























APPENDIX H:
CUMULATIVE CONDITIONS ANALYSIS OUTPUT SHEETS

HCM 2010 Signalized Intersection Summary
 1: American Ave/W Country Club Dr & Balfour Rd

Cumulative
 Timing Plan: AM-Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	332	354	791	460	242	123	213	728	256	471	12
Future Volume (veh/h)	26	332	354	791	460	242	123	213	728	256	471	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	28	361	385	860	500	263	134	232	791	278	512	13
Adj No. of Lanes	1	2	0	2	2	0	1	1	2	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	54	514	437	611	963	504	162	434	1283	304	566	14
Arrive On Green	0.03	0.28	0.28	0.17	0.42	0.42	0.09	0.24	0.24	0.17	0.32	0.32
Sat Flow, veh/h	1757	1845	1568	3514	2283	1196	1757	1845	3136	1757	1791	45
Grp Volume(v), veh/h	28	361	385	860	404	359	134	232	791	278	0	525
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1634	1757	1845	1568	1757	0	1837
Q Serve(g_s), s	1.8	20.2	27.0	20.0	18.6	18.8	8.6	12.6	22.9	17.9	0.0	31.5
Cycle Q Clear(g_c), s	1.8	20.2	27.0	20.0	18.6	18.8	8.6	12.6	22.9	17.9	0.0	31.5
Prop In Lane	1.00		1.00	1.00		0.73	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	54	514	437	611	778	689	162	434	1283	304	0	580
V/C Ratio(X)	0.52	0.70	0.88	1.41	0.52	0.52	0.83	0.53	0.62	0.92	0.00	0.90
Avail Cap(c_a), veh/h	306	802	682	611	802	710	306	481	1363	306	0	580
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	0.00	1.00
Uniform Delay (d), s/veh	54.9	37.2	39.7	47.5	24.6	24.7	51.3	38.5	26.8	46.7	0.0	37.7
Incr Delay (d2), s/veh	2.8	0.7	5.5	193.0	0.2	0.3	4.0	0.4	0.5	29.9	0.0	17.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	10.3	12.3	26.1	9.5	8.5	4.3	6.5	10.0	11.2	0.0	18.7
LnGrp Delay(d),s/veh	57.7	37.9	45.2	240.5	24.8	24.9	55.3	38.8	27.3	76.6	0.0	55.0
LnGrp LOS	E	D	D	F	C	C	E	D	C	E		D
Approach Vol, veh/h		774			1623			1157			803	
Approach Delay, s/veh		42.2			139.1			32.9			62.5	
Approach LOS		D			F			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	23.9	31.1	24.0	36.0	14.6	40.3	7.5	52.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	20.0	30.0	20.0	50.0	20.0	36.0	20.0	50.0				
Max Q Clear Time (g_c+I1), s	19.9	24.9	22.0	29.0	10.6	33.5	3.8	20.8				
Green Ext Time (p_c), s	0.0	2.2	0.0	3.0	0.2	1.3	0.0	3.1				
Intersection Summary												
HCM 2010 Ctrl Delay			79.6									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary
 2: Foothill Dr/E Country Club Dr & Balfour Rd

Cumulative
 Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	973	121	65	959	77	210	108	113	258	148	252
Future Volume (veh/h)	53	973	121	65	959	77	210	108	113	258	148	252
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	56	1035	129	69	1020	82	223	115	120	274	157	268
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	128	1135	141	93	1122	90	258	166	141	589	171	291
Arrive On Green	0.07	0.35	0.35	0.05	0.33	0.33	0.15	0.09	0.09	0.34	0.28	0.28
Sat Flow, veh/h	1757	3218	401	1757	3371	271	1757	1845	1568	1757	613	1047
Grp Volume(v), veh/h	56	593	571	69	558	544	223	115	120	274	0	425
Grp Sat Flow(s),veh/h/ln	1757	1845	1774	1757	1845	1797	1757	1845	1568	1757	0	1660
Q Serve(g_s), s	2.9	29.0	29.1	3.7	27.4	27.4	11.7	5.7	6.1	11.6	0.0	23.5
Cycle Q Clear(g_c), s	2.9	29.0	29.1	3.7	27.4	27.4	11.7	5.7	6.1	11.6	0.0	23.5
Prop In Lane	1.00		0.23	1.00		0.15	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	128	650	626	93	614	598	258	166	141	589	0	462
V/C Ratio(X)	0.44	0.91	0.91	0.74	0.91	0.91	0.86	0.69	0.85	0.47	0.00	0.92
Avail Cap(c_a), veh/h	130	936	900	316	1131	1101	316	721	613	589	0	649
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	0.00	1.00
Uniform Delay (d), s/veh	42.0	29.2	29.2	44.2	30.2	30.2	39.4	41.8	30.6	24.8	0.0	33.1
Incr Delay (d2), s/veh	0.9	7.8	8.2	4.3	2.2	2.3	16.2	1.9	5.3	0.2	0.0	12.2
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	4	16.1	15.5	1.9	14.3	14.0	6.9	3.0	3.0	5.7	0.0	12.3
LnGrp Delay(d),s/veh	42.9	37.0	37.4	48.4	32.4	32.5	55.7	43.7	35.9	25.0	0.0	45.3
LnGrp LOS	D	D	D	D	C	C	E	D	D	C		D
Approach Vol, veh/h		1220			1171			458			699	
Approach Delay, s/veh		37.5			33.4			47.5			37.3	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.7	12.5	9.0	37.4	17.9	30.3	10.9	35.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	37.0	17.0	17.0	48.0	17.0	37.0	7.0	58.0				
Max Q Clear Time (g_c+M3), s	8.1	5.7	5.7	31.1	13.7	25.5	4.9	29.4				
Green Ext Time (p_c), s	0.4	0.5	0.1	2.3	0.2	0.8	0.8	2.1				
Intersection Summary												
HCM 2010 Ctrl Delay				37.4								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary
 3: John Muir Pkwy & Balfour Rd

Cumulative
 Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1164	130	51	1055	67	36	6	83	4	2	10
Future Volume (veh/h)	50	1164	130	51	1055	67	36	6	83	4	2	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	52	1212	135	53	1099	70	38	6	86	4	2	10
Adj No. of Lanes	1	2	1	2	2	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	110	1763	749	223	1766	750	175	218	185	11	7	33
Arrive On Green	0.06	0.48	0.48	0.06	0.48	0.48	0.10	0.12	0.12	0.01	0.02	0.02
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	268	1340
Grp Volume(v), veh/h	52	1212	135	53	1099	70	38	6	86	4	0	12
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1608
Q Serve(g_s), s	1.4	12.2	1.2	0.7	10.6	0.8	1.0	0.1	1.8	0.1	0.0	0.4
Cycle Q Clear(g_c), s	1.4	12.2	1.2	0.7	10.6	0.8	1.0	0.1	1.8	0.1	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.83
Lane Grp Cap(c), veh/h	110	1763	749	223	1766	750	175	218	185	11	0	40
V/C Ratio(X)	0.47	0.69	0.18	0.24	0.62	0.09	0.22	0.03	0.46	0.35	0.00	0.30
Avail Cap(c_a), veh/h	404	5011	2130	587	4780	2031	294	1542	1311	220	0	1277
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	0.00	1.00
Uniform Delay (d), s/veh	21.7	9.7	1.7	21.3	9.3	3.0	19.8	18.7	10.7	23.7	0.0	22.9
Incr Delay (d2), s/veh	1.2	0.2	0.0	0.2	0.1	0.0	0.2	0.0	0.7	6.7	0.0	1.6
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	0.7	6.1	0.9	0.3	5.4	0.5	0.5	0.1	1.0	0.1	0.0	0.2
LnGrp Delay(d),s/veh	22.8	9.9	1.7	21.5	9.4	3.0	20.0	18.7	11.4	30.4	0.0	24.5
LnGrp LOS	C	A	A	C	A	A	C	B	B	C		C
Approach Vol, veh/h		1399			1222			130			16	
Approach Delay, s/veh		9.6			9.6			14.3			26.0	
Approach LOS		A			A			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.3	9.6	7.0	26.9	8.8	5.2	7.0	26.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	40.0	8.0	65.0	8.0	38.0	11.0	62.0					
Max Q Clear Time (g_c+1), s	3.8	2.7	14.2	3.0	2.4	3.4	12.6					
Green Ext Time (p_c), s	0.0	0.2	0.0	8.6	0.0	0.0	8.6					
Intersection Summary												
HCM 2010 Ctrl Delay			9.9									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary
4: Eagle Rock Ave/Cortona Wy & Balfour Rd

Cumulative
Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	1247	10	339	1287	84	5	29	330	114	28	38
Future Volume (veh/h)	47	1247	10	339	1287	84	5	29	330	114	28	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	52	1370	11	373	1414	92	5	32	363	125	31	42
Adj No. of Lanes	1	2	1	2	2	1	1	1	1	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	184	1469	624	432	1536	653	14	465	395	151	235	318
Arrive On Green	0.10	0.40	0.40	0.12	0.42	0.42	0.01	0.25	0.25	0.09	0.33	0.33
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	711	963
Grp Volume(v), veh/h	52	1370	11	373	1414	92	5	32	363	125	0	73
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1675
Q Serve(g_s), s	3.1	40.4	0.5	11.8	41.2	3.0	0.3	1.5	25.6	8.0	0.0	3.5
Cycle Q Clear(g_c), s	3.1	40.4	0.5	11.8	41.2	3.0	0.3	1.5	25.6	8.0	0.0	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.58
Lane Grp Cap(c), veh/h	184	1469	624	432	1536	653	14	465	395	151	0	553
V/C Ratio(X)	0.28	0.93	0.02	0.86	0.92	0.14	0.37	0.07	0.92	0.83	0.00	0.13
Avail Cap(c_a), veh/h	184	1655	703	464	1947	827	93	698	593	155	0	692
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	0.00	1.00
Uniform Delay (d), s/veh	46.9	32.7	20.7	48.9	31.4	11.0	56.1	32.4	41.4	51.1	0.0	26.7
Incr Delay (d2), s/veh	0.3	8.9	0.0	13.8	5.8	0.0	6.1	0.0	11.2	27.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	22.4	0.2	6.6	22.2	1.7	0.2	0.8	12.3	5.0	0.0	1.6
LnGrp Delay(d),s/veh	47.3	41.7	20.7	62.7	37.2	11.1	62.2	32.4	52.6	78.6	0.0	26.7
LnGrp LOS	D	D	C	E	D	B	E	C	D	E		C
Approach Vol, veh/h		1433			1879			400			198	
Approach Delay, s/veh		41.7			41.0			51.1			59.5	
Approach LOS		D			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.8	32.7	18.0	49.3	4.9	41.6	15.9	51.3				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	43.0	15.0	51.0	6.0	47.0	6.0	60.0					
Max Q Clear Time (g_c+M), s	27.6	13.8	42.4	2.3	5.5	5.1	43.2					
Green Ext Time (p_c), s	0.0	1.0	0.1	2.9	0.0	1.2	0.5	4.1				
Intersection Summary												
HCM 2010 Ctrl Delay			43.2									
HCM 2010 LOS			D									

Intersection

Intersection Delay, s/veh 27.3
Intersection LOS D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	123	48	172	517	12
Future Vol, veh/h	5	123	48	172	517	12
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	156	61	218	654	15
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left SB		EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right NB			EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	10.6	11	38.1
HCM LOS	B	B	E

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	4%	0%
Vol Thru, %	0%	100%	0%	98%
Vol Right, %	0%	0%	96%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	172	128	529
LT Vol	48	0	5	0
Through Vol	0	172	0	517
RT Vol	0	0	123	12
Lane Flow Rate	61	218	162	670
Geometry Grp	7	7	2	5
Degree of Util (X)	0.105	0.344	0.255	0.917
Departure Headway (Hd)	6.199	5.692	5.656	4.93
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	579	634	634	743
Service Time	3.928	3.421	3.698	2.93
HCM Lane V/C Ratio	0.105	0.344	0.256	0.902
HCM Control Delay	9.7	11.4	10.6	38.1
HCM Lane LOS	A	B	B	E
HCM 95th-tile Q	0.4	1.5	1	12.5

Intersection												
Intersection Delay, s/veh	27.4											
Intersection LOS	D											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	126	135	65	24	52	23	61	282	42	62	203	69
Future Vol, veh/h	126	135	65	24	52	23	61	282	42	62	203	69
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	166	178	86	32	68	30	80	371	55	82	267	91
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	18.7	13.7	39.2	26.2
HCM LOS	C	B	E	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	87%	0%	68%	0%	69%	0%	75%
Vol Right, %	0%	13%	0%	33%	0%	31%	0%	25%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	324	126	200	24	75	62	272
LT Vol	61	0	126	0	24	0	62	0
Through Vol	0	282	0	135	0	52	0	203
RT Vol	0	42	0	65	0	23	0	69
Lane Flow Rate	80	426	166	263	32	99	82	358
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.179	0.881	0.39	0.564	0.082	0.235	0.186	0.745
Departure Headway (Hd)	8.046	7.439	8.469	7.719	9.306	8.562	8.19	7.492
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	445	486	424	466	383	417	436	480
Service Time	5.82	5.213	6.247	5.496	7.103	6.358	5.968	5.269
HCM Lane V/C Ratio	0.18	0.877	0.392	0.564	0.084	0.237	0.188	0.746
HCM Control Delay	12.6	44.2	16.6	20.1	12.9	14	12.8	29.2
HCM Lane LOS	B	E	C	C	B	B	B	D
HCM 95th-tile Q	0.6	9.5	1.8	3.4	0.3	0.9	0.7	6.2

Intersection

Intersection Delay, s/veh 13.5
Intersection LOS B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↘		↘	↗
Traffic Vol, veh/h	9	255	187	7	147	207
Future Vol, veh/h	9	255	187	7	147	207
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	12	349	256	10	201	284
Number of Lanes	1	0	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	14	12.9	13.4
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	3%	100%	0%
Vol Thru, %	96%	0%	0%	100%
Vol Right, %	4%	97%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	194	264	147	207
LT Vol	0	9	147	0
Through Vol	187	0	0	207
RT Vol	7	255	0	0
Lane Flow Rate	266	362	201	284
Geometry Grp	5	2	7	7
Degree of Util (X)	0.423	0.526	0.361	0.469
Departure Headway (Hd)	5.733	5.24	6.455	5.948
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	627	687	558	607
Service Time	3.773	3.284	4.192	3.685
HCM Lane V/C Ratio	0.424	0.527	0.36	0.468
HCM Control Delay	12.9	14	12.8	13.9
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.1	3.1	1.6	2.5

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	78	116	55	55	177
Future Vol, veh/h	36	78	116	55	55	177
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	44	96	143	68	68	219

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	531	177	0	0	211
Stage 1	177	-	-	-	-
Stage 2	354	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227
Pot Cap-1 Maneuver	507	863	-	-	1354
Stage 1	851	-	-	-	-
Stage 2	708	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	482	863	-	-	1354
Mov Cap-2 Maneuver	482	-	-	-	-
Stage 1	851	-	-	-	-
Stage 2	672	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	691	1354
HCM Lane V/C Ratio	-	-	0.204	0.05
HCM Control Delay (s)	-	-	11.5	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.8	0.2

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↑	↔	
Traffic Vol, veh/h	27	32	0	1	66	0
Future Vol, veh/h	27	32	0	1	66	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	39	0	1	80	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	72	0	53
Stage 1	-	-	-	-	52
Stage 2	-	-	-	-	1
Critical Hdwy	-	-	4.13	-	6.43
Critical Hdwy Stg 1	-	-	-	-	5.43
Critical Hdwy Stg 2	-	-	-	-	5.43
Follow-up Hdwy	-	-	2.227	-	3.527
Pot Cap-1 Maneuver	-	-	1522	-	953
Stage 1	-	-	-	-	968
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1522	-	953
Mov Cap-2 Maneuver	-	-	-	-	953
Stage 1	-	-	-	-	968
Stage 2	-	-	-	-	1020

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	953	-	-	1522	-
HCM Lane V/C Ratio	0.084	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	34.1
Intersection LOS	D

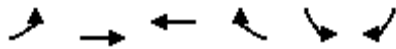
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	↵
Traffic Vol, veh/h	47	228	90	139	89	5	17	51	134	7	149	27
Future Vol, veh/h	47	228	90	139	89	5	17	51	134	7	149	27
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	65	317	125	193	124	7	24	71	186	10	207	38
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	57.7	18.6	22.5	19.7
HCM LOS	F	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	28%	0%	72%	0%	95%	0%	100%	0%
Vol Right, %	0%	72%	0%	28%	0%	5%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	185	47	318	139	94	7	149	27
LT Vol	17	0	47	0	139	0	7	0	0
Through Vol	0	51	0	228	0	89	0	149	0
RT Vol	0	134	0	90	0	5	0	0	27
Lane Flow Rate	24	257	65	442	193	131	10	207	38
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.062	0.604	0.157	0.974	0.494	0.314	0.026	0.522	0.087
Departure Headway (Hd)	9.512	8.463	8.652	7.938	9.215	8.661	9.594	9.075	8.348
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	376	427	415	455	390	414	373	397	428
Service Time	7.282	6.233	6.412	5.697	6.986	6.432	7.365	6.845	6.118
HCM Lane V/C Ratio	0.064	0.602	0.157	0.971	0.495	0.316	0.027	0.521	0.089
HCM Control Delay	12.9	23.4	13	64.3	20.7	15.4	12.6	21.4	11.9
HCM Lane LOS	B	C	B	F	C	C	B	C	B
HCM 95th-tile Q	0.2	3.9	0.6	12.1	2.6	1.3	0.1	2.9	0.3

HCM 2010 Signalized Intersection Summary
 17: Balfour Rd & SR-4 SB Off Ramp

Cumulative
 Timing Plan: AM-Peak

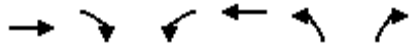


Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↖↗	↑↑	↑↑	↖	↖	↖↗		
Traffic Volume (veh/h)	339	1292	1320	132	469	340		
Future Volume (veh/h)	339	1292	1320	132	469	340		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	368	1404	1435	143	510	370		
Adj No. of Lanes	2	2	2	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	3	3	3	3		
Cap, veh/h	444	2223	1593	677	557	875		
Arrive On Green	0.13	0.60	0.43	0.43	0.32	0.32		
Sat Flow, veh/h	3408	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	368	1404	1435	143	510	370		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	10.5	24.3	35.9	5.7	27.7	10.5		
Cycle Q Clear(g_c), s	10.5	24.3	35.9	5.7	27.7	10.5		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	444	2223	1593	677	557	875		
V/C Ratio(X)	0.83	0.63	0.90	0.21	0.92	0.42		
Avail Cap(c_a), veh/h	755	2638	1672	711	725	1139		
HCM Platoon Ratio	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		
Uniform Delay (d), s/veh	42.1	12.7	26.2	17.6	32.6	26.8		
Incr Delay (d2), s/veh	1.5	0.2	6.6	0.1	12.1	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.0	12.3	19.6	2.5	15.3	8.6		
LnGrp Delay(d),s/veh	43.6	12.9	32.8	17.7	44.7	26.9		
LnGrp LOS	D	B	C	B	D	C		
Approach Vol, veh/h		1772	1578		880			
Approach Delay, s/veh		19.3	31.5		37.2			
Approach LOS		B	C		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				63.8		35.5	16.9	46.9
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				71.0		41.0	22.0	45.0
Max Q Clear Time (g_c+I1), s				26.3		29.7	12.5	37.9
Green Ext Time (p_c), s				12.3		1.7	0.5	5.0
Intersection Summary								
HCM 2010 Ctrl Delay			27.5					
HCM 2010 LOS			C					
Notes								

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
 18: SR-4 NB Off Ramp & Balfour Rd

Cumulative
 Timing Plan: AM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑		↑↑	↑↑	↑		
Traffic Volume (veh/h)	993	768	0	1723	506	118		
Future Volume (veh/h)	993	768	0	1723	506	118		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1845	0	1845	1845	1845		
Adj Flow Rate, veh/h	1079	835	0	1873	550	128		
Adj No. of Lanes	2	1	0	2	2	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	0	3	3	3		
Cap, veh/h	2499	1062	0	2499	702	323		
Arrive On Green	0.68	0.68	0.00	0.68	0.21	0.21		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1079	835	0	1873	550	128		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	9.1	25.2	0.0	22.8	10.5	4.8		
Cycle Q Clear(g_c), s	9.1	25.2	0.0	22.8	10.5	4.8		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2499	1062	0	2499	702	323		
V/C Ratio(X)	0.43	0.79	0.00	0.75	0.78	0.40		
Avail Cap(c_a), veh/h	4143	1761	0	4143	1740	800		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	5.0	7.6	0.0	7.2	25.8	23.5		
Incr Delay (d2), s/veh	0.0	0.5	0.0	0.2	0.7	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	4.5	10.8	0.0	11.5	5.0	2.1		
LnGrp Delay(d),s/veh	5.1	8.1	0.0	7.4	26.5	23.8		
LnGrp LOS	A	A		A	C	C		
Approach Vol, veh/h	1914			1873	678			
Approach Delay, s/veh	6.4			7.4	26.0			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		18.1		50.4				50.4
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		35.0		77.0				77.0
Max Q Clear Time (g_c+I1), s		12.5		27.2				24.8
Green Ext Time (p_c), s		1.6		19.3				19.5
Intersection Summary								
HCM 2010 Ctrl Delay				9.8				
HCM 2010 LOS				A				
Notes								

User approved pedestrian interval to be less than phase max green.

Intersection

Intersection Delay, s/veh 9.3
Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SBU	SBL	SBR
Lane Configurations		↶	↷			↶↷	
Traffic Vol, veh/h	20	88	69	39	0	135	50
Future Vol, veh/h	20	88	69	39	0	135	50
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	3	3	3	3	3	3	3
Mvmt Flow	27	121	95	53	0	185	68
Number of Lanes	0	1	1	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	9	8.6	9.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	0%	73%
Vol Thru, %	81%	64%	0%
Vol Right, %	0%	36%	27%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	108	108	185
LT Vol	20	0	135
Through Vol	88	69	0
RT Vol	0	39	50
Lane Flow Rate	148	148	253
Geometry Grp	1	1	1
Degree of Util (X)	0.196	0.186	0.325
Departure Headway (Hd)	4.775	4.529	4.623
Convergence, Y/N	Yes	Yes	Yes
Cap	750	792	778
Service Time	2.81	2.564	2.656
HCM Lane V/C Ratio	0.197	0.187	0.325
HCM Control Delay	9	8.6	9.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.7	0.7	1.4

Intersection						
Int Delay, s/veh	8.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	167	56	257	121	41	258
Future Vol, veh/h	167	56	257	121	41	258
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	70	70	70	70	70	70
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	239	80	367	173	59	369






















Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	540	0	-	0	1011 454
Stage 1	-	-	-	-	454 -
Stage 2	-	-	-	-	557 -
Critical Hdwy	4.13	-	-	-	6.43 6.23
Critical Hdwy Stg 1	-	-	-	-	5.43 -
Critical Hdwy Stg 2	-	-	-	-	5.43 -
Follow-up Hdwy	2.227	-	-	-	3.527 3.327
Pot Cap-1 Maneuver	1023	-	-	-	264 604
Stage 1	-	-	-	-	638 -
Stage 2	-	-	-	-	572 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1023	-	-	-	200 604
Mov Cap-2 Maneuver	-	-	-	-	200 -
Stage 1	-	-	-	-	638 -
Stage 2	-	-	-	-	432 -

Approach	EB	WB	SB
HCM Control Delay, s	7.2	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1023	-	-	-	200	604
HCM Lane V/C Ratio	0.233	-	-	-	0.293	0.61
HCM Control Delay (s)	9.6	0	-	-	30.3	19.8
HCM Lane LOS	A	A	-	-	D	C
HCM 95th %tile Q(veh)	0.9	-	-	-	1.2	4.1

HCM 2010 Signalized Intersection Summary
 1: American Ave/W Country Club Dr & Balfour Rd

Cumulative
 Timing Plan: PM-Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	269	494	68	313	453	194	108	265	682	203	172	34
Future Volume (veh/h)	269	494	68	313	453	194	108	265	682	203	172	34
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	292	537	74	340	492	211	117	288	741	221	187	37
Adj No. of Lanes	1	2	0	2	2	0	1	1	2	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	336	988	136	444	604	257	367	385	1051	266	226	45
Arrive On Green	0.19	0.31	0.31	0.13	0.25	0.25	0.21	0.21	0.21	0.15	0.15	0.15
Sat Flow, veh/h	1757	3176	436	3514	2457	1048	1757	1845	3136	1757	1496	296
Grp Volume(v), veh/h	292	311	300	340	369	334	117	288	741	221	0	224
Grp Sat Flow(s),veh/h/ln	1757	1845	1768	1757	1845	1660	1757	1845	1568	1757	0	1792
Q Serve(g_s), s	12.7	11.0	11.1	7.4	14.9	15.0	4.5	11.6	8.8	9.6	0.0	9.6
Cycle Q Clear(g_c), s	12.7	11.0	11.1	7.4	14.9	15.0	4.5	11.6	8.8	9.6	0.0	9.6
Prop In Lane	1.00		0.25	1.00		0.63	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	336	574	550	444	453	408	367	385	1051	266	0	271
V/C Ratio(X)	0.87	0.54	0.55	0.77	0.81	0.82	0.32	0.75	0.71	0.83	0.00	0.83
Avail Cap(c_a), veh/h	601	982	941	890	818	736	367	725	1628	579	0	1022
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	0.00	1.00
Uniform Delay (d), s/veh	30.9	22.5	22.6	33.4	28.1	28.1	26.5	29.3	8.9	32.5	0.0	32.5
Incr Delay (d2), s/veh	2.7	0.3	0.3	1.1	1.4	1.6	0.2	1.1	0.3	2.6	0.0	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	6.4	5.7	5.5	3.7	7.8	7.1	2.2	6.0	3.8	4.9	0.0	4.9
LnGrp Delay(d),s/veh	33.6	22.8	22.9	34.4	29.4	29.7	26.6	30.4	9.2	35.1	0.0	35.0
LnGrp LOS	C	C	C	C	C	C	C	C	A	D		C
Approach Vol, veh/h		903			1043			1146			445	
Approach Delay, s/veh		26.3			31.1			16.3			35.0	
Approach LOS		C			C			B			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	20.5	14.0	28.5	20.5	15.9	19.1	23.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	26.0	31.0	20.0	42.0	12.0	45.0	27.0	35.0				
Max Q Clear Time (g_c+I1), s	11.6	13.6	9.4	13.1	6.5	11.6	14.7	17.0				
Green Ext Time (p_c), s	0.4	2.9	0.6	2.4	0.4	0.4	0.4	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay			25.6									
HCM 2010 LOS			C									
Notes												

User approved pedestrian interval to be less than phase max green.

HCM 2010 Signalized Intersection Summary
 2: Foothill Dr/E Country Club Dr & Balfour Rd

Cumulative
 Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗	
Traffic Volume (veh/h)	174	961	153	109	750	194	114	93	97	132	65	75
Future Volume (veh/h)	174	961	153	109	750	194	114	93	97	132	65	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	185	1022	163	116	798	206	121	99	103	140	69	80
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	287	1262	201	150	929	240	192	234	199	181	94	109
Arrive On Green	0.16	0.41	0.41	0.09	0.33	0.33	0.11	0.13	0.13	0.10	0.12	0.12
Sat Flow, veh/h	1757	3107	495	1757	2830	730	1757	1845	1568	1757	780	905
Grp Volume(v), veh/h	185	606	579	116	520	484	121	99	103	140	0	149
Grp Sat Flow(s),veh/h/ln	1757	1845	1757	1757	1845	1716	1757	1845	1568	1757	0	1685
Q Serve(g_s), s	6.0	17.7	17.8	3.9	16.1	16.1	4.0	3.0	3.7	4.7	0.0	5.2
Cycle Q Clear(g_c), s	6.0	17.7	17.8	3.9	16.1	16.1	4.0	3.0	3.7	4.7	0.0	5.2
Prop In Lane	1.00		0.28	1.00		0.43	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	287	749	713	150	605	563	192	234	199	181	0	203
V/C Ratio(X)	0.64	0.81	0.81	0.77	0.86	0.86	0.63	0.42	0.52	0.77	0.00	0.73
Avail Cap(c_a), veh/h	576	1511	1439	547	1511	1405	547	907	771	576	0	828
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	0.00	1.00
Uniform Delay (d), s/veh	23.9	16.0	16.1	27.3	19.2	19.2	26.0	24.6	24.9	26.7	0.0	25.9
Incr Delay (d2), s/veh	0.9	0.8	0.9	3.1	1.4	1.5	1.3	0.5	0.8	2.6	0.0	1.9
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	8.0	9.1	8.7	2.0	8.3	7.8	2.0	1.6	1.7	2.4	0.0	2.5
LnGrp Delay(d),s/veh	24.8	16.9	16.9	30.5	20.6	20.7	27.3	25.0	25.7	29.3	0.0	27.8
LnGrp LOS	C	B	B	C	C	C	C	C	C	C		C
Approach Vol, veh/h		1370			1120			323			289	
Approach Delay, s/veh		17.9			21.7			26.1			28.5	
Approach LOS		B			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	10.3	12.7	9.2	28.8	11.7	11.4	14.0	24.0				
Change Period (Y+Rc), s	4.0	* 5	4.0	4.0	5.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	20.0	* 30	19.0	50.0	19.0	30.0	20.0	50.0				
Max Q Clear Time (g_c+10), s	10.7	5.7	5.9	19.8	6.0	7.2	8.0	18.1				
Green Ext Time (p_c), s	0.2	0.7	0.1	2.7	0.6	0.3	2.4	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay				21.1								
HCM 2010 LOS				C								
Notes												

User approved pedestrian interval to be less than phase max green.

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

HCM 2010 Signalized Intersection Summary

3: John Muir Pkwy & Balfour Rd

Cumulative
Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	1065	64	51	953	56	68	26	78	30	11	23
Future Volume (veh/h)	61	1065	64	51	953	56	68	26	78	30	11	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	64	1109	67	53	993	58	71	27	81	31	11	24
Adj No. of Lanes	1	2	1	2	2	1	1	1	1	1	1	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	126	1591	676	223	1560	663	135	235	200	74	48	105
Arrive On Green	0.07	0.43	0.43	0.06	0.42	0.42	0.08	0.13	0.13	0.04	0.09	0.09
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	517	1128
Grp Volume(v), veh/h	64	1109	67	53	993	58	71	27	81	31	0	35
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1646
Q Serve(g_s), s	1.7	11.7	1.2	0.7	10.1	1.1	1.9	0.6	2.3	0.8	0.0	0.9
Cycle Q Clear(g_c), s	1.7	11.7	1.2	0.7	10.1	1.1	1.9	0.6	2.3	0.8	0.0	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	126	1591	676	223	1560	663	135	235	200	74	0	154
V/C Ratio(X)	0.51	0.70	0.10	0.24	0.64	0.09	0.53	0.11	0.40	0.42	0.00	0.23
Avail Cap(c_a), veh/h	737	3867	1643	1473	3867	1643	737	1431	1216	737	0	1276
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	0.00	1.00
Uniform Delay (d), s/veh	21.3	11.0	8.1	21.2	10.9	8.3	21.2	18.4	19.1	22.3	0.0	20.0
Incr Delay (d2), s/veh	1.2	0.2	0.0	0.2	0.2	0.0	1.2	0.1	0.5	1.4	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.9	0.5	0.3	5.1	0.5	0.9	0.3	1.0	0.4	0.0	0.4
LnGrp Delay(d),s/veh	22.5	11.2	8.1	21.4	11.0	8.3	22.4	18.5	19.6	23.6	0.0	20.3
LnGrp LOS	C	B	A	C	B	A	C	B	B	C		C
Approach Vol, veh/h		1240			1104			179			66	
Approach Delay, s/veh		11.7			11.4			20.6			21.9	
Approach LOS		B			B			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.0	10.1	7.0	24.6	7.7	8.5	7.4	24.2				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	20.0	37.0	20.0	50.0	20.0	37.0	20.0	50.0				
Max Q Clear Time (g_c+1), s	12.8	4.3	2.7	13.7	3.9	2.9	3.7	12.1				
Green Ext Time (p_c), s	0.0	0.3	0.1	6.9	0.1	0.3	0.1	6.9				
Intersection Summary												
HCM 2010 Ctrl Delay				12.4								
HCM 2010 LOS				B								

HCM 2010 Signalized Intersection Summary
4: Eagle Rock Ave/Cortona Wy & Balfour Rd

Cumulative
Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	1056	43	381	1141	92	13	39	371	151	45	39
Future Volume (veh/h)	61	1056	43	381	1141	92	13	39	371	151	45	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	67	1160	47	419	1254	101	14	43	408	166	49	43
Adj No. of Lanes	1	2	1	2	2	1	1	1	1	1	1	0
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	86	1232	524	462	1537	653	34	518	441	181	331	291
Arrive On Green	0.05	0.33	0.33	0.13	0.42	0.42	0.02	0.28	0.28	0.10	0.37	0.37
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	908	796
Grp Volume(v), veh/h	67	1160	47	419	1254	101	14	43	408	166	0	92
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1704
Q Serve(g_s), s	4.0	32.5	1.9	12.5	32.0	3.0	0.8	1.8	26.9	10.0	0.0	3.9
Cycle Q Clear(g_c), s	4.0	32.5	1.9	12.5	32.0	3.0	0.8	1.8	26.9	10.0	0.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.47
Lane Grp Cap(c), veh/h	86	1232	524	462	1537	653	34	518	441	181	0	622
V/C Ratio(X)	0.78	0.94	0.09	0.91	0.82	0.15	0.42	0.08	0.93	0.91	0.00	0.15
Avail Cap(c_a), veh/h	181	1282	545	462	1559	663	99	728	618	181	0	752
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	0.00	1.00
Uniform Delay (d), s/veh	50.1	34.4	17.9	45.6	27.5	9.3	51.6	28.2	37.2	47.3	0.0	22.7
Incr Delay (d2), s/veh	5.6	13.0	0.0	21.0	3.2	0.0	3.0	0.0	13.6	42.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	18.8	0.9	7.4	16.9	1.7	0.4	0.9	13.3	7.0	0.0	1.8
LnGrp Delay(d),s/veh	55.7	47.4	18.0	66.6	30.7	9.4	54.7	28.2	50.8	89.8	0.0	22.7
LnGrp LOS	E	D	B	E	C	A	D	C	D	F		C
Approach Vol, veh/h		1274			1774			465			258	
Approach Delay, s/veh		46.8			37.9			48.8			65.9	
Approach LOS		D			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.0	33.9	18.0	39.6	6.0	42.9	9.2	48.4				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	42.0	14.0	37.0	6.0	47.0	11.0	45.0					
Max Q Clear Time (g_c+M), s	28.9	14.5	34.5	2.8	5.9	6.0	34.0					
Green Ext Time (p_c), s	0.0	1.0	0.0	1.0	0.0	0.5	0.0	4.1				
Intersection Summary												
HCM 2010 Ctrl Delay			44.2									
HCM 2010 LOS			D									
Notes												

User approved pedestrian interval to be less than phase max green.

Intersection

Intersection Delay, s/veh 13.2
Intersection LOS B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	48	66	366	224	9
Future Vol, veh/h	8	48	66	366	224	9
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	10	61	84	463	284	11
Number of Lanes	1	0	1	1	1	0

Approach	EB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	2
Conflicting Approach Left SB		EB	
Conflicting Lanes Left	1	1	0
Conflicting Approach Right NB			EB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9	15	10.9
HCM LOS	A	B	B

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	14%	0%
Vol Thru, %	0%	100%	0%	96%
Vol Right, %	0%	0%	86%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	66	366	56	233
LT Vol	66	0	8	0
Through Vol	0	366	0	224
RT Vol	0	0	48	9
Lane Flow Rate	84	463	71	295
Geometry Grp	7	7	2	5
Degree of Util (X)	0.127	0.639	0.105	0.392
Departure Headway (Hd)	5.466	4.963	5.308	4.79
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	656	727	672	749
Service Time	3.203	2.7	3.366	2.83
HCM Lane V/C Ratio	0.128	0.637	0.106	0.394
HCM Control Delay	9	16.1	9	10.9
HCM Lane LOS	A	C	A	B
HCM 95th-tile Q	0.4	4.6	0.4	1.9

Intersection												
Intersection Delay, s/veh	16.8											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	90	116	33	23	88	12	69	205	27	61	146	116
Future Vol, veh/h	90	116	33	23	88	12	69	205	27	61	146	116
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	118	153	43	30	116	16	91	270	36	80	192	153
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	14.4	13.3	17.7	19.1
HCM LOS	B	B	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	88%	0%	78%	0%	88%	0%	56%
Vol Right, %	0%	12%	0%	22%	0%	12%	0%	44%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	69	232	90	149	23	100	61	262
LT Vol	69	0	90	0	23	0	61	0
Through Vol	0	205	0	116	0	88	0	146
RT Vol	0	27	0	33	0	12	0	116
Lane Flow Rate	91	305	118	196	30	132	80	345
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.191	0.592	0.263	0.399	0.07	0.284	0.168	0.643
Departure Headway (Hd)	7.579	6.984	7.995	7.323	8.368	7.767	7.544	6.716
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	473	516	449	492	428	462	475	538
Service Time	5.329	4.734	5.745	5.073	6.127	5.525	5.292	4.464
HCM Lane V/C Ratio	0.192	0.591	0.263	0.398	0.07	0.286	0.168	0.641
HCM Control Delay	12.1	19.4	13.6	14.9	11.8	13.6	11.8	20.8
HCM Lane LOS	B	C	B	B	B	B	B	C
HCM 95th-tile Q	0.7	3.8	1	1.9	0.2	1.2	0.6	4.5

Intersection

Intersection Delay, s/veh 14.2

Intersection LOS B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↘		↘	↗
Traffic Vol, veh/h	12	224	199	18	98	263
Future Vol, veh/h	12	224	199	18	98	263
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	16	307	273	25	134	360
Number of Lanes	1	0	1	0	1	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left NB			WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right SB		WB	
Conflicting Lanes Right	2	1	0
HCM Control Delay	13.3	13.5	15.2
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	5%	100%	0%
Vol Thru, %	92%	0%	0%	100%
Vol Right, %	8%	95%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	217	236	98	263
LT Vol	0	12	98	0
Through Vol	199	0	0	263
RT Vol	18	224	0	0
Lane Flow Rate	297	323	134	360
Geometry Grp	5	2	7	7
Degree of Util (X)	0.465	0.481	0.238	0.589
Departure Headway (Hd)	5.627	5.357	6.388	5.881
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	639	672	562	612
Service Time	3.669	3.403	4.126	3.619
HCM Lane V/C Ratio	0.465	0.481	0.238	0.588
HCM Control Delay	13.5	13.3	11.1	16.7
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	2.5	2.6	0.9	3.8

Intersection						
Int Delay, s/veh	3.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T		T	T
Traffic Vol, veh/h	57	62	163	27	62	214
Future Vol, veh/h	57	62	163	27	62	214
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	70	77	201	33	77	264

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	635	218	0	0	235
Stage 1	218	-	-	-	-
Stage 2	417	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227
Pot Cap-1 Maneuver	441	819	-	-	1326
Stage 1	816	-	-	-	-
Stage 2	663	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	415	819	-	-	1326
Mov Cap-2 Maneuver	415	-	-	-	-
Stage 1	816	-	-	-	-
Stage 2	625	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.7	0	1.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	559	1326
HCM Lane V/C Ratio	-	-	0.263	0.058
HCM Control Delay (s)	-	-	13.7	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1	0.2

Intersection						
Int Delay, s/veh	3.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	36	0	18	41	3
Future Vol, veh/h	20	36	0	18	41	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	24	44	0	22	50	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	68	0	68	46
Stage 1	-	-	-	-	46	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	-	-	4.13	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.227	-	3.527	3.327
Pot Cap-1 Maneuver	-	-	1527	-	934	1021
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	998	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1527	-	934	1021
Mov Cap-2 Maneuver	-	-	-	-	934	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	998	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	939	-	-	1527	-
HCM Lane V/C Ratio	0.057	-	-	-	-
HCM Control Delay (s)	9.1	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	22.8
Intersection LOS	C

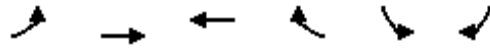
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	↵
Traffic Vol, veh/h	35	203	29	204	142	14	12	90	102	12	88	32
Future Vol, veh/h	35	203	29	204	142	14	12	90	102	12	88	32
Peak Hour Factor	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	49	282	40	283	197	19	17	125	142	17	122	44
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	27.5	22.5	22.6	14.6
HCM LOS	D	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	47%	0%	88%	0%	91%	0%	100%	0%
Vol Right, %	0%	53%	0%	12%	0%	9%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	192	35	232	204	156	12	88	32
LT Vol	12	0	35	0	204	0	12	0	0
Through Vol	0	90	0	203	0	142	0	88	0
RT Vol	0	102	0	29	0	14	0	0	32
Lane Flow Rate	17	267	49	322	283	217	17	122	44
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.042	0.611	0.118	0.727	0.664	0.473	0.044	0.307	0.103
Departure Headway (Hd)	9.157	8.254	8.72	8.118	8.438	7.862	9.57	9.051	8.325
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	437	412	445	428	459	374	397	430
Service Time	6.905	6.001	6.462	5.86	6.18	5.605	7.323	6.804	6.078
HCM Lane V/C Ratio	0.043	0.611	0.119	0.724	0.661	0.473	0.045	0.307	0.102
HCM Control Delay	12.3	23.2	12.6	29.7	26.4	17.5	12.8	15.8	12
HCM Lane LOS	B	C	B	D	D	C	B	C	B
HCM 95th-tile Q	0.1	4	0.4	5.8	4.7	2.5	0.1	1.3	0.3

HCM 2010 Signalized Intersection Summary
 17: Balfour Rd & SR-4 SB Off Ramp

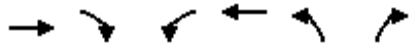
Cumulative
 Timing Plan: PM-Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↶↶	↶↶	↶↶	↶	↶	↶↶		
Traffic Volume (veh/h)	171	1467	1296	81	583	366		
Future Volume (veh/h)	171	1467	1296	81	583	366		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	186	1595	1409	88	634	398		
Adj No. of Lanes	2	2	2	1	1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	3	3	3	3		
Cap, veh/h	242	1969	1536	653	675	1256		
Arrive On Green	0.07	0.53	0.42	0.42	0.38	0.38		
Sat Flow, veh/h	3408	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	186	1595	1409	88	634	398		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	5.2	34.5	35.1	3.4	33.8	8.9		
Cycle Q Clear(g_c), s	5.2	34.5	35.1	3.4	33.8	8.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	242	1969	1536	653	675	1256		
V/C Ratio(X)	0.77	0.81	0.92	0.13	0.94	0.32		
Avail Cap(c_a), veh/h	242	1969	1669	709	752	1376		
HCM Platoon Ratio	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		
Uniform Delay (d), s/veh	44.4	18.6	26.8	17.5	28.9	16.9		
Incr Delay (d2), s/veh	12.7	2.5	7.7	0.0	17.8	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.9	18.2	19.4	1.5	19.7	8.3		
LnGrp Delay(d),s/veh	57.1	21.1	34.5	17.6	46.7	16.9		
LnGrp LOS	E	C	C	B	D	B		
Approach Vol, veh/h		1781	1497		1032			
Approach Delay, s/veh		24.9	33.5		35.2			
Approach LOS		C	C		D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				55.9		41.4	11.4	44.5
Change Period (Y+Rc), s				4.0		4.0	4.5	4.0
Max Green Setting (Gmax), s				50.4		41.6	6.9	44.0
Max Q Clear Time (g_c+I1), s				36.5		35.8	7.2	37.1
Green Ext Time (p_c), s				8.3		1.5	0.0	3.4
Intersection Summary								
HCM 2010 Ctrl Delay			30.3					
HCM 2010 LOS			C					

HCM 2010 Signalized Intersection Summary
 18: SR-4 NB Off Ramp & Balfour Rd

Cumulative
 Timing Plan: PM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↗		↑↑	↖↗	↗		
Traffic Volume (veh/h)	1608	442	0	1530	358	240		
Future Volume (veh/h)	1608	442	0	1530	358	240		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1845	0	1845	1845	1845		
Adj Flow Rate, veh/h	1748	480	0	1663	389	261		
Adj No. of Lanes	2	1	0	2	2	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	0	3	3	3		
Cap, veh/h	2463	1047	0	2463	717	330		
Arrive On Green	0.67	0.67	0.00	0.67	0.21	0.21		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1748	480	0	1663	389	261		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	19.6	9.6	0.0	17.9	6.7	10.3		
Cycle Q Clear(g_c), s	19.6	9.6	0.0	17.9	6.7	10.3		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2463	1047	0	2463	717	330		
V/C Ratio(X)	0.71	0.46	0.00	0.68	0.54	0.79		
Avail Cap(c_a), veh/h	4783	2033	0	2463	2183	1005		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	6.9	5.2	0.0	6.6	23.1	24.5		
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.6	0.2	1.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	9.8	4.0	0.0	9.0	3.2	4.6		
LnGrp Delay(d),s/veh	7.0	5.3	0.0	7.2	23.3	26.1		
LnGrp LOS	A	A		A	C	C		
Approach Vol, veh/h	2228			1663	650			
Approach Delay, s/veh	6.7			7.2	24.4			
Approach LOS	A			A	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		17.8		47.8				47.8
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		42.0		85.0				43.0
Max Q Clear Time (g_c+I1), s		12.3		21.6				19.9
Green Ext Time (p_c), s		1.5		22.1				14.6
Intersection Summary								
HCM 2010 Ctrl Delay			9.4					
HCM 2010 LOS			A					

Intersection

Intersection Delay, s/veh 8.5
 Intersection LOS A

Movement	EBL	EBT	WBT	WBR	SBU	SBL	SBR
Lane Configurations		↶	↷			↶↷	
Traffic Vol, veh/h	7	83	48	62	0	87	70
Future Vol, veh/h	7	83	48	62	0	87	70
Peak Hour Factor	0.76	0.76	0.76	0.76	0.76	0.76	0.76
Heavy Vehicles, %	3	3	3	3	3	3	3
Mvmt Flow	9	109	63	82	0	114	92
Number of Lanes	0	1	1	0	0	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	1	1
HCM Control Delay	8.4	8.1	8.9
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	55%
Vol Thru, %	92%	44%	0%
Vol Right, %	0%	56%	45%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	90	110	157
LT Vol	7	0	87
Through Vol	83	48	0
RT Vol	0	62	70
Lane Flow Rate	118	145	207
Geometry Grp	1	1	1
Degree of Util (X)	0.151	0.17	0.252
Departure Headway (Hd)	4.6	4.227	4.383
Convergence, Y/N	Yes	Yes	Yes
Cap	780	850	820
Service Time	2.624	2.25	2.403
HCM Lane V/C Ratio	0.151	0.171	0.252
HCM Control Delay	8.4	8.1	8.9
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.6	1

Intersection						
Int Delay, s/veh	7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↘	↙
Traffic Vol, veh/h	109	61	47	59	82	184
Future Vol, veh/h	109	61	47	59	82	184
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	100	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	131	73	57	71	99	222

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	128	0	0	428	92
Stage 1	-	-	-	92	-
Stage 2	-	-	-	336	-
Critical Hdwy	4.13	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	3.527	3.327
Pot Cap-1 Maneuver	1452	-	-	582	963
Stage 1	-	-	-	929	-
Stage 2	-	-	-	722	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1452	-	-	527	963
Mov Cap-2 Maneuver	-	-	-	527	-
Stage 1	-	-	-	929	-
Stage 2	-	-	-	654	-

Approach	EB	WB	SB
HCM Control Delay, s	5	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1452	-	-	-	527	963
HCM Lane V/C Ratio	0.09	-	-	-	0.187	0.23
HCM Control Delay (s)	7.7	0	-	-	13.4	9.9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0.7	0.9

Arterial Level of Service: EB Balfour Rd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
American Ave	II	39	13.1	47.8	60.9	0.11	6.7	F
Foothill Dr	II	45	42.4	46.0	88.4	0.48	19.6	D
John Muir Pkwy	II	35	21.2	20.0	41.2	0.17	14.8	E
Eagle Rock Ave	II	35	11.5	51.3	62.8	0.09	5.3	F
SR-4 SB Off Ramp	II	45	12.0	16.0	28.0	0.11	14.1	E
SR-4 NB Off Ramp	II	30	21.7	12.3	34.0	0.16	17.1	D
Total	II		121.9	193.4	315.3	1.13	12.9	F

Arterial Level of Service: WB Balfour Rd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
SR-4 NB Off Ramp	II	45	10.9	21.1	32.0	0.10	11.2	F
SR-4 SB Off Ramp	II	30	21.7	47.0	68.7	0.16	8.5	F
Cortona Wy	II	35	13.8	37.0	50.8	0.11	7.8	F
John Muir Pkwy	II	45	10.1	20.4	30.5	0.09	10.9	F
E Country Club Dr	II	45	18.5	40.8	59.3	0.17	10.3	F
W Country Club Dr	II	45	42.4	28.1	70.5	0.48	24.6	C
Total	II		117.4	194.4	311.8	1.11	12.9	F

Arterial Level of Service: EB Balfour Rd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
American Ave	II	39	13.1	34.0	47.1	0.11	8.7	F
Foothill Dr	II	45	42.4	38.8	81.2	0.48	21.3	D
John Muir Pkwy	II	35	21.2	26.0	47.2	0.17	12.9	F
Eagle Rock Ave	II	35	11.5	60.3	71.8	0.09	4.6	F
SR-4 SB Off Ramp	II	45	12.0	23.9	35.9	0.11	11.0	F
SR-4 NB Off Ramp	II	30	21.7	16.6	38.3	0.16	15.2	E
Total	II		121.9	199.6	321.5	1.13	12.6	F

Arterial Level of Service: WB Balfour Rd

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
SR-4 NB Off Ramp	II	45	10.9	15.4	26.3	0.10	13.7	E
SR-4 SB Off Ramp	II	30	21.7	39.4	61.1	0.16	9.5	F
Cortona Wy	II	35	13.8	39.1	52.9	0.11	7.5	F
John Muir Pkwy	II	45	10.1	27.1	37.2	0.09	8.9	F
E Country Club Dr	II	45	18.5	38.9	57.4	0.17	10.6	F
W Country Club Dr	II	45	42.4	45.8	88.2	0.48	19.7	D
Total	II		117.4	205.7	323.1	1.11	12.4	F