






















APPENDIX I:

**CUMULATIVE PLUS PROJECT CONDITIONS ANALYSIS
OUTPUT SHEETS**

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

Cumulative With Project
 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	262	471	12
Future Volume (veh/h)	26	332	354	791	460	242	123	213	728	262	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	285	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	610	962	504	162	433	1282	305	567	14
Arrive On Green	0.03	0.28	0.28	0.17	0.42	0.42	0.09	0.23	0.23	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	285	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	18.7	18.8	8.6	12.7	23.0	18.4	0.0	31.5
Cycle Q Clear(g_c), s	1.8	20.2	27.0	20.0	18.7	18.8	8.6	12.7	23.0	18.4	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	610	778	689	162	433	1282	305	0	581
V/C Ratio(X)	0.52	0.70	0.88	1.41	0.52	0.52	0.83	0.54	0.62	0.93	0.00	0.90
Avail Cap(c_a), veh/h	305	801	681	610	801	709	305	481	1362	305	0	581
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	47.6	24.7	24.7	51.3	38.5	26.9	46.9	0.0	37.7
Incr Delay (d2), s/veh	2.8	0.7	5.6	193.7	0.2	0.3	4.0	0.4	0.5	34.1	0.0	17.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	10.4	12.3	26.1	9.6	8.5	4.4	6.5	10.0	11.8	0.0	18.7
LnGrp Delay(d),s/veh	57.8	37.9	45.3	241.2	24.9	25.0	55.4	38.9	27.4	81.0	0.0	54.8
LnGrp LOS	E	D	D	F	C	C	E	D	C	F		D
Approach Vol, veh/h		774			1623			1157			810	
Approach Delay, s/veh		42.3			139.5			33.0			64.0	
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	24.0	31.1	24.0	36.1	14.6	40.4	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	20.4	25.0	22.0	29.0	10.6	33.5	3.8	20.8				
Green Ext Time (p_c), s	0.0	2.1	0.0	3.0	0.2	1.3	0.0	3.1				
Intersection Summary												
HCM 2010 Ctrl Delay			80.0									
HCM 2010 LOS			F									

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

Cumulative With Project
 Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	979	122	63	979	99	212	108	126	301	147	253
Future Volume (veh/h)	53	979	122	63	979	99	212	108	126	301	147	253
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	1041	130	67	1041	105	226	115	134	320	156	269
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	107	1139	142	91	1139	115	263	180	153	581	170	293
Arrive On Green	0.06	0.35	0.35	0.05	0.35	0.35	0.15	0.10	0.10	0.33	0.28	0.28
Sat Flow, veh/h	1757	3217	401	1757	3298	332	1757	1845	1568	1757	609	1050
Grp Volume(v), veh/h	56	596	575	67	582	564	226	115	134	320	0	425
Grp Sat Flow(s),veh/h/ln	1757	1845	1774	1757	1845	1786	1757	1845	1568	1757	0	1659
Q Serve(g_s), s	3.0	29.8	29.9	3.6	29.1	29.2	12.1	5.8	6.9	14.4	0.0	24.0
Cycle Q Clear(g_c), s	3.0	29.8	29.9	3.6	29.1	29.2	12.1	5.8	6.9	14.4	0.0	24.0
Prop In Lane	1.00		0.23	1.00		0.19	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	107	653	628	91	637	617	263	180	153	581	0	462
V/C Ratio(X)	0.53	0.91	0.91	0.74	0.91	0.91	0.86	0.64	0.87	0.55	0.00	0.92
Avail Cap(c_a), veh/h	127	955	919	146	974	943	473	669	568	581	0	687
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	44.0	29.8	29.8	45.1	30.2	30.2	40.1	41.9	31.1	26.5	0.0	33.8
Incr Delay (d2), s/veh	1.5	7.5	7.9	4.3	6.6	6.9	3.2	1.4	6.0	0.7	0.0	10.3
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	1.5	16.4	15.9	1.9	16.0	15.6	6.1	3.0	3.5	7.0	0.0	12.3
LnGrp Delay(d),s/veh	45.5	37.3	37.7	49.4	36.8	37.1	43.3	43.3	37.1	27.1	0.0	44.0
LnGrp LOS	D	D	D	D	D	D	D	D	D	C		D
Approach Vol, veh/h		1227			1213			475			745	
Approach Delay, s/veh		37.8			37.7			41.5			36.8	
Approach LOS		D			D			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	35.9	13.4	9.0	38.2	18.4	30.9	9.9	37.3				
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	35.0	35.0	8.0	50.0	26.0	40.0	7.0	51.0				
Max Q Clear Time (g_c+110), s	11.4	8.9	5.6	31.9	14.1	26.0	5.0	31.2				
Green Ext Time (p_c), s	1.6	0.5	0.0	2.3	0.4	0.9	0.7	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay				38.0								
HCM 2010 LOS				D								

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

Cumulative With Project
 Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	1226	130	51	1094	67	36	6	83	4	2	10
Future Volume (veh/h)	50	1226	130	51	1094	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	1277	135	53	1140	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	108	1826	776	220	1829	777	171	213	181	11	7	33
Arrive On Green	0.06	0.49	0.49	0.06	0.50	0.50	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	1277	135	53	1140	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	13.3	1.2	0.7	11.3	0.8	1.0	0.1	1.9	0.1	0.0	0.4
Cycle Q Clear(g_c), s	1.4	13.3	1.2	0.7	11.3	0.8	1.0	0.1	1.9	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	108	1826	776	220	1829	777	171	213	181	11	0	40
V/C Ratio(X)	0.48	0.70	0.17	0.24	0.62	0.09	0.22	0.03	0.47	0.35	0.00	0.30
Avail Cap(c_a), veh/h	387	4805	2042	563	4583	1948	282	1478	1257	211	0	1224
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	22.6	9.7	1.7	22.3	9.2	3.0	20.8	19.6	11.6	24.7	0.0	23.9
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	6.8	0.9	0.4	5.7	0.5	0.5	0.1	1.1	0.1	0.0	0.2
LnGrp Delay(d),s/veh	23.9	9.9	1.7	22.5	9.3	3.0	21.0	19.6	12.3	31.4	0.0	25.5
LnGrp LOS	C	A	A	C	A	A	C	B	B	C		C
Approach Vol, veh/h		1464			1263			130			16	
Approach Delay, s/veh		9.7			9.5			15.2			27.0	
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	9.8	7.1	28.7	8.9	5.2	7.1	28.7				
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	3.9	2.7	15.3	3.0	2.4	3.4	13.3					
Green Ext Time (p_c), s	0.0	0.2	0.0	9.4	0.0	0.0	9.3					
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 With Project
 Timing Plan: AM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	1309	10	337	1326	84	5	42	330	114	28	38
Future Volume (veh/h)	47	1309	10	337	1326	84	5	42	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	1438	11	370	1457	92	5	46	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	185	1511	642	425	1569	667	13	463	394	147	233	316
Arrive On Green	0.11	0.41	0.41	0.12	0.43	0.43	0.01	0.25	0.25	0.08	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	1438	11	370	1457	92	5	46	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	3.3	44.9	0.5	12.3	44.7	3.1	0.3	2.3	26.9	8.4	0.0	3.7
Cycle Q Clear(g_c), s	3.3	44.9	0.5	12.3	44.7	3.1	0.3	2.3	26.9	8.4	0.0	3.7
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	185	1511	642	425	1569	667	13	463	394	147	0	548
V/C Ratio(X)	0.28	0.95	0.02	0.87	0.93	0.14	0.37	0.10	0.92	0.85	0.00	0.13
Avail Cap(c_a), veh/h	185	1580	671	442	1858	790	88	666	566	147	0	661
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	49.1	34.0	20.9	51.4	32.5	11.4	58.8	34.3	43.5	53.8	0.0	28.2
Incr Delay (d2), s/veh	0.3	12.4	0.0	15.7	7.3	0.0	6.2	0.0	13.3	33.0	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	1.6	25.4	0.2	6.9	24.3	1.7	0.2	1.2	13.1	5.4	0.0	1.7
LnGrp Delay(d),s/veh	49.4	46.5	20.9	67.1	39.8	11.4	65.0	34.3	56.7	86.8	0.0	28.2
LnGrp LOS	D	D	C	E	D	B	E	C	E	F		C
Approach Vol, veh/h		1501			1919			414			198	
Approach Delay, s/veh		46.4			43.7			54.3			65.2	
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	34.0	33.9	18.4	52.8	4.9	43.0	16.5	54.7				
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	43.0	15.0	51.0	6.0	47.0	6.0	60.0				
Max Q Clear Time (g_c+M), s	28.9	28.9	14.3	46.9	2.3	5.7	5.3	46.7				
Green Ext Time (p_c), s	0.0	1.1	0.1	1.9	0.0	1.2	0.4	4.0				
Intersection Summary												
HCM 2010 Ctrl Delay			46.9									
HCM 2010 LOS			D									

Intersection

Intersection Delay, s/veh 31.8
Intersection LOS D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	166	80	180	517	12
Future Vol, veh/h	5	166	80	180	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	210	101	228	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	12	11.8	48.1
HCM LOS	B	B	E

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	3%	0%
Vol Thru, %	0%	100%	0%	98%
Vol Right, %	0%	0%	97%	2%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	80	180	171	529
LT Vol	80	0	5	0
Through Vol	0	180	0	517
RT Vol	0	0	166	12
Lane Flow Rate	101	228	216	670
Geometry Grp	7	7	2	5
Degree of Util (X)	0.182	0.378	0.35	0.963
Departure Headway (Hd)	6.473	5.965	5.816	5.179
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	554	602	617	703
Service Time	4.218	3.71	3.869	3.213
HCM Lane V/C Ratio	0.182	0.379	0.35	0.953
HCM Control Delay	10.7	12.3	12	48.1
HCM Lane LOS	B	B	B	E
HCM 95th-tile Q	0.7	1.8	1.6	14.3

Intersection

Intersection Delay, s/veh	32
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	127	135	64	22	52	23	61	296	55	62	200	69
Future Vol, veh/h	127	135	64	22	52	23	61	296	55	62	200	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	167	178	84	29	68	30	80	389	72	82	263	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	19.1	14	50.8	26.5
HCM LOS	C	B	F	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	84%	0%	68%	0%	69%	0%	74%
Vol Right, %	0%	16%	0%	32%	0%	31%	0%	26%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	351	127	199	22	75	62	269
LT Vol	61	0	127	0	22	0	62	0
Through Vol	0	296	0	135	0	52	0	200
RT Vol	0	55	0	64	0	23	0	69
Lane Flow Rate	80	462	167	262	29	99	82	354
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.18	0.953	0.398	0.569	0.077	0.241	0.188	0.745
Departure Headway (Hd)	8.057	7.431	8.566	7.817	9.537	8.791	8.279	7.578
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	443	485	418	458	378	411	432	474
Service Time	5.842	5.215	6.353	5.603	7.237	6.491	6.07	5.369
HCM Lane V/C Ratio	0.181	0.953	0.4	0.572	0.077	0.241	0.19	0.747
HCM Control Delay	12.6	57.4	17	20.5	13	14.3	13	29.6
HCM Lane LOS	B	F	C	C	B	B	B	D
HCM 95th-tile Q	0.6	11.8	1.9	3.5	0.2	0.9	0.7	6.2

Intersection

Intersection Delay, s/veh 13.9

Intersection LOS B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	255	213	7	147	200
Future Vol, veh/h	9	255	213	7	147	200
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	292	10	201	274
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	14.3	14	13.5
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	3%	100%	0%
Vol Thru, %	97%	0%	0%	100%
Vol Right, %	3%	97%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	220	264	147	200
LT Vol	0	9	147	0
Through Vol	213	0	0	200
RT Vol	7	255	0	0
Lane Flow Rate	301	362	201	274
Geometry Grp	5	2	7	7
Degree of Util (X)	0.481	0.534	0.365	0.458
Departure Headway (Hd)	5.743	5.316	6.521	6.013
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	627	676	552	597
Service Time	3.789	3.363	4.265	3.757
HCM Lane V/C Ratio	0.48	0.536	0.364	0.459
HCM Control Delay	14	14.3	13	13.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.6	3.2	1.7	2.4

Intersection						
Int Delay, s/veh	3.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	36	78	142	55	55	170
Future Vol, veh/h	36	78	142	55	55	170
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	175	68	68	210

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	555	209	0	0	243
Stage 1	209	-	-	-	-
Stage 2	346	-	-	-	-
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	491	829	-	-	1317
Stage 1	824	-	-	-	-
Stage 2	714	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	466	829	-	-	1317
Mov Cap-2 Maneuver	466	-	-	-	-
Stage 1	824	-	-	-	-
Stage 2	677	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	665	1317
HCM Lane V/C Ratio	-	-	0.212	0.052
HCM Control Delay (s)	-	-	11.9	7.9
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	40
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	↵
Traffic Vol, veh/h	47	241	90	139	87	5	17	51	147	7	149	27
Future Vol, veh/h	47	241	90	139	87	5	17	51	147	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	335	125	193	121	7	24	71	204	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	71.4	18.9	24.7	20
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%	26%	0%	73%	0%	95%	0%	100%	0%
Vol Right, %	0%	74%	0%	27%	0%	5%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	198	47	331	139	92	7	149	27
LT Vol	17	0	47	0	139	0	7	0	0
Through Vol	0	51	0	241	0	87	0	149	0
RT Vol	0	147	0	90	0	5	0	0	27
Lane Flow Rate	24	275	65	460	193	128	10	207	38
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.061	0.644	0.159	1.032	0.497	0.309	0.026	0.524	0.087
Departure Headway (Hd)	9.691	8.627	8.792	8.084	9.467	8.911	9.846	9.326	8.597
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	372	421	411	451	382	406	366	389	419
Service Time	7.391	6.327	6.49	5.783	7.167	6.611	7.546	7.026	6.297
HCM Lane V/C Ratio	0.065	0.653	0.158	1.02	0.505	0.315	0.027	0.532	0.091
HCM Control Delay	13	25.7	13.1	79.7	21.2	15.5	12.8	21.8	12.1
HCM Lane LOS	B	D	B	F	C	C	B	C	B
HCM 95th-tile Q	0.2	4.4	0.6	14	2.7	1.3	0.1	2.9	0.3

Intersection						
Int Delay, s/veh	2.1					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	128	0	22	70	0	43
Future Vol, veh/h	128	0	22	70	0	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	139	0	24	76	0	47

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	139	0	263
Stage 1	-	-	-	-	139
Stage 2	-	-	-	-	124
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	-	-	1438	-	724
Stage 1	-	-	-	-	885
Stage 2	-	-	-	-	899
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1438	-	712
Mov Cap-2 Maneuver	-	-	-	-	712
Stage 1	-	-	-	-	885
Stage 2	-	-	-	-	884

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	9.2
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	1438	-
HCM Lane V/C Ratio	0.052	-	-	0.017	-
HCM Control Delay (s)	9.2	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	0	0	91	120	5
Future Vol, veh/h	0	0	0	91	120	5
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	0	99	130	5

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	133	-	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	-
Pot Cap-1 Maneuver	0	913	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	913	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	1.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	0	0	91	115	5
Future Vol, veh/h	32	0	0	91	115	5
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	-	55	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	35	0	0	99	125	5

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	227	128	130	0	-	0
Stage 1	128	-	-	-	-	-
Stage 2	99	-	-	-	-	-
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	759	919	1449	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	922	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	759	919	1449	-	-	-
Mov Cap-2 Maneuver	759	-	-	-	-	-
Stage 1	895	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1449	-	759	-	-
HCM Lane V/C Ratio	-	-	0.046	-	-
HCM Control Delay (s)	0	-	10	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	0	0	91	110	5
Future Vol, veh/h	0	0	0	91	110	5
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	0	99	120	5

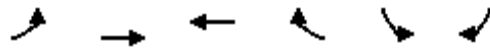
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	122	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	-
Pot Cap-1 Maneuver	0	926	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	926	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

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

Cumulative With Project
 Timing Plan: AM-Peak

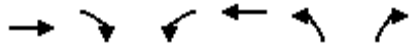


Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↶↶	↶↶	↶↶	↷	↶	↷↷		
Traffic Volume (veh/h)	369	1337	1337	132	469	361		
Future Volume (veh/h)	369	1337	1337	132	469	361		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	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	401	1453	1453	143	510	392		
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	460	2254	1602	681	553	869		
Arrive On Green	0.13	0.61	0.43	0.43	0.31	0.31		
Sat Flow, veh/h	3408	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	401	1453	1453	143	510	392		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	12.4	27.3	39.7	6.1	30.2	12.2		
Cycle Q Clear(g_c), s	12.4	27.3	39.7	6.1	30.2	12.2		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	460	2254	1602	681	553	869		
V/C Ratio(X)	0.87	0.64	0.91	0.21	0.92	0.45		
Avail Cap(c_a), veh/h	490	2359	1675	712	700	1100		
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	45.8	13.5	28.5	19.0	35.7	29.5		
Incr Delay (d2), s/veh	14.3	0.4	7.1	0.1	13.8	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	6.8	13.9	21.8	2.7	16.7	9.9		
LnGrp Delay(d),s/veh	60.0	13.9	35.6	19.1	49.4	29.6		
LnGrp LOS	E	B	D	B	D	C		
Approach Vol, veh/h		1854	1596		902			
Approach Delay, s/veh		23.9	34.1		40.8			
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				69.9		38.0	19.1	50.9
Change Period (Y+Rc), s				4.0		4.0	4.5	4.0
Max Green Setting (Gmax), s				69.0		43.0	15.5	49.0
Max Q Clear Time (g_c+I1), s				29.3		32.2	14.4	41.7
Green Ext Time (p_c), s				12.6		1.8	0.1	5.2
Intersection Summary								
HCM 2010 Ctrl Delay			31.1					
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 With Project
 Timing Plan: AM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↗		↑↑	↖↗	↗		
Traffic Volume (veh/h)	998	808	0	1725	521	118		
Future Volume (veh/h)	998	808	0	1725	521	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	1085	878	0	1875	566	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	2529	1075	0	2529	706	325		
Arrive On Green	0.69	0.69	0.00	0.69	0.21	0.21		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1085	878	0	1875	566	128		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	9.8	29.8	0.0	24.2	11.8	5.2		
Cycle Q Clear(g_c), s	9.8	29.8	0.0	24.2	11.8	5.2		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2529	1075	0	2529	706	325		
V/C Ratio(X)	0.43	0.82	0.00	0.74	0.80	0.39		
Avail Cap(c_a), veh/h	3815	1621	0	3815	1602	737		
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	5.2	8.4	0.0	7.5	28.1	25.5		
Incr Delay (d2), s/veh	0.0	1.2	0.0	0.2	0.8	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	8	13.0	0.0	12.0	5.6	2.3		
LnGrp Delay(d),s/veh	5.3	9.5	0.0	7.7	28.9	25.8		
LnGrp LOS	A	A		A	C	C		
Approach Vol, veh/h	1963			1875	694			
Approach Delay, s/veh	7.2			7.7	28.3			
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		19.4		55.0				55.0
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		13.8		31.8				26.2
Green Ext Time (p_c), s		1.7		19.2				19.9
Intersection Summary								
HCM 2010 Ctrl Delay			10.6					
HCM 2010 LOS			B					
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	87	68	39	0	135	50
Future Vol, veh/h	20	87	68	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	119	93	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	107	107	185
LT Vol	20	0	135
Through Vol	87	68	0
RT Vol	0	39	50
Lane Flow Rate	147	147	253
Geometry Grp	1	1	1
Degree of Util (X)	0.194	0.184	0.325
Departure Headway (Hd)	4.773	4.525	4.616
Convergence, Y/N	Yes	Yes	Yes
Cap	750	792	778
Service Time	2.809	2.56	2.649
HCM Lane V/C Ratio	0.196	0.186	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	8.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	167	56	257	122	42	258
Future Vol, veh/h	167	56	257	122	42	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	174	60	369






















Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	541	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	21.3
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	-	-	-	0.3	0.61
HCM Control Delay (s)	9.6	0	-	-	30.5	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 With Project
 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	192	108	265	682	238	172	34
Future Volume (veh/h)	269	494	68	313	453	192	108	265	682	238	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	209	117	288	741	259	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	334	977	134	439	597	252	398	376	1031	303	224	44
Arrive On Green	0.19	0.31	0.31	0.12	0.24	0.24	0.23	0.20	0.20	0.17	0.15	0.15
Sat Flow, veh/h	1757	3176	436	3514	2465	1041	1757	1845	3136	1757	1496	296
Grp Volume(v), veh/h	292	311	300	340	368	333	117	288	741	259	0	224
Grp Sat Flow(s),veh/h/ln	1757	1845	1768	1757	1845	1661	1757	1845	1568	1757	0	1792
Q Serve(g_s), s	13.5	11.8	11.8	7.8	15.8	15.9	4.6	12.3	9.2	12.0	0.0	10.2
Cycle Q Clear(g_c), s	13.5	11.8	11.8	7.8	15.8	15.9	4.6	12.3	9.2	12.0	0.0	10.2
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	334	568	544	439	447	403	398	376	1031	303	0	269
V/C Ratio(X)	0.87	0.55	0.55	0.78	0.82	0.83	0.29	0.77	0.72	0.86	0.00	0.83
Avail Cap(c_a), veh/h	567	904	866	882	772	695	398	617	1441	609	0	964
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	32.9	24.1	24.2	35.5	30.0	30.0	26.8	31.4	9.6	33.6	0.0	34.6
Incr Delay (d2), s/veh	3.8	0.3	0.3	1.1	1.5	1.7	0.2	1.2	0.5	2.7	0.0	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	6.0	5.8	3.9	8.1	7.5	2.3	6.4	4.0	6.1	0.0	5.2
LnGrp Delay(d),s/veh	36.7	24.4	24.5	36.6	31.4	31.7	27.0	32.7	10.1	36.3	0.0	37.2
LnGrp LOS	D	C	C	D	C	C	C	C	B	D		D
Approach Vol, veh/h		903			1041			1146			483	
Approach Delay, s/veh		28.4			33.2			17.5			36.7	
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	18.4	21.1	14.4	29.7	22.9	16.5	19.9	24.3				
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	29.0	28.0	21.0	41.0	12.0	45.0	27.0	35.0				
Max Q Clear Time (g_c+I1), s	14.0	14.3	9.8	13.8	6.6	12.2	15.5	17.9				
Green Ext Time (p_c), s	0.5	2.7	0.6	2.4	0.4	0.4	0.4	2.4				
Intersection Summary												
HCM 2010 Ctrl Delay			27.4									
HCM 2010 LOS			C									

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

Cumulative With Project
 Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	176	993	156	123	774	257	116	91	105	189	64	76
Future Volume (veh/h)	176	993	156	123	774	257	116	91	105	189	64	76
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	187	1056	166	131	823	273	123	97	112	201	68	81
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	237	1199	188	184	942	312	159	223	190	249	132	157
Arrive On Green	0.13	0.39	0.39	0.10	0.36	0.36	0.09	0.12	0.12	0.14	0.17	0.17
Sat Flow, veh/h	1757	3114	489	1757	2654	880	1757	1845	1568	1757	768	915
Grp Volume(v), veh/h	187	625	597	131	572	524	123	97	112	201	0	149
Grp Sat Flow(s),veh/h/ln	1757	1845	1758	1757	1845	1689	1757	1845	1568	1757	0	1683
Q Serve(g_s), s	6.7	20.4	20.4	4.7	18.7	18.8	4.4	3.2	3.2	7.2	0.0	5.2
Cycle Q Clear(g_c), s	6.7	20.4	20.4	4.7	18.7	18.8	4.4	3.2	3.2	7.2	0.0	5.2
Prop In Lane	1.00		0.28	1.00		0.52	1.00		1.00	1.00		0.54
Lane Grp Cap(c), veh/h	237	710	677	184	655	600	159	223	190	249	0	289
V/C Ratio(X)	0.79	0.88	0.88	0.71	0.87	0.87	0.77	0.44	0.59	0.81	0.00	0.51
Avail Cap(c_a), veh/h	462	1570	1496	435	1541	1411	462	885	752	462	0	807
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	27.1	18.5	18.5	28.0	19.5	19.5	28.7	26.4	14.7	26.9	0.0	24.3
Incr Delay (d2), s/veh	2.2	1.4	1.5	1.9	1.5	1.6	3.0	0.5	1.1	2.4	0.0	0.5
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	8.4	10.5	10.1	2.4	9.6	9.0	2.3	1.6	1.8	3.6	0.0	2.4
LnGrp Delay(d),s/veh	29.3	19.9	20.1	29.9	21.0	21.1	31.8	26.9	15.8	29.3	0.0	24.8
LnGrp LOS	C	B	C	C	C	C	C	C	B	C		C
Approach Vol, veh/h		1409			1227			332			350	
Approach Delay, s/veh		21.2			22.0			25.0			27.4	
Approach LOS		C			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	13.2	11.8	10.8	28.9	9.8	15.1	12.7	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	31.0	16.0	16.0	55.0	17.0	31.0	17.0	54.0				
Max Q Clear Time (g_c+1/2), s	5.2	5.2	6.7	22.4	6.4	7.2	8.7	20.8				
Green Ext Time (p_c), s	0.2	0.8	0.4	2.4	0.1	0.8	0.4	2.2				
Intersection Summary												
HCM 2010 Ctrl Delay				22.5								
HCM 2010 LOS				C								

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

Cumulative With Project
 Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	1161	65	51	1053	56	69	26	78	30	11	23
Future Volume (veh/h)	61	1161	65	51	1053	56	69	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	1209	68	53	1097	58	72	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	123	1695	720	218	1665	708	132	227	193	73	46	101
Arrive On Green	0.07	0.46	0.46	0.06	0.45	0.45	0.08	0.12	0.12	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	1209	68	53	1097	58	72	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	1.8	13.4	1.2	0.7	11.8	1.1	2.0	0.7	2.4	0.9	0.0	1.0
Cycle Q Clear(g_c), s	1.8	13.4	1.2	0.7	11.8	1.1	2.0	0.7	2.4	0.9	0.0	1.0
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	123	1695	720	218	1665	708	132	227	193	73	0	147
V/C Ratio(X)	0.52	0.71	0.09	0.24	0.66	0.08	0.54	0.12	0.42	0.42	0.00	0.24
Avail Cap(c_a), veh/h	689	3618	1538	1378	3618	1538	689	1339	1138	689	0	1194
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	22.9	11.1	7.8	22.8	10.9	8.0	22.7	19.9	20.7	23.8	0.0	21.6
Incr Delay (d2), s/veh	1.3	0.2	0.0	0.2	0.2	0.0	1.3	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	0.9	6.8	0.5	0.4	6.0	0.5	1.0	0.3	1.1	0.5	0.0	0.5
LnGrp Delay(d),s/veh	24.1	11.3	7.8	23.0	11.1	8.0	24.0	20.0	21.2	25.3	0.0	21.9
LnGrp LOS	C	B	A	C	B	A	C	B	C	C		C
Approach Vol, veh/h		1341			1208			180			66	
Approach Delay, s/veh		11.7			11.5			22.2			23.5	
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	6.1	10.3	7.2	27.4	7.8	8.6	7.6	27.0				
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	11.9	4.4	2.7	15.4	4.0	3.0	3.8	13.8				
Green Ext Time (p_c), s	0.0	0.3	0.1	8.0	0.1	0.3	0.1	8.0				
Intersection Summary												
HCM 2010 Ctrl Delay				12.6								
HCM 2010 LOS				B								

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

Cumulative With Project
Timing Plan: PM-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	62	1151	43	395	1240	92	12	48	379	151	44	40
Future Volume (veh/h)	62	1151	43	395	1240	92	12	48	379	151	44	40
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	68	1265	47	434	1363	101	13	53	416	166	48	44
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	87	1250	531	451	1541	655	31	527	448	177	327	300
Arrive On Green	0.05	0.34	0.34	0.13	0.42	0.42	0.02	0.29	0.29	0.10	0.37	0.37
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	888	814
Grp Volume(v), veh/h	68	1265	47	434	1363	101	13	53	416	166	0	92
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1701
Q Serve(g_s), s	4.2	37.0	1.9	13.4	37.3	3.1	0.8	2.3	28.2	10.2	0.0	3.9
Cycle Q Clear(g_c), s	4.2	37.0	1.9	13.4	37.3	3.1	0.8	2.3	28.2	10.2	0.0	3.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.48
Lane Grp Cap(c), veh/h	87	1250	531	451	1541	655	31	527	448	177	0	627
V/C Ratio(X)	0.78	1.01	0.09	0.96	0.88	0.15	0.41	0.10	0.93	0.94	0.00	0.15
Avail Cap(c_a), veh/h	177	1250	531	451	1541	655	97	710	603	177	0	732
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	51.3	36.1	18.3	47.3	29.4	9.7	53.0	28.7	37.9	48.7	0.0	23.0
Incr Delay (d2), s/veh	5.6	28.3	0.0	32.7	6.3	0.0	3.2	0.0	15.3	49.2	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	2.2	23.7	0.9	8.6	20.3	1.7	0.4	1.2	14.0	7.4	0.0	1.8
LnGrp Delay(d),s/veh	56.8	64.4	18.3	80.0	35.7	9.8	56.2	28.7	53.3	97.9	0.0	23.1
LnGrp LOS	E	F	B	F	D	A	E	C	D	F		C
Approach Vol, veh/h		1380			1898			482			258	
Approach Delay, s/veh		62.5			44.4			50.6			71.2	
Approach LOS		E			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	35.2	18.0	41.0	6.0	44.2	9.4	49.6				
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	30.2	15.4	39.0	2.8	5.9	6.2	39.3					
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	0.5	0.0	3.0				
Intersection Summary												
HCM 2010 Ctrl Delay			53.1									
HCM 2010 LOS			D									
Notes												

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

Intersection

Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	105	129	366	224	9
Future Vol, veh/h	8	105	129	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	133	163	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	9.9	16	11.7
HCM LOS	A	C	B

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	7%	0%
Vol Thru, %	0%	100%	0%	96%
Vol Right, %	0%	0%	93%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	366	113	233
LT Vol	129	0	8	0
Through Vol	0	366	0	224
RT Vol	0	0	105	9
Lane Flow Rate	163	463	143	295
Geometry Grp	7	7	2	5
Degree of Util (X)	0.258	0.668	0.213	0.415
Departure Headway (Hd)	5.693	5.189	5.372	5.065
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	627	690	662	705
Service Time	3.466	2.962	3.456	3.141
HCM Lane V/C Ratio	0.26	0.671	0.216	0.418
HCM Control Delay	10.5	17.9	9.9	11.7
HCM Lane LOS	B	C	A	B
HCM 95th-tile Q	1	5.1	0.8	2

Intersection												
Intersection Delay, s/veh	18.7											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	91	116	32	36	88	12	67	213	35	61	160	118
Future Vol, veh/h	91	116	32	36	88	12	67	213	35	61	160	118
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	120	153	42	47	116	16	88	280	46	80	211	155
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	15	13.6	20	22.1
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%	86%	0%	78%	0%	88%	0%	58%
Vol Right, %	0%	14%	0%	22%	0%	12%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	248	91	148	36	100	61	278
LT Vol	67	0	91	0	36	0	61	0
Through Vol	0	213	0	116	0	88	0	160
RT Vol	0	35	0	32	0	12	0	118
Lane Flow Rate	88	326	120	195	47	132	80	366
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.19	0.646	0.273	0.408	0.113	0.291	0.172	0.7
Departure Headway (Hd)	7.746	7.132	8.214	7.544	8.562	7.958	7.703	6.886
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	506	437	477	418	450	465	523
Service Time	5.507	4.893	5.977	5.307	6.33	5.727	5.461	4.644
HCM Lane V/C Ratio	0.19	0.644	0.275	0.409	0.112	0.293	0.172	0.7
HCM Control Delay	12.3	22.1	14.1	15.5	12.4	14	12.1	24.3
HCM Lane LOS	B	C	B	C	B	B	B	C
HCM 95th-tile Q	0.7	4.5	1.1	2	0.4	1.2	0.6	5.5

Intersection

Intersection Delay, s/veh 15.4
Intersection LOS C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	12	224	211	18	98	288
Future Vol, veh/h	12	224	211	18	98	288
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	289	25	134	395
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	13.8	14.3	17.1
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	229	236	98	288
LT Vol	0	12	98	0
Through Vol	211	0	0	288
RT Vol	18	224	0	0
Lane Flow Rate	314	323	134	395
Geometry Grp	5	2	7	7
Degree of Util (X)	0.496	0.492	0.24	0.65
Departure Headway (Hd)	5.697	5.474	6.436	5.929
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	631	656	557	608
Service Time	3.746	3.525	4.18	3.672
HCM Lane V/C Ratio	0.498	0.492	0.241	0.65
HCM Control Delay	14.3	13.8	11.2	19.1
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	2.8	2.7	0.9	4.7

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		P		Y	↑
Traffic Vol, veh/h	56	62	175	26	62	238
Future Vol, veh/h	56	62	175	26	62	238
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	69	77	216	32	77	294

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	679	232	0	0	248
Stage 1	232	-	-	-	-
Stage 2	447	-	-	-	-
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	416	805	-	-	1312
Stage 1	804	-	-	-	-
Stage 2	642	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	392	805	-	-	1312
Mov Cap-2 Maneuver	392	-	-	-	-
Stage 1	804	-	-	-	-
Stage 2	604	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.2	0	1.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	537	1312
HCM Lane V/C Ratio	-	-	0.271	0.058
HCM Control Delay (s)	-	-	14.2	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	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	24.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	↵
Traffic Vol, veh/h	35	211	29	204	155	14	12	91	102	12	89	32
Future Vol, veh/h	35	211	29	204	155	14	12	91	102	12	89	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	293	40	283	215	19	17	126	142	17	124	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	30.4	23.5	23.5	14.9
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%	92%	0%	100%	0%
Vol Right, %	0%	53%	0%	12%	0%	8%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	193	35	240	204	169	12	89	32
LT Vol	12	0	35	0	204	0	12	0	0
Through Vol	0	91	0	211	0	155	0	89	0
RT Vol	0	102	0	29	0	14	0	0	32
Lane Flow Rate	17	268	49	333	283	235	17	124	44
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.043	0.625	0.119	0.762	0.672	0.52	0.045	0.316	0.105
Departure Headway (Hd)	9.299	8.396	8.825	8.227	8.541	7.97	9.726	9.207	8.48
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	385	429	406	440	422	453	368	391	422
Service Time	7.052	6.149	6.574	5.975	6.288	5.717	7.485	6.966	6.239
HCM Lane V/C Ratio	0.044	0.625	0.121	0.757	0.671	0.519	0.046	0.317	0.104
HCM Control Delay	12.5	24.2	12.8	33	27.2	19.1	12.9	16.2	12.2
HCM Lane LOS	B	C	B	D	D	C	B	C	B
HCM 95th-tile Q	0.1	4.1	0.4	6.4	4.8	2.9	0.1	1.3	0.3

Intersection

Int Delay, s/veh 3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	56	0	63	75	0	57
Future Vol, veh/h	56	0	63	75	0	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	61	0	68	82	0	62

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	61	0	279 61
Stage 1	-	-	-	-	61 -
Stage 2	-	-	-	-	218 -
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	-	-	1536	-	709 1001
Stage 1	-	-	-	-	959 -
Stage 2	-	-	-	-	816 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1536	-	676 1001
Mov Cap-2 Maneuver	-	-	-	-	676 -
Stage 1	-	-	-	-	959 -
Stage 2	-	-	-	-	778 -

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1001	-	-	1536	-
HCM Lane V/C Ratio	0.062	-	-	0.045	-
HCM Control Delay (s)	8.8	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	0	0	112	180	15
Future Vol, veh/h	0	0	0	112	180	15
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	0	122	196	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	204	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.23	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.327	-
Pot Cap-1 Maneuver	0	834	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	834	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	47	0	0	65	160	20
Future Vol, veh/h	47	0	0	65	160	20
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	-	55	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	51	0	0	71	174	22

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	256	185	196	0	0
Stage 1	185	-	-	-	-
Stage 2	71	-	-	-	-
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	731	855	1371	-	-
Stage 1	844	-	-	-	-
Stage 2	949	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	731	855	1371	-	-
Mov Cap-2 Maneuver	731	-	-	-	-
Stage 1	844	-	-	-	-
Stage 2	949	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1371	-	731	-	-
HCM Lane V/C Ratio	-	-	0.07	-	-
HCM Control Delay (s)	0	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	0	0	65	140	15
Future Vol, veh/h	0	0	0	65	140	15
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	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	0	71	152	16

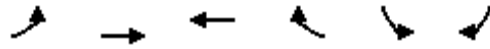
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	160	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	-
Pot Cap-1 Maneuver	0	882	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	882	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-
HCM Control Delay (s)	-	0	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	-	-	-

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

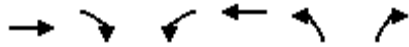
Cumulative With Project
 Timing Plan: PM-Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	213	1529	1348	81	583	427		
Future Volume (veh/h)	213	1529	1348	81	583	427		
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	232	1662	1465	88	634	464		
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	238	1974	1547	658	675	1253		
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	232	1662	1465	88	634	464		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	6.7	37.6	37.7	3.4	34.3	10.9		
Cycle Q Clear(g_c), s	6.7	37.6	37.7	3.4	34.3	10.9		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	238	1974	1547	658	675	1253		
V/C Ratio(X)	0.97	0.84	0.95	0.13	0.94	0.37		
Avail Cap(c_a), veh/h	238	1974	1646	699	741	1357		
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	45.8	19.4	27.6	17.6	29.3	17.7		
Incr Delay (d2), s/veh	50.3	3.3	11.3	0.0	18.3	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	4.8	19.8	21.5	1.5	20.0	9.8		
LnGrp Delay(d),s/veh	96.1	22.7	38.8	17.6	47.6	17.7		
LnGrp LOS	F	C	D	B	D	B		
Approach Vol, veh/h		1894	1553		1098			
Approach Delay, s/veh		31.7	37.6		35.0			
Approach LOS		C	D		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				56.8		41.9	11.4	45.4
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				39.6		36.3	8.7	39.7
Green Ext Time (p_c), s				7.3		1.6	0.0	1.6
Intersection Summary								
HCM 2010 Ctrl Delay			34.5					
HCM 2010 LOS			C					

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

Cumulative With Project
 Timing Plan: PM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑		↑↑	↑↑	↑		
Traffic Volume (veh/h)	1614	498	0	1537	403	240		
Future Volume (veh/h)	1614	498	0	1537	403	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	1754	541	0	1671	438	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	2465	1048	0	2465	721	332		
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	1754	541	0	1671	438	261		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	20.0	11.6	0.0	18.3	7.7	10.5		
Cycle Q Clear(g_c), s	20.0	11.6	0.0	18.3	7.7	10.5		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2465	1048	0	2465	721	332		
V/C Ratio(X)	0.71	0.52	0.00	0.68	0.61	0.79		
Avail Cap(c_a), veh/h	4712	2003	0	2465	2151	990		
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	7.0	5.6	0.0	6.7	23.7	24.8		
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.6	0.3	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	0.0	5.0	0.0	9.3	3.7	4.6		
LnGrp Delay(d),s/veh	7.1	5.7	0.0	7.3	24.0	26.4		
LnGrp LOS	A	A		A	C	C		
Approach Vol, veh/h	2295			1671	699			
Approach Delay, s/veh	6.8			7.3	24.9			
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		48.5				48.5
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		12.5		22.0				20.3
Green Ext Time (p_c), s		1.6		22.5				14.7
Intersection Summary								
HCM 2010 Ctrl Delay				9.7				
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	82	47	62	0	87	70
Future Vol, veh/h	7	82	47	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	108	62	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%	43%	0%
Vol Right, %	0%	57%	45%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	89	109	157
LT Vol	7	0	87
Through Vol	82	47	0
RT Vol	0	62	70
Lane Flow Rate	117	143	207
Geometry Grp	1	1	1
Degree of Util (X)	0.15	0.168	0.251
Departure Headway (Hd)	4.598	4.223	4.377
Convergence, Y/N	Yes	Yes	Yes
Cap	781	850	822
Service Time	2.62	2.244	2.398
HCM Lane V/C Ratio	0.15	0.168	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	60	83	184
Future Vol, veh/h	109	61	47	60	83	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	72	100	222

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	129	0	0	429	93
Stage 1	-	-	-	93	-
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	1451	-	-	581	961
Stage 1	-	-	-	928	-
Stage 2	-	-	-	722	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1451	-	-	526	961
Mov Cap-2 Maneuver	-	-	-	526	-
Stage 1	-	-	-	928	-
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)	1451	-	-	-	526	961
HCM Lane V/C Ratio	0.091	-	-	-	0.19	0.231
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	47.2	89.6	0.48	19.3	D
John Muir Pkwy	II	35	21.2	19.9	41.1	0.17	14.8	E
Eagle Rock Ave	II	35	11.5	54.7	66.2	0.09	5.0	F
SR-4 SB Off Ramp	II	45	12.0	17.4	29.4	0.11	13.5	E
SR-4 NB Off Ramp	II	30	21.7	12.1	33.8	0.16	17.2	D
Total	II		121.9	199.1	321.0	1.13	12.7	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	20.1	31.0	0.10	11.6	F
SR-4 SB Off Ramp	II	30	21.7	44.0	65.7	0.16	8.9	F
Cortona Wy	II	35	13.8	37.1	50.9	0.11	7.8	F
John Muir Pkwy	II	45	10.1	20.1	30.2	0.09	11.0	F
E Country Club Dr	II	45	18.5	45.7	64.2	0.17	9.5	F
W Country Club Dr	II	45	42.4	28.1	70.5	0.48	24.6	C
Total	II		117.4	195.1	312.5	1.11	12.8	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	35.3	48.4	0.11	8.5	F
Foothill Dr	II	45	42.4	41.2	83.6	0.48	20.7	D
John Muir Pkwy	II	35	21.2	25.6	46.8	0.17	13.0	E
Eagle Rock Ave	II	35	11.5	85.5	97.0	0.09	3.4	F
SR-4 SB Off Ramp	II	45	12.0	25.3	37.3	0.11	10.6	F
SR-4 NB Off Ramp	II	30	21.7	16.4	38.1	0.16	15.3	E
Total	II		121.9	229.3	351.2	1.13	11.6	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	42.5	64.2	0.16	9.1	F
Cortona Wy	II	35	13.8	44.2	58.0	0.11	6.8	F
John Muir Pkwy	II	45	10.1	26.8	36.9	0.09	9.0	F
E Country Club Dr	II	45	18.5	40.5	59.0	0.17	10.3	F
W Country Club Dr	II	45	42.4	47.1	89.5	0.48	19.4	D
Total	II		117.4	216.5	333.9	1.11	12.0	F

Methodology	Scenario	Segment	Direction	segment length	average time	free flow time	=F/G delay index
Arterial	2040 AM	SR-4 to American Ave/Country Club Dr	EB	1.13	315.3	121.9	2.59
			WB	1.11	311.8	117.4	2.66
Arterial	2040 PM	SR-4 to American Ave/Country Club Dr	EB	1.13	321.5	121.9	2.64
			WB	1.11	323.1	117.4	2.75
Arterial	2040 + P AM	SR-4 to American Ave/Country Club Dr	EB	1.13	321.0	121.9	2.63
			WB	1.11	312.5	117.4	2.66
Arterial	2040 + P PM	SR-4 to American Ave/Country Club Dr	EB	1.13	351.2	121.9	2.88
			WB	1.11	333.9	117.4	2.84
Arterial	2040 + P AM - Mit	SR-4 to American Ave/Country Club Dr	EB	1.13	307.0	121.9	2.52
			WB	1.11	303.9	117.4	2.59
Arterial	2040 + P PM - Mit	SR-4 to American Ave/Country Club Dr	EB	1.13	312.1	121.9	2.56
			WB	1.11	293.2	117.4	2.50

Methodology	Scenario	Segment	Direction	segment length	average speed	free flow speed	average time	free flow time	delay index	average time	free flow time	delay index
Basic Freeway	2040 AM	Sand Creek to Balfour	NB	0.58	67.0	70.0	31.2	29.8	1.04	139.2	137.8	1.01
			SB	1.1	68.6	70.0	57.7	56.6	1.02	166.2	164.6	1.01
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	108.0	108.0	1.00			
			SB	2.1	69.7	70.0	108.5	108.0	1.00			
Basic Freeway	2040 PM	Sand Creek to Balfour	NB	0.58	69.4	70.0	30.1	29.8	1.01	138.1	137.8	1.00
			SB	1.1	69.6	70.0	56.9	56.6	1.01	164.9	164.6	1.00
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	108.0	108.0	1.00			
			SB	2.1	70.0	70.0	108.0	108.0	1.00			
Basic Freeway	2040 plus Project AM	Sand Creek to Balfour	NB	0.58	66.7	70.0	31.3	29.8	1.05	139.3	137.8	1.01
			SB	1.1	68.5	70.0	57.8	56.6	1.02	166.4	164.6	1.01
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	108.0	108.0	1.00			
			SB	2.1	69.6	70.0	108.6	108.0	1.01			
Basic Freeway	2040 plus Project PM	Sand Creek to Balfour	NB	0.58	69.2	70.0	30.2	29.8	1.01	138.2	137.8	1.00
			SB	1.1	69.5	70.0	57.0	56.6	1.01	165.0	164.6	1.00
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	108.0	108.0	1.00			
			SB	2.1	70.0	70.0	108.0	108.0	1.00			