






















**APPENDIX G:**

**EXISTING PLUS APPROVED PROJECTS PLUS PROJECT  
CONDITIONS ANALYSIS OUTPUT SHEETS**

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

Near-Term 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)	13	236	354	791	469	92	123	213	728	79	471	6
Future Volume (veh/h)	13	236	354	791	469	92	123	213	728	79	471	6
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	14	257	385	860	510	100	134	232	791	86	512	7
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	33	509	433	646	1323	258	164	609	1613	110	544	7
Arrive On Green	0.02	0.28	0.28	0.18	0.44	0.44	0.09	0.33	0.33	0.06	0.30	0.30
Sat Flow, veh/h	1757	1845	1568	3514	3000	586	1757	1845	3136	1757	1815	25
Grp Volume(v), veh/h	14	257	385	860	313	297	134	232	791	86	0	519
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1741	1757	1845	1568	1757	0	1840
Q Serve(g_s), s	0.9	12.7	25.6	20.0	12.4	12.5	8.1	10.5	17.8	5.2	0.0	29.9
Cycle Q Clear(g_c), s	0.9	12.7	25.6	20.0	12.4	12.5	8.1	10.5	17.8	5.2	0.0	29.9
Prop In Lane	1.00		1.00	1.00		0.34	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	33	509	433	646	813	768	164	609	1613	110	0	552
V/C Ratio(X)	0.42	0.50	0.89	1.33	0.38	0.39	0.82	0.38	0.49	0.78	0.00	0.94
Avail Cap(c_a), veh/h	323	848	721	646	848	801	323	609	1613	323	0	609
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	52.7	33.1	37.8	44.4	20.5	20.5	48.4	27.9	17.2	50.3	0.0	37.1
Incr Delay (d2), s/veh	3.1	0.3	4.4	159.4	0.1	0.1	3.8	0.1	0.1	4.5	0.0	21.1
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	0.4	6.5	11.6	23.9	6.4	6.1	4.1	5.4	7.7	2.7	0.0	18.4
LnGrp Delay(d),s/veh	55.8	33.4	42.2	203.8	20.6	20.6	52.3	28.0	17.2	54.8	0.0	58.2
LnGrp LOS	E	C	D	F	C	C	D	C	B	D		E
Approach Vol, veh/h		656		1470			1157			605		
Approach Delay, s/veh		39.0		127.8			23.5			57.7		
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	10.8	39.9	24.0	34.0	14.1	36.6	6.1	52.0				
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	30.0	20.0	50.0	20.0	36.0	20.0	50.0				
Max Q Clear Time (g_c+I1), s	7.2	19.8	22.0	27.6	10.1	31.9	2.9	14.5				
Green Ext Time (p_c), s	0.1	3.5	0.0	2.4	0.2	0.7	0.0	2.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			70.8									
HCM 2010 LOS			E									

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

Near-Term 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	885	122	44	988	72	212	87	98	234	113	253
Future Volume (veh/h)	53	885	122	44	988	72	212	87	98	234	113	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	941	130	47	1051	77	226	93	104	249	120	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	101	1121	155	83	1165	85	267	171	146	561	132	296
Arrive On Green	0.06	0.35	0.35	0.05	0.34	0.34	0.15	0.09	0.09	0.32	0.26	0.26
Sat Flow, veh/h	1757	3174	438	1757	3397	249	1757	1845	1568	1757	507	1137
Grp Volume(v), veh/h	56	547	524	47	571	557	226	93	104	249	0	389
Grp Sat Flow(s),veh/h/ln	1757	1845	1767	1757	1845	1801	1757	1845	1568	1757	0	1644
Q Serve(g_s), s	2.6	23.3	23.3	2.2	25.1	25.2	10.7	4.1	4.6	9.6	0.0	19.6
Cycle Q Clear(g_c), s	2.6	23.3	23.3	2.2	25.1	25.2	10.7	4.1	4.6	9.6	0.0	19.6
Prop In Lane	1.00		0.25	1.00		0.14	1.00		1.00	1.00		0.69
Lane Grp Cap(c), veh/h	101	652	624	83	633	618	267	171	146	561	0	428
V/C Ratio(X)	0.55	0.84	0.84	0.57	0.90	0.90	0.85	0.54	0.71	0.44	0.00	0.91
Avail Cap(c_a), veh/h	411	1080	1035	411	1080	1054	411	648	551	561	0	578
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	39.2	25.4	25.4	39.8	26.7	26.7	35.3	37.0	26.9	23.0	0.0	30.6
Incr Delay (d2), s/veh	1.8	1.3	1.4	2.2	3.2	3.3	5.9	1.0	2.4	0.2	0.0	12.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	12.1	11.6	1.1	13.2	13.0	5.6	2.1	2.3	4.7	0.0	10.4
LnGrp Delay(d),s/veh	40.9	26.7	26.8	42.1	29.9	30.0	41.2	38.0	29.3	23.3	0.0	43.3
LnGrp LOS	D	C	C	D	C	C	D	D	C	C		D
Approach Vol, veh/h		1127			1175			423			638	
Approach Delay, s/veh		27.4			30.5			37.6			35.5	
Approach LOS		C			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	11.3	11.9	8.0	34.2	17.0	26.2	8.9	33.3				
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	20.0	30.0	20.0	50.0	20.0	30.0	20.0	50.0				
Max Q Clear Time (g_c+I), s	6.6	6.6	4.2	25.3	12.7	21.6	4.6	27.2				
Green Ext Time (p_c), s	0.7	0.4	0.0	2.1	0.3	0.7	2.0	2.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				31.3								
HCM 2010 LOS				C								

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

Near-Term 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)	40	1047	129	44	1066	34	33	6	30	4	2	10
Future Volume (veh/h)	40	1047	129	44	1066	34	33	6	30	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	42	1091	134	46	1110	35	34	6	31	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	98	1719	730	211	1734	737	83	124	106	11	7	36
Arrive On Green	0.06	0.47	0.47	0.06	0.47	0.47	0.05	0.07	0.07	0.01	0.03	0.03
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	268	1340
Grp Volume(v), veh/h	42	1091	134	46	1110	35	34	6	31	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	0.9	9.0	2.0	0.5	9.1	0.5	0.8	0.1	0.8	0.1	0.0	0.3
Cycle Q Clear(g_c), s	0.9	9.0	2.0	0.5	9.1	0.5	0.8	0.1	0.8	0.1	0.0	0.3
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	98	1719	730	211	1734	737	83	124	106	11	0	43
V/C Ratio(X)	0.43	0.63	0.18	0.22	0.64	0.05	0.41	0.05	0.29	0.35	0.00	0.28
Avail Cap(c_a), veh/h	879	4614	1961	1758	4614	1961	879	1707	1451	879	0	1488
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	18.3	8.1	6.2	17.9	8.0	5.7	18.5	17.4	17.7	19.8	0.0	19.1
Incr Delay (d2), s/veh	1.1	0.1	0.0	0.2	0.1	0.0	1.2	0.1	0.6	6.6	0.0	1.3
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	0.5	4.4	0.8	0.2	4.5	0.2	0.4	0.1	0.3	0.1	0.0	0.1
LnGrp Delay(d),s/veh	19.3	8.2	6.3	18.1	8.2	5.8	19.7	17.5	18.3	26.4	0.0	20.4
LnGrp LOS	B	A	A	B	A	A	B	B	B	C		C
Approach Vol, veh/h		1267			1191			71			16	
Approach Delay, s/veh		8.4			8.5			18.9			21.9	
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	6.7	6.4	22.6	5.9	5.1	6.2	22.8				
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	11.1	2.8	2.5	11.0	2.8	2.3	2.9	11.1				
Green Ext Time (p_c), s	0.0	0.1	0.1	7.7	0.0	0.1	0.0	7.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.8									
HCM 2010 LOS			A									

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

Near-Term 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	1014	9	306	1113	44	4	29	313	114	28	38
Future Volume (veh/h)	47	1014	9	306	1113	44	4	29	313	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	1114	10	336	1223	48	4	32	344	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	84	1378	586	424	1647	700	11	452	384	157	233	316
Arrive On Green	0.05	0.37	0.37	0.12	0.45	0.45	0.01	0.24	0.24	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	1114	10	336	1223	48	4	32	344	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	2.7	25.3	0.4	8.7	25.6	1.6	0.2	1.2	19.8	6.5	0.0	2.9
Cycle Q Clear(g_c), s	2.7	25.3	0.4	8.7	25.6	1.6	0.2	1.2	19.8	6.5	0.0	2.9
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	84	1378	586	424	1647	700	11	452	384	157	0	549
V/C Ratio(X)	0.62	0.81	0.02	0.79	0.74	0.07	0.36	0.07	0.90	0.80	0.00	0.13
Avail Cap(c_a), veh/h	377	1979	841	754	1979	841	377	831	707	377	0	755
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	43.6	26.2	18.4	39.8	21.4	14.7	46.1	27.0	34.0	41.6	0.0	22.0
Incr Delay (d2), s/veh	2.8	1.1	0.0	1.3	0.9	0.0	7.1	0.0	3.0	3.5	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	4	13.0	0.2	4.3	13.1	0.7	0.1	0.6	8.9	3.3	0.0	1.3
LnGrp Delay(d),s/veh	46.3	27.3	18.4	41.1	22.3	14.7	53.2	27.1	37.1	45.1	0.0	22.1
LnGrp LOS	D	C	B	D	C	B	D	C	D	D		C
Approach Vol, veh/h		1176			1607			380			198	
Approach Delay, s/veh		28.0			26.0			36.4			36.6	
Approach LOS		C			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	12.3	26.8	15.2	38.8	4.6	34.6	8.4	45.6				
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	20.0	42.0	20.0	50.0	20.0	42.0	20.0	50.0				
Max Q Clear Time (g_c+1), s	10.5	21.8	10.7	27.3	2.2	4.9	4.7	27.6				
Green Ext Time (p_c), s	0.2	1.1	0.6	7.5	0.0	1.1	0.0	7.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				28.5								
HCM 2010 LOS				C								

**Intersection**

Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	121	55	139	461	12
Future Vol, veh/h	5	121	55	139	461	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	153	70	176	584	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	10.1	10.1	23.6
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	4%	0%
Vol Thru, %	0%	100%	0%	97%
Vol Right, %	0%	0%	96%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	139	126	473
LT Vol	55	0	5	0
Through Vol	0	139	0	461
RT Vol	0	0	121	12
Lane Flow Rate	70	176	159	599
Geometry Grp	7	7	2	5
Degree of Util (X)	0.116	0.268	0.235	0.792
Departure Headway (Hd)	5.991	5.486	5.307	4.76
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	592	647	668	754
Service Time	3.786	3.279	3.406	2.83
HCM Lane V/C Ratio	0.118	0.272	0.238	0.794
HCM Control Delay	9.6	10.3	10.1	23.6
HCM Lane LOS	A	B	B	C
HCM 95th-tile Q	0.4	1.1	0.9	8.1

Intersection												
Intersection Delay, s/veh	22.6											
Intersection LOS	C											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	
Traffic Vol, veh/h	121	135	64	22	52	17	61	263	55	56	166	63
Future Vol, veh/h	121	135	64	22	52	17	61	263	55	56	166	63
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	159	178	84	29	68	22	80	346	72	74	218	83
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	17.4	13	31.8	19.1
HCM LOS	C	B	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	83%	0%	68%	0%	75%	0%	72%
Vol Right, %	0%	17%	0%	32%	0%	25%	0%	28%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	318	121	199	22	69	56	229
LT Vol	61	0	121	0	22	0	56	0
Through Vol	0	263	0	135	0	52	0	166
RT Vol	0	55	0	64	0	17	0	63
Lane Flow Rate	80	418	159	262	29	91	74	301
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.173	0.827	0.36	0.539	0.072	0.208	0.164	0.609
Departure Headway (Hd)	7.753	7.117	8.149	7.404	8.935	8.238	7.994	7.282
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	462	506	441	487	400	434	448	494
Service Time	5.51	4.874	5.908	5.162	6.712	6.014	5.756	5.044
HCM Lane V/C Ratio	0.173	0.826	0.361	0.538	0.072	0.21	0.165	0.609
HCM Control Delay	12.1	35.6	15.5	18.5	12.4	13.2	12.3	20.8
HCM Lane LOS	B	E	C	C	B	B	B	C
HCM 95th-tile Q	0.6	8.2	1.6	3.2	0.2	0.8	0.6	4

**Intersection**

Intersection Delay, s/veh	12.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	251	194	7	144	121
Future Vol, veh/h	9	251	194	7	144	121
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	344	266	10	197	166
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	12.6	11.8
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	201	260	144	121
LT Vol	0	9	144	0
Through Vol	194	0	0	121
RT Vol	7	251	0	0
Lane Flow Rate	275	356	197	166
Geometry Grp	5	2	7	7
Degree of Util (X)	0.423	0.501	0.35	0.271
Departure Headway (Hd)	5.536	5.062	6.395	5.888
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	650	716	562	610
Service Time	3.576	3.062	4.135	3.628
HCM Lane V/C Ratio	0.423	0.497	0.351	0.272
HCM Control Delay	12.6	13	12.6	10.8
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.1	2.8	1.6	1.1



Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	26	74	121	55	52	69
Future Vol, veh/h	26	74	121	55	52	69
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	32	91	149	68	64	85

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	397	183	0	0	217
Stage 1	183	-	-	-	-
Stage 2	214	-	-	-	-
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	606	857	-	-	1347
Stage 1	846	-	-	-	-
Stage 2	819	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	577	857	-	-	1347
Mov Cap-2 Maneuver	577	-	-	-	-
Stage 1	846	-	-	-	-
Stage 2	780	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	761	1347
HCM Lane V/C Ratio	-	-	0.162	0.048
HCM Control Delay (s)	-	-	10.6	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.6	0.1

**Intersection**

Int Delay, s/veh 5.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	1	34	0	0	70	0
Future Vol, veh/h	1	34	0	0	70	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	1	41	0	0	85	0

**Major/Minor**

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	43	0	23
Stage 1	-	-	-	-	22
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	-	-	1559	-	991
Stage 1	-	-	-	-	998
Stage 2	-	-	-	-	1020
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1559	-	991
Mov Cap-2 Maneuver	-	-	-	-	991
Stage 1	-	-	-	-	998
Stage 2	-	-	-	-	1020

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	991	-	-	1559	-
HCM Lane V/C Ratio	0.086	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Intersection Delay, s/veh	37.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↶	↷		↶	↷		↶	↷		↶	↷	↶
Traffic Vol, veh/h	30	241	90	139	87	1	17	51	134	6	148	27
Future Vol, veh/h	30	241	90	139	87	1	17	51	134	6	148	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	42	335	125	193	121	1	24	71	186	8	206	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	67.9	18.3	22	19.3
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%	73%	0%	99%	0%	100%	0%
Vol Right, %	0%	72%	0%	27%	0%	1%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	17	185	30	331	139	88	6	148	27
LT Vol	17	0	30	0	139	0	6	0	0
Through Vol	0	51	0	241	0	87	0	148	0
RT Vol	0	134	0	90	0	1	0	0	27
Lane Flow Rate	24	257	42	460	193	122	8	206	38
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.061	0.592	0.1	1.01	0.488	0.291	0.022	0.51	0.086
Departure Headway (Hd)	9.536	8.487	8.613	7.906	9.243	8.72	9.622	9.103	8.376
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	378	429	418	460	392	414	374	399	431
Service Time	7.236	6.187	6.32	5.613	6.943	6.42	7.322	6.803	6.076
HCM Lane V/C Ratio	0.063	0.599	0.1	1	0.492	0.295	0.021	0.516	0.088
HCM Control Delay	12.9	22.8	12.3	72.9	20.4	15	12.5	20.9	11.9
HCM Lane LOS	B	C	B	F	C	B	B	C	B
HCM 95th-tile Q	0.2	3.7	0.3	13.4	2.6	1.2	0.1	2.8	0.3

Intersection						
Int Delay, s/veh	2.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	83	0	22	45	0	43
Future Vol, veh/h	83	0	22	45	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	90	0	24	49	0	47

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	90	0	187
Stage 1	-	-	-	-	90
Stage 2	-	-	-	-	97
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	-	-	1499	-	800
Stage 1	-	-	-	-	931
Stage 2	-	-	-	-	924
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1499	-	787
Mov Cap-2 Maneuver	-	-	-	-	787
Stage 1	-	-	-	-	931
Stage 2	-	-	-	-	909

Approach	EB	WB	NB
HCM Control Delay, s	0	2.4	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	965	-	-	1499	-
HCM Lane V/C Ratio	0.048	-	-	0.016	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑	↘	
Traffic Vol, veh/h	0	0	0	97	90	5
Future Vol, veh/h	0	0	0	97	90	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	105	98	5

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	101	-	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	952	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	952	-	-	-
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	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	0	0	72	107	6
Future Vol, veh/h	32	0	0	72	107	6
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	78	116	7

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	198	120	123	0	0
Stage 1	120	-	-	-	-
Stage 2	78	-	-	-	-
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	788	929	1458	-	-
Stage 1	903	-	-	-	-
Stage 2	943	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	788	929	1458	-	-
Mov Cap-2 Maneuver	788	-	-	-	-
Stage 1	903	-	-	-	-
Stage 2	943	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1458	-	788	-	-
HCM Lane V/C Ratio	-	-	0.044	-	-
HCM Control Delay (s)	0	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
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	71	102	5
Future Vol, veh/h	0	0	0	71	102	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	77	111	5

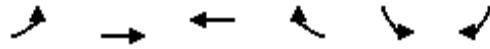
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	114	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.23	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.327	-
Pot Cap-1 Maneuver	0	936	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	936	-
Mov Cap-2 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

Near-Term With Project  
 Timing Plan: AM-Peak

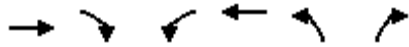


Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↶↶	↶↶	↶↶	↷	↶	↷↷		
Traffic Volume (veh/h)	297	1287	1032	134	334	415		
Future Volume (veh/h)	297	1287	1032	134	334	415		
Number	7	4	8	18	1	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00		
Parking Bus, Adj	1.00	1.00	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	323	1399	1122	146	363	451		
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	438	2295	1564	665	446	700		
Arrive On Green	0.13	0.62	0.42	0.42	0.25	0.25		
Sat Flow, veh/h	3408	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	323	1399	1122	146	363	451		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	5.9	14.9	16.2	3.8	12.5	9.4		
Cycle Q Clear(g_c), s	5.9	14.9	16.2	3.8	12.5	9.4		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	438	2295	1564	665	446	700		
V/C Ratio(X)	0.74	0.61	0.72	0.22	0.81	0.64		
Avail Cap(c_a), veh/h	951	3974	2688	1142	1157	1818		
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	27.1	7.4	15.4	11.8	22.6	21.5		
Incr Delay (d2), s/veh	0.9	0.1	0.2	0.1	1.4	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.8	7.4	8.3	1.6	6.2	7.1		
LnGrp Delay(d),s/veh	28.0	7.5	15.6	11.9	24.0	21.8		
LnGrp LOS	C	A	B	B	C	C		
Approach Vol, veh/h		1722	1268		814			
Approach Delay, s/veh		11.4	15.2		22.8			
Approach LOS		B	B		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				44.1		20.4	12.8	31.3
Change Period (Y+Rc), s				4.0		4.0	4.5	4.0
Max Green Setting (Gmax), s				69.5		42.5	18.0	47.0
Max Q Clear Time (g_c+I1), s				16.9		14.5	7.9	18.2
Green Ext Time (p_c), s				9.9		1.8	0.4	9.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			15.1					
HCM 2010 LOS			B					



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

Near-Term With Project  
 Timing Plan: AM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↗		↑↑	↖↗	↗		
Traffic Volume (veh/h)	1051	570	0	1537	198	60		
Future Volume (veh/h)	1051	570	0	1537	198	60		
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	1142	620	0	1671	215	65		
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	2377	1010	0	2377	596	274		
Arrive On Green	0.64	0.64	0.00	0.64	0.17	0.17		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1142	620	0	1671	215	65		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	7.1	10.3	0.0	13.0	2.5	1.6		
Cycle Q Clear(g_c), s	7.1	10.3	0.0	13.0	2.5	1.6		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2377	1010	0	2377	596	274		
V/C Ratio(X)	0.48	0.61	0.00	0.70	0.36	0.24		
Avail Cap(c_a), veh/h	7082	3010	0	3583	3233	1487		
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	4.1	4.6	0.0	5.1	16.1	15.7		
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.1	0.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.5	4.4	0.0	6.5	1.1	0.7		
LnGrp Delay(d),s/veh	4.1	4.9	0.0	5.3	16.2	15.9		
LnGrp LOS	A	A		A	B	B		
Approach Vol, veh/h	1762			1671	280			
Approach Delay, s/veh	4.4			5.3	16.1			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		11.7		32.5				32.5
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		4.5		12.3				15.0
Green Ext Time (p_c), s		0.6		16.2				13.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay				5.7				
HCM 2010 LOS				A				

**Intersection**

Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBU	SBL	SBR
Lane Configurations		↶	↷			↶↷	
Traffic Vol, veh/h	17	74	65	22	2	133	48
Future Vol, veh/h	17	74	65	22	2	133	48
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	23	101	89	30	3	182	66
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	8.7	8.4	9.6
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	19%	0%	73%
Vol Thru, %	81%	75%	0%
Vol Right, %	0%	25%	27%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	91	87	183
LT Vol	17	0	134
Through Vol	74	65	0
RT Vol	0	22	49
Lane Flow Rate	125	119	251
Geometry Grp	1	1	1
Degree of Util (X)	0.164	0.151	0.314
Departure Headway (Hd)	4.725	4.547	4.511
Convergence, Y/N	Yes	Yes	Yes
Cap	759	789	797
Service Time	2.754	2.576	2.537
HCM Lane V/C Ratio	0.165	0.151	0.315
HCM Control Delay	8.7	8.4	9.6
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.6	0.5	1.3

**Intersection**

Int Delay, s/veh 7.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	↔
Traffic Vol, veh/h	123	51	113	64	34	240
Future Vol, veh/h	123	51	113	64	34	240
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	176	73	161	91	49	343

**Major/Minor**

	Major1	Major2	Minor2
Conflicting Flow All	253	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.13	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.227	-	-
Pot Cap-1 Maneuver	1306	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1306	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

**Approach**






















	EB	WB	SB
HCM Control Delay, s	5.8	0	12.7
HCM LOS			B

**Minor Lane/Major Mvmt**

	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1306	-	-	-	381	831
HCM Lane V/C Ratio	0.135	-	-	-	0.127	0.413
HCM Control Delay (s)	8.2	0	-	-	15.8	12.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.5	-	-	-	0.4	2

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

Near-Term 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)	52	389	68	313	394	157	85	265	682	222	159	31
Future Volume (veh/h)	52	389	68	313	394	157	85	265	682	222	159	31
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	57	423	74	340	428	171	92	288	741	241	173	34
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	104	586	102	466	666	264	130	492	1252	292	537	106
Arrive On Green	0.06	0.19	0.19	0.13	0.26	0.26	0.07	0.27	0.27	0.17	0.36	0.36
Sat Flow, veh/h	1757	3063	532	3514	2518	996	1757	1845	3136	1757	1498	294
Grp Volume(v), veh/h	57	253	244	340	312	287	92	288	741	241	0	207
Grp Sat Flow(s),veh/h/ln	1757	1845	1751	1757	1845	1669	1757	1845	1568	1757	0	1793
Q Serve(g_s), s	2.1	8.5	8.6	6.1	9.9	10.0	3.4	8.9	12.2	8.7	0.0	5.5
Cycle Q Clear(g_c), s	2.1	8.5	8.6	6.1	9.9	10.0	3.4	8.9	12.2	8.7	0.0	5.5
Prop In Lane	1.00		0.30	1.00		0.60	1.00		1.00	1.00		0.16
Lane Grp Cap(c), veh/h	104	353	335	466	488	442	130	492	1252	292	0	643
V/C Ratio(X)	0.55	0.72	0.73	0.73	0.64	0.65	0.71	0.59	0.59	0.83	0.00	0.32
Avail Cap(c_a), veh/h	535	1404	1332	1069	1404	1270	535	842	1847	535	0	982
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	30.1	24.9	25.0	27.4	21.4	21.5	29.7	20.9	15.5	26.5	0.0	15.3
Incr Delay (d2), s/veh	1.7	1.0	1.1	0.8	0.5	0.6	2.6	0.4	0.2	2.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.4	4.2	3.0	5.1	4.7	1.7	4.5	5.2	4.4	0.0	2.7
LnGrp Delay(d),s/veh	31.8	26.0	26.1	28.2	21.9	22.1	32.3	21.4	15.7	28.8	0.0	15.4
LnGrp LOS	C	C	C	C	C	C	C	C	B	C		B
Approach Vol, veh/h		554			939			1121			448	
Approach Delay, s/veh		26.6			24.2			18.5			22.6	
Approach LOS		C			C			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	14.9	21.5	12.7	16.6	8.9	27.6	7.9	21.4				
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	20.0	30.0	20.0	50.0	20.0	36.0	20.0	50.0				
Max Q Clear Time (g_c+I1), s	10.7	14.2	8.1	10.6	5.4	7.5	4.1	12.0				
Green Ext Time (p_c), s	0.3	3.3	0.6	2.0	0.1	3.6	0.1	2.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			22.3									
HCM 2010 LOS			C									

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

Near-Term 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)	116	993	143	123	749	193	115	91	104	174	64	65
Future Volume (veh/h)	116	993	143	123	749	193	115	91	104	174	64	65
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	123	1056	152	131	797	205	122	97	111	185	68	69
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	271	1216	175	169	926	238	159	232	198	234	142	144
Arrive On Green	0.15	0.39	0.39	0.10	0.33	0.33	0.09	0.13	0.13	0.13	0.17	0.17
Sat Flow, veh/h	1757	3156	454	1757	2832	728	1757	1845	1568	1757	841	853
Grp Volume(v), veh/h	123	617	591	131	519	483	122	97	111	185	0	137
Grp Sat Flow(s),veh/h/ln	1757	1845	1765	1757	1845	1716	1757	1845	1568	1757	0	1694
Q Serve(g_s), s	3.9	19.0	19.1	4.5	16.3	16.3	4.2	3.0	4.1	6.3	0.0	4.5
Cycle Q Clear(g_c), s	3.9	19.0	19.1	4.5	16.3	16.3	4.2	3.0	4.1	6.3	0.0	4.5
Prop In Lane	1.00		0.26	1.00		0.42	1.00		1.00	1.00		0.50
Lane Grp Cap(c), veh/h	271	711	680	169	603	561	159	232	198	234	0	286
V/C Ratio(X)	0.45	0.87	0.87	0.77	0.86	0.86	0.77	0.42	0.56	0.79	0.00	0.48
Avail Cap(c_a), veh/h	570	1495	1431	570	1495	1391	570	897	763	570	0	824
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	23.7	17.5	17.5	27.2	19.4	19.4	27.4	24.9	25.3	25.9	0.0	23.2
Incr Delay (d2), s/veh	0.4	1.3	1.4	2.8	1.4	1.5	2.9	0.4	0.9	2.3	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	9	9.8	9.5	2.3	8.5	7.9	2.2	1.5	1.8	3.2	0.0	2.1
LnGrp Delay(d),s/veh	24.1	18.8	18.9	30.1	20.9	21.0	30.4	25.3	26.3	28.2	0.0	23.6
LnGrp LOS	C	B	B	C	C	C	C	C	C	C		C
Approach Vol, veh/h		1331			1133			330			322	
Approach Delay, s/veh		19.4			22.0			27.5			26.3	
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	12.2	11.8	9.9	27.8	9.6	14.4	13.5	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	30.0	20.0	50.0	20.0	30.0	20.0	50.0				
Max Q Clear Time (g_c+10), s	19.3	6.1	6.5	21.1	6.2	6.5	5.9	18.3				
Green Ext Time (p_c), s	0.3	0.7	0.2	2.6	0.2	0.7	2.4	1.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				21.9								
HCM 2010 LOS				C								

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

Near-Term 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	54	48	988	28	57	21	60	30	11	23
Future Volume (veh/h)	61	1161	54	48	988	28	57	21	60	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	56	50	1029	29	59	22	62	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	125	1690	718	213	1650	701	119	206	175	74	44	97
Arrive On Green	0.07	0.46	0.46	0.06	0.45	0.45	0.07	0.11	0.11	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	56	50	1029	29	59	22	62	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	12.9	1.0	0.7	10.4	0.5	1.6	0.5	1.8	0.8	0.0	1.0
Cycle Q Clear(g_c), s	1.7	12.9	1.0	0.7	10.4	0.5	1.6	0.5	1.8	0.8	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	125	1690	718	213	1650	701	119	206	175	74	0	141
V/C Ratio(X)	0.51	0.72	0.08	0.24	0.62	0.04	0.50	0.11	0.35	0.42	0.00	0.25
Avail Cap(c_a), veh/h	720	3779	1606	1440	3779	1606	720	1398	1189	720	0	1247
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	21.8	10.7	7.4	21.9	10.3	7.6	22.0	19.5	20.1	22.8	0.0	20.8
Incr Delay (d2), s/veh	1.2	0.2	0.0	0.2	0.1	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	0.9	6.4	0.4	0.3	5.3	0.2	0.8	0.3	0.8	0.4	0.0	0.5
LnGrp Delay(d),s/veh	23.0	10.9	7.4	22.1	10.5	7.6	23.1	19.6	20.5	24.2	0.0	21.2
LnGrp LOS	C	B	A	C	B	A	C	B	C	C		C
Approach Vol, veh/h		1329			1108			143			66	
Approach Delay, s/veh		11.3			10.9			21.5			22.6	
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	9.4	7.0	26.4	7.3	8.2	7.5	25.8				
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	3.8	2.7	14.9	3.6	3.0	3.7	12.4				
Green Ext Time (p_c), s	0.0	0.2	0.1	7.5	0.1	0.2	0.1	7.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				12.0								
HCM 2010 LOS				B								

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

Near-Term 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)	52	1218	21	289	1021	77	12	38	355	151	44	40
Future Volume (veh/h)	52	1218	21	289	1021	77	12	38	355	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	57	1338	23	318	1122	85	13	42	390	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	74	1413	601	383	1660	705	31	491	418	194	319	292
Arrive On Green	0.04	0.38	0.38	0.11	0.45	0.45	0.02	0.27	0.27	0.11	0.36	0.36
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	888	814
Grp Volume(v), veh/h	57	1338	23	318	1122	85	13	42	390	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	3.9	42.8	1.1	10.8	29.3	3.8	0.9	2.1	29.6	11.3	0.0	4.5
Cycle Q Clear(g_c), s	3.9	42.8	1.1	10.8	29.3	3.8	0.9	2.1	29.6	11.3	0.0	4.5
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	74	1413	601	383	1660	705	31	491	418	194	0	611
V/C Ratio(X)	0.77	0.95	0.04	0.83	0.68	0.12	0.42	0.09	0.93	0.86	0.00	0.15
Avail Cap(c_a), veh/h	288	1515	644	577	1660	705	288	636	541	288	0	611
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	57.7	36.4	23.5	53.2	26.5	19.5	59.2	33.5	43.6	53.2	0.0	26.4
Incr Delay (d2), s/veh	6.2	11.9	0.0	3.8	0.9	0.0	3.4	0.0	18.3	10.5	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	2.0	24.1	0.5	5.5	15.0	1.7	0.5	1.1	14.9	6.1	0.0	2.1
LnGrp Delay(d),s/veh	63.9	48.3	23.5	57.0	27.4	19.5	62.6	33.6	61.9	63.7	0.0	26.5
LnGrp LOS	E	D	C	E	C	B	E	C	E	E		C
Approach Vol, veh/h		1418			1525			445			258	
Approach Delay, s/veh		48.5			33.1			59.3			50.5	
Approach LOS		D			C			E			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	17.4	36.4	17.3	50.6	6.1	47.7	9.1	58.8				
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	42.0	20.0	50.0	20.0	42.0	20.0	50.0				
Max Q Clear Time (g_c+M), s	11.3	31.6	12.8	44.8	2.9	6.5	5.9	31.3				
Green Ext Time (p_c), s	0.2	0.9	0.5	1.9	0.0	1.3	0.1	7.8				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			43.5									
HCM 2010 LOS			D									

**Intersection**

Intersection Delay, s/veh 11.4  
Intersection LOS B

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	98	109	287	198	9
Future Vol, veh/h	8	98	109	287	198	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	124	138	363	251	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	9.4	12.3	10.7
HCM LOS	A	B	B

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	8%	0%
Vol Thru, %	0%	100%	0%	96%
Vol Right, %	0%	0%	92%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	109	287	106	207
LT Vol	109	0	8	0
Through Vol	0	287	0	198
RT Vol	0	0	98	9
Lane Flow Rate	138	363	134	262
Geometry Grp	7	7	2	5
Degree of Util (X)	0.215	0.516	0.19	0.357
Departure Headway (Hd)	5.616	5.113	5.087	4.905
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	636	701	702	728
Service Time	3.373	2.87	3.149	2.964
HCM Lane V/C Ratio	0.217	0.518	0.191	0.36
HCM Control Delay	9.9	13.2	9.4	10.7
HCM Lane LOS	A	B	A	B
HCM 95th-tile Q	0.8	3	0.7	1.6



Intersection												
Intersection Delay, s/veh	18.4											
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	6	67	213	35	48	160	118
Future Vol, veh/h	91	116	32	36	88	6	67	213	35	48	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	8	88	280	46	63	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	14.7	13.3	19.6	22
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%	94%	0%	58%
Vol Right, %	0%	14%	0%	22%	0%	6%	0%	42%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	67	248	91	148	36	94	48	278
LT Vol	67	0	91	0	36	0	48	0
Through Vol	0	213	0	116	0	88	0	160
RT Vol	0	35	0	32	0	6	0	118
Lane Flow Rate	88	326	120	195	47	124	63	366
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.188	0.64	0.271	0.404	0.112	0.273	0.134	0.695
Departure Headway (Hd)	7.672	7.059	8.142	7.472	8.506	7.944	7.655	6.839
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	467	512	441	481	421	451	468	527
Service Time	5.427	4.813	5.901	5.231	6.273	5.71	5.407	4.591
HCM Lane V/C Ratio	0.188	0.637	0.272	0.405	0.112	0.275	0.135	0.694
HCM Control Delay	12.2	21.6	13.9	15.2	12.4	13.7	11.6	23.8
HCM Lane LOS	B	C	B	C	B	B	B	C
HCM 95th-tile Q	0.7	4.5	1.1	1.9	0.4	1.1	0.5	5.4

Intersection

Intersection Delay, s/veh 11.4

Intersection LOS B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	12	218	184	18	91	140
Future Vol, veh/h	12	218	184	18	91	140
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	299	252	25	125	192
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	11.6	11.9	10.9
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	5%	100%	0%
Vol Thru, %	91%	0%	0%	100%
Vol Right, %	9%	95%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	202	230	91	140
LT Vol	0	12	91	0
Through Vol	184	0	0	140
RT Vol	18	218	0	0
Lane Flow Rate	277	315	125	192
Geometry Grp	5	2	7	7
Degree of Util (X)	0.406	0.432	0.216	0.305
Departure Headway (Hd)	5.288	4.931	6.231	5.725
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	681	734	577	629
Service Time	3.318	2.931	3.961	3.455
HCM Lane V/C Ratio	0.407	0.429	0.217	0.305
HCM Control Delay	11.9	11.6	10.7	11
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2	2.2	0.8	1.3

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	20	46	134	26	49	155
Future Vol, veh/h	20	46	134	26	49	155
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	25	57	165	32	60	191

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	493	181	0	0	198
Stage 1	181	-	-	-	-
Stage 2	312	-	-	-	-
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	534	859	-	-	1369
Stage 1	848	-	-	-	-
Stage 2	740	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	511	859	-	-	1369
Mov Cap-2 Maneuver	511	-	-	-	-
Stage 1	848	-	-	-	-
Stage 2	708	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	1.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	712	1369
HCM Lane V/C Ratio	-	-	0.114	0.044
HCM Control Delay (s)	-	-	10.7	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻		↻	↑	↻	
Traffic Vol, veh/h	3	47	0	6	52	3
Future Vol, veh/h	3	47	0	6	52	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	4	57	0	7	63	4

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	61	0	39	32
Stage 1	-	-	-	-	32	-
Stage 2	-	-	-	-	7	-
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	-	970	1039
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	1013	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1536	-	970	1039
Mov Cap-2 Maneuver	-	-	-	-	970	-
Stage 1	-	-	-	-	988	-
Stage 2	-	-	-	-	1013	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	974	-	-	1536	-
HCM Lane V/C Ratio	0.069	-	-	-	-
HCM Control Delay (s)	9	-	-	0	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↵	↵		↵	↵		↵	↵		↵	↵	↵
Traffic Vol, veh/h	35	196	27	97	141	7	11	91	95	9	62	27
Future Vol, veh/h	35	196	27	97	141	7	11	91	95	9	62	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	49	272	38	135	196	10	15	126	132	13	86	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	19.1	14.4	17	11.9
HCM LOS	C	B	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%	49%	0%	88%	0%	95%	0%	100%	0%
Vol Right, %	0%	51%	0%	12%	0%	5%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	11	186	35	223	97	148	9	62	27
LT Vol	11	0	35	0	97	0	9	0	0
Through Vol	0	91	0	196	0	141	0	62	0
RT Vol	0	95	0	27	0	7	0	0	27
Lane Flow Rate	15	258	49	310	135	206	12	86	38
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.034	0.516	0.104	0.609	0.29	0.411	0.03	0.191	0.076
Departure Headway (Hd)	8.064	7.185	7.669	7.076	7.738	7.196	8.504	7.991	7.272
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	444	501	467	511	463	500	420	448	491
Service Time	5.82	4.94	5.423	4.829	5.493	4.951	6.27	5.757	5.037
HCM Lane V/C Ratio	0.034	0.515	0.105	0.607	0.292	0.412	0.029	0.192	0.077
HCM Control Delay	11.1	17.4	11.3	20.3	13.6	14.9	11.5	12.6	10.6
HCM Lane LOS	B	C	B	C	B	B	B	B	B
HCM 95th-tile Q	0.1	2.9	0.3	4	1.2	2	0.1	0.7	0.2

**Intersection**

Int Delay, s/veh 4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	49	0	63	55	0	57
Future Vol, veh/h	49	0	63	55	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	53	0	68	60	0	62

**Major/Minor**

	Major1	Major2	Minor1		
Conflicting Flow All	0	0	53	0	250
Stage 1	-	-	-	-	53
Stage 2	-	-	-	-	197
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	-	-	1546	-	736
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	834
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1546	-	703
Mov Cap-2 Maneuver	-	-	-	-	703
Stage 1	-	-	-	-	967
Stage 2	-	-	-	-	796

**Approach**

	EB	WB	NB
HCM Control Delay, s	0	4	8.8
HCM LOS			A

**Minor Lane/Major Mvmt**

	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1012	-	-	1546	-
HCM Lane V/C Ratio	0.061	-	-	0.044	-
HCM Control Delay (s)	8.8	-	-	7.4	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	66	161	15
Future Vol, veh/h	0	0	0	66	161	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	72	175	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	183	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	857	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	857	-
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	56	168	20
Future Vol, veh/h	47	0	0	56	168	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	61	183	22

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	254	193	204	0	-	0
Stage 1	193	-	-	-	-	-
Stage 2	61	-	-	-	-	-
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	732	846	1362	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	732	846	1362	-	-	-
Mov Cap-2 Maneuver	732	-	-	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	959	-	-	-	-	-

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)	1362	-	732	-	-
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	55	152	15
Future Vol, veh/h	0	0	0	55	152	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	60	165	16

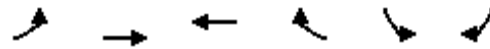
Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	173	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.23	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.327	-
Pot Cap-1 Maneuver	0	868	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	868	-
Mov Cap-2 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

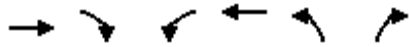
Near-Term With Project  
 Timing Plan: PM-Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations								
Traffic Volume (veh/h)	213	1572	884	86	583	401		
Future Volume (veh/h)	213	1572	884	86	583	401		
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	1709	961	93	634	436		
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	270	1908	1425	606	687	1297		
Arrive On Green	0.08	0.52	0.39	0.39	0.39	0.39		
Sat Flow, veh/h	3408	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	232	1709	961	93	634	436		
Grp Sat Flow(s),veh/h/ln	1704	1845	1845	1568	1757	1380		
Q Serve(g_s), s	5.9	36.3	18.8	3.4	29.9	8.7		
Cycle Q Clear(g_c), s	5.9	36.3	18.8	3.4	29.9	8.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	270	1908	1425	606	687	1297		
V/C Ratio(X)	0.86	0.90	0.67	0.15	0.92	0.34		
Avail Cap(c_a), veh/h	270	2136	1865	793	840	1538		
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	39.6	18.9	22.2	17.4	25.3	14.5		
Incr Delay (d2), s/veh	22.2	4.7	0.3	0.0	12.7	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	3.6	19.5	9.5	1.5	16.9	0.0		
LnGrp Delay(d),s/veh	61.8	23.5	22.4	17.5	38.0	14.6		
LnGrp LOS	E	C	C	B	D	B		
Approach Vol, veh/h		1941	1054		1070			
Approach Delay, s/veh		28.1	22.0		28.4			
Approach LOS		C	C		C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				49.0		38.0	11.4	37.6
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				38.3		31.9	7.9	20.8
Green Ext Time (p_c), s				6.8		2.1	0.0	9.3
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			26.6					
HCM 2010 LOS			C					

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

Near-Term With Project  
 Timing Plan: PM-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↗		↑↑	↖↗	↗		
Traffic Volume (veh/h)	1607	548	0	1247	234	187		
Future Volume (veh/h)	1607	548	0	1247	234	187		
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	1747	596	0	1355	254	203		
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	2512	1068	0	2512	599	276		
Arrive On Green	0.68	0.68	0.00	0.68	0.18	0.18		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1747	596	0	1355	254	203		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	16.0	10.9	0.0	10.3	3.7	6.8		
Cycle Q Clear(g_c), s	16.0	10.9	0.0	10.3	3.7	6.8		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2512	1068	0	2512	599	276		
V/C Ratio(X)	0.70	0.56	0.00	0.54	0.42	0.74		
Avail Cap(c_a), veh/h	5616	2387	0	2775	2563	1179		
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	5.4	4.6	0.0	4.5	20.5	21.8		
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.2	1.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.1	4.7	0.0	5.1	1.7	3.0		
LnGrp Delay(d),s/veh	5.5	4.8	0.0	4.6	20.7	23.2		
LnGrp LOS	A	A		A	C	C		
Approach Vol, veh/h	2343			1355	457			
Approach Delay, s/veh	5.3			4.6	21.8			
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		13.8		42.0				42.0
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		42.0		85.0				42.0
Max Q Clear Time (g_c+I1), s		8.8		18.0				12.3
Green Ext Time (p_c), s		1.0		20.0				15.4
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay				6.9				
HCM 2010 LOS				A				

**Intersection**

Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	WBT	WBR	SBU	SBL	SBR
Lane Configurations		↶	↷			↶↷	
Traffic Vol, veh/h	7	82	43	29	6	84	67
Future Vol, veh/h	7	82	43	29	6	84	67
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	57	38	8	111	88
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	8.3	7.9	8.7
HCM LOS	A	A	A

Lane	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	56%
Vol Thru, %	92%	60%	0%
Vol Right, %	0%	40%	44%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	89	72	157
LT Vol	7	0	87
Through Vol	82	43	0
RT Vol	0	29	70
Lane Flow Rate	117	95	207
Geometry Grp	1	1	1
Degree of Util (X)	0.148	0.114	0.246
Departure Headway (Hd)	4.541	4.313	4.279
Convergence, Y/N	Yes	Yes	Yes
Cap	792	833	841
Service Time	2.559	2.332	2.296
HCM Lane V/C Ratio	0.148	0.114	0.246
HCM Control Delay	8.3	7.9	8.7
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.5	0.4	1

**Intersection**

Int Delay, s/veh 5.7

Movement	EBL	EBT	WBT	WBR	SBU	SBL	SBR
Lane Configurations		↕	↕			↕	↕
Traffic Vol, veh/h	81	57	44	56	1	51	116
Future Vol, veh/h	81	57	44	56	1	51	116
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	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	83
Heavy Vehicles, %	3	3	3	3	3	3	3
Mvmt Flow	98	69	53	67	1	61	140






















Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	120	0	0
Stage 1	-	-	0
Stage 2	-	-	0
Critical Hdwy	4.13	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.227	-	-
Pot Cap-1 Maneuver	1462	-	0
Stage 1	-	-	0
Stage 2	-	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1462	-	0
Mov Cap-2 Maneuver	-	-	0
Stage 1	-	-	0
Stage 2	-	-	0

Approach	EB	WB	SB
HCM Control Delay, s	4.5	0	10
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1462	-	-	-	599	969
HCM Lane V/C Ratio	0.067	-	-	-	0.103	0.144
HCM Control Delay (s)	7.6	0	-	-	11.7	9.3
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	0.5

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

Near-Term With Project  
 Timing Plan: WKND-Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	182	4	49	220	84	10	10	77	129	13	16
Future Volume (veh/h)	12	182	4	49	220	84	10	10	77	129	13	16
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	13	194	4	52	234	89	11	11	82	137	14	17
Adj No. of Lanes	1	2	0	2	2	0	1	1	2	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	36	854	18	237	731	270	30	247	631	217	182	221
Arrive On Green	0.02	0.24	0.24	0.07	0.28	0.28	0.02	0.13	0.13	0.12	0.24	0.24
Sat Flow, veh/h	1757	3602	74	3514	2572	950	1757	1845	3136	1757	760	922
Grp Volume(v), veh/h	13	99	99	52	166	157	11	11	82	137	0	31
Grp Sat Flow(s),veh/h/ln	1757	1845	1832	1757	1845	1677	1757	1845	1568	1757	0	1682
Q Serve(g_s), s	0.3	1.6	1.6	0.5	2.6	2.7	0.2	0.2	0.8	2.7	0.0	0.5
Cycle Q Clear(g_c), s	0.3	1.6	1.6	0.5	2.6	2.7	0.2	0.2	0.8	2.7	0.0	0.5
Prop In Lane	1.00		0.04	1.00		0.57	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	36	437	434	237	524	477	30	247	631	217	0	403
V/C Ratio(X)	0.36	0.23	0.23	0.22	0.32	0.33	0.36	0.04	0.13	0.63	0.00	0.08
Avail Cap(c_a), veh/h	963	2527	2509	1925	2527	2297	963	1516	2788	963	0	1659
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	17.6	11.2	11.2	16.1	10.3	10.3	17.7	13.8	12.0	15.2	0.0	10.7
Incr Delay (d2), s/veh	2.3	0.1	0.1	0.2	0.1	0.1	2.7	0.0	0.0	1.1	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	0.1	0.8	0.8	0.3	1.3	1.2	0.1	0.1	0.3	1.4	0.0	0.2
LnGrp Delay(d),s/veh	20.0	11.3	11.3	16.3	10.4	10.5	20.4	13.8	12.0	16.3	0.0	10.8
LnGrp LOS	B	B	B	B	B	B	C	B	B	B		B
Approach Vol, veh/h		211			375			104			168	
Approach Delay, s/veh		11.9			11.2			13.1			15.3	
Approach LOS		B			B			B			B	
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	8.5	8.9	6.5	12.7	4.6	12.8	4.7	14.4				
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	20.0	30.0	20.0	50.0	20.0	36.0	20.0	50.0				
Max Q Clear Time (g_c+I1), s	4.7	2.8	2.5	3.6	2.2	2.5	2.3	4.7				
Green Ext Time (p_c), s	0.2	0.3	0.1	0.9	0.0	0.3	0.0	0.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				12.4								
HCM 2010 LOS				B								

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

Near-Term With Project  
 Timing Plan: WKND-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↑	↗	↖	↗	
Traffic Volume (veh/h)	14	373	25	139	375	192	26	19	118	188	28	18
Future Volume (veh/h)	14	373	25	139	375	192	26	19	118	188	28	18
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	14	381	26	142	383	196	27	19	120	192	29	18
Adj No. of Lanes	1	2	0	1	2	0	1	1	1	1	1	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	196	778	53	199	531	268	67	276	234	250	270	168
Arrive On Green	0.11	0.23	0.23	0.11	0.23	0.23	0.04	0.15	0.15	0.14	0.25	0.25
Sat Flow, veh/h	1757	3416	232	1757	2316	1168	1757	1845	1568	1757	1066	662
Grp Volume(v), veh/h	14	205	202	142	304	275	27	19	120	192	0	47
Grp Sat Flow(s),veh/h/ln	1757	1845	1804	1757	1845	1639	1757	1845	1568	1757	0	1728
Q Serve(g_s), s	0.3	4.2	4.2	3.4	6.6	6.8	0.7	0.4	3.1	4.6	0.0	0.9
Cycle Q Clear(g_c), s	0.3	4.2	4.2	3.4	6.6	6.8	0.7	0.4	3.1	4.6	0.0	0.9
Prop In Lane	1.00		0.13	1.00		0.71	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	196	420	411	199	423	376	67	276	234	250	0	438
V/C Ratio(X)	0.07	0.49	0.49	0.72	0.72	0.73	0.40	0.07	0.51	0.77	0.00	0.11
Avail Cap(c_a), veh/h	806	2117	2070	806	2117	1880	806	1270	1079	806	0	1190
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	17.3	14.6	14.6	18.7	15.5	15.6	20.5	15.9	17.1	18.0	0.0	12.5
Incr Delay (d2), s/veh	0.1	0.3	0.3	1.8	0.9	1.0	1.4	0.0	0.6	1.9	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	0.2	2.1	2.1	1.8	3.5	3.2	0.3	0.2	1.3	2.3	0.0	0.4
LnGrp Delay(d),s/veh	17.4	14.9	15.0	20.5	16.4	16.6	21.9	16.0	17.7	19.8	0.0	12.5
LnGrp LOS	B	B	B	C	B	B	C	B	B	B		B
Approach Vol, veh/h		421			721			166			239	
Approach Delay, s/veh		15.0			17.3			18.2			18.4	
Approach LOS		B			B			B			B	
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	10.2	10.5	8.9	13.9	5.7	15.1	8.9	14.0				
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	30.0	20.0	50.0	20.0	30.0	20.0	50.0				
Max Q Clear Time (g_c+1), s	10.6	5.1	5.4	6.2	2.7	2.9	2.3	8.8				
Green Ext Time (p_c), s	0.3	0.4	0.2	0.7	0.0	0.4	0.6	1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				16.9								
HCM 2010 LOS				B								

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

Near-Term With Project  
 Timing Plan: WKND-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	625	12	23	661	4	34	17	34	26	7	12
Future Volume (veh/h)	19	625	12	23	661	4	34	17	34	26	7	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	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	20	658	13	24	696	4	36	18	36	27	7	13
Adj No. of Lanes	1	2	1	2	2	1	1	1	1	1	1	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	54	1189	505	127	1209	514	90	176	150	70	49	91
Arrive On Green	0.03	0.32	0.32	0.04	0.33	0.33	0.05	0.10	0.10	0.04	0.08	0.08
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	579	1076
Grp Volume(v), veh/h	20	658	13	24	696	4	36	18	36	27	0	20
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1655
Q Serve(g_s), s	0.4	4.7	0.2	0.2	4.9	0.1	0.6	0.3	0.7	0.5	0.0	0.4
Cycle Q Clear(g_c), s	0.4	4.7	0.2	0.2	4.9	0.1	0.6	0.3	0.7	0.5	0.0	0.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.65
Lane Grp Cap(c), veh/h	54	1189	505	127	1209	514	90	176	150	70	0	139
V/C Ratio(X)	0.37	0.55	0.03	0.19	0.58	0.01	0.40	0.10	0.24	0.38	0.00	0.14
Avail Cap(c_a), veh/h	1111	5834	2480	2223	5834	2480	1111	2159	1835	1111	0	1937
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	15.0	8.8	7.3	14.8	8.8	7.2	14.5	13.1	13.2	14.8	0.0	13.4
Incr Delay (d2), s/veh	1.6	0.2	0.0	0.3	0.2	0.0	1.1	0.1	0.3	1.3	0.0	0.2
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	0.2	2.3	0.1	0.1	2.5	0.0	0.3	0.1	0.3	0.2	0.0	0.2
LnGrp Delay(d),s/veh	16.6	9.0	7.3	15.1	9.0	7.2	15.6	13.2	13.5	16.1	0.0	13.6
LnGrp LOS	B	A	A	B	A	A	B	B	B	B		B
Approach Vol, veh/h		691			724			90			47	
Approach Delay, s/veh		9.2			9.2			14.3			15.0	
Approach LOS		A			A			B			B	
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	5.3	7.0	5.1	14.2	5.6	6.7	5.0	14.4				
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	20.0	37.0	20.0	50.0	20.0	37.0	20.0	50.0				
Max Q Clear Time (g_c+1), s	12.5	2.7	2.2	6.7	2.6	2.4	2.4	6.9				
Green Ext Time (p_c), s	0.0	0.1	0.0	3.4	0.0	0.1	0.0	3.4				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				9.6								
HCM 2010 LOS				A								



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

Near-Term With Project  
 Timing Plan: WKND-Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (veh/h)	55	669	3	121	705	50	4	8	148	123	12	19
Future Volume (veh/h)	55	669	3	121	705	50	4	8	148	123	12	19
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	57	697	3	126	734	52	4	8	154	128	12	20
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	118	1084	461	366	1219	518	11	279	237	184	156	259
Arrive On Green	0.07	0.29	0.29	0.10	0.33	0.33	0.01	0.15	0.15	0.10	0.25	0.25
Sat Flow, veh/h	1757	3689	1568	3514	3689	1568	1757	1845	1568	1757	623	1038
Grp Volume(v), veh/h	57	697	3	126	734	52	4	8	154	128	0	32
Grp Sat Flow(s),veh/h/ln	1757	1845	1568	1757	1845	1568	1757	1845	1568	1757	0	1661
Q Serve(g_s), s	1.4	7.6	0.1	1.5	7.7	1.1	0.1	0.2	4.3	3.3	0.0	0.7
Cycle Q Clear(g_c), s	1.4	7.6	0.1	1.5	7.7	1.1	0.1	0.2	4.3	3.3	0.0	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.63
Lane Grp Cap(c), veh/h	118	1084	461	366	1219	518	11	279	237	184	0	415
V/C Ratio(X)	0.48	0.64	0.01	0.34	0.60	0.10	0.35	0.03	0.65	0.70	0.00	0.08
Avail Cap(c_a), veh/h	760	3990	1696	1520	3990	1696	760	1676	1425	760	0	1509
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	20.8	14.2	11.6	19.2	12.9	10.7	22.9	16.7	18.5	20.0	0.0	13.3
Incr Delay (d2), s/veh	1.1	0.2	0.0	0.2	0.2	0.0	6.7	0.0	1.1	1.8	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	0.7	3.9	0.0	0.8	3.9	0.5	0.1	0.1	1.9	1.7	0.0	0.3
LnGrp Delay(d),s/veh	21.9	14.5	11.6	19.5	13.1	10.8	29.5	16.7	19.6	21.8	0.0	13.3
LnGrp LOS	C	B	B	B	B	B	C	B	B	C		B
Approach Vol, veh/h		757			912			166			160	
Approach Delay, s/veh		15.0			13.9			19.7			20.1	
Approach LOS		B			B			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	8.8	11.0	8.8	17.6	4.3	15.5	7.1	19.3				
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	20.0	42.0	20.0	50.0	20.0	42.0	20.0	50.0				
Max Q Clear Time (g_c+1), s	11.3	6.3	3.5	9.6	2.1	2.7	3.4	9.7				
Green Ext Time (p_c), s	0.2	0.4	0.2	4.0	0.0	0.5	0.1	4.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				15.3								
HCM 2010 LOS				B								

**Intersection**

Intersection Delay, s/veh 8.5  
Intersection LOS A

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	89	92	130	148	2
Future Vol, veh/h	1	89	92	130	148	2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	93	96	135	154	2
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	7.8	8.8	8.6
HCM LOS	A	A	A

Lane	NBLn1	NBLn2	EBLn1	SBLn1
Vol Left, %	100%	0%	1%	0%
Vol Thru, %	0%	100%	0%	99%
Vol Right, %	0%	0%	99%	1%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	130	90	150
LT Vol	92	0	1	0
Through Vol	0	130	0	148
RT Vol	0	0	89	2
Lane Flow Rate	96	135	94	156
Geometry Grp	7	7	2	5
Degree of Util (X)	0.141	0.181	0.111	0.196
Departure Headway (Hd)	5.3	4.799	4.259	4.507
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	669	738	845	798
Service Time	3.095	2.593	2.27	2.522
HCM Lane V/C Ratio	0.143	0.183	0.111	0.195
HCM Control Delay	9	8.7	7.8	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0.7	0.4	0.7

**Intersection**

Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	86	78	4	10	42	8	3	71	8	7	69	104
Future Vol, veh/h	86	78	4	10	42	8	3	71	8	7	69	104
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	91	82	4	11	44	8	3	75	8	7	73	109
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	9.2	8.6	8.8	9.2
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	90%	0%	95%	0%	84%	0%	40%
Vol Right, %	0%	10%	0%	5%	0%	16%	0%	60%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	3	79	86	82	10	50	7	173
LT Vol	3	0	86	0	10	0	7	0
Through Vol	0	71	0	78	0	42	0	69
RT Vol	0	8	0	4	0	8	0	104
Lane Flow Rate	3	83	91	86	11	53	7	182
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.005	0.123	0.146	0.126	0.017	0.078	0.012	0.246
Departure Headway (Hd)	5.88	5.306	5.803	5.266	5.942	5.326	5.784	4.859
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	608	674	616	678	600	670	618	738
Service Time	3.626	3.051	3.551	3.014	3.698	3.081	3.523	2.597
HCM Lane V/C Ratio	0.005	0.123	0.148	0.127	0.018	0.079	0.011	0.247
HCM Control Delay	8.7	8.8	9.5	8.8	8.8	8.5	8.6	9.2
HCM Lane LOS	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.4	0.5	0.4	0.1	0.3	0	1

Intersection

Intersection Delay, s/veh 7.9  
Intersection LOS A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↙		↘		↘	↗
Traffic Vol, veh/h	1	5	101	1	4	96
Future Vol, veh/h	1	5	101	1	4	96
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	5	111	1	4	105
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	7	7.8	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	SBLn1	SBLn2
Vol Left, %	0%	17%	100%	0%
Vol Thru, %	99%	0%	0%	100%
Vol Right, %	1%	83%	0%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	102	6	4	96
LT Vol	0	1	4	0
Through Vol	101	0	0	96
RT Vol	1	5	0	0
Lane Flow Rate	112	7	4	105
Geometry Grp	5	2	7	7
Degree of Util (X)	0.129	0.007	0.006	0.135
Departure Headway (Hd)	4.137	3.991	5.118	4.617
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	864	902	701	779
Service Time	2.174	1.991	2.836	2.335
HCM Lane V/C Ratio	0.13	0.008	0.006	0.135
HCM Control Delay	7.8	7	7.9	8.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0	0	0.5

Intersection						
Int Delay, s/veh	1.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Vol, veh/h	12	9	94	23	12	81
Future Vol, veh/h	12	9	94	23	12	81
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	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	13	10	102	25	13	88

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	229	115	0	0	127	0
Stage 1	115	-	-	-	-	-
Stage 2	114	-	-	-	-	-
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	757	935	-	-	1453	-
Stage 1	907	-	-	-	-	-
Stage 2	908	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	750	935	-	-	1453	-
Mov Cap-2 Maneuver	750	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	900	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	1
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	819	1453
HCM Lane V/C Ratio	-	-	0.028	0.009
HCM Control Delay (s)	-	-	9.5	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection						
Int Delay, s/veh	4.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↶		↷	↶	↷	
Traffic Vol, veh/h	3	45	1	5	60	0
Future Vol, veh/h	3	45	1	5	60	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	93	93	93	93	93	93
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	48	1	5	65	0

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	52	0	35
Stage 1	-	-	-	-	27
Stage 2	-	-	-	-	8
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	-	-	1548	-	975
Stage 1	-	-	-	-	993
Stage 2	-	-	-	-	1012
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1548	-	974
Mov Cap-2 Maneuver	-	-	-	-	974
Stage 1	-	-	-	-	993
Stage 2	-	-	-	-	1011

Approach	EB	WB	NB
HCM Control Delay, s	0	1.2	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	974	-	-	1548	-
HCM Lane V/C Ratio	0.066	-	-	0.001	-
HCM Control Delay (s)	9	-	-	7.3	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	↰
Traffic Vol, veh/h	21	112	2	52	58	2	4	43	45	1	20	6
Future Vol, veh/h	21	112	2	52	58	2	4	43	45	1	20	6
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	24	130	2	60	67	2	5	50	52	1	23	7
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	9.1	8.8	8.7	8.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	49%	0%	98%	0%	97%	0%	100%	0%
Vol Right, %	0%	51%	0%	2%	0%	3%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	88	21	114	52	60	1	20	6
LT Vol	4	0	21	0	52	0	1	0	0
Through Vol	0	43	0	112	0	58	0	20	0
RT Vol	0	45	0	2	0	2	0	0	6
Lane Flow Rate	5	102	24	133	60	70	1	23	7
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.008	0.145	0.039	0.192	0.097	0.102	0.002	0.036	0.009
Departure Headway (Hd)	5.964	5.1	5.72	5.207	5.768	5.244	6.107	5.603	4.899
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	599	702	626	688	620	682	584	637	727
Service Time	3.706	2.842	3.458	2.944	3.509	2.984	3.861	3.358	2.653
HCM Lane V/C Ratio	0.008	0.145	0.038	0.193	0.097	0.103	0.002	0.036	0.01
HCM Control Delay	8.8	8.7	8.7	9.2	9.1	8.6	8.9	8.6	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0	0.5	0.1	0.7	0.3	0.3	0	0.1	0

Intersection						
Int Delay, s/veh	4.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	39	0	57	37	0	51
Future Vol, veh/h	39	0	57	37	0	51
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	42	0	62	40	0	55

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	42	0	206 42
Stage 1	-	-	-	-	42 -
Stage 2	-	-	-	-	164 -
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	-	-	1561	-	780 1026
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	863 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1561	-	748 1026
Mov Cap-2 Maneuver	-	-	-	-	748 -
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	828 -

Approach	EB	WB	NB
HCM Control Delay, s	0	4.5	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1026	-	-	1561	-
HCM Lane V/C Ratio	0.054	-	-	0.04	-
HCM Control Delay (s)	8.7	-	-	7.4	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	64	79	14
Future Vol, veh/h	0	0	0	64	79	14
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	70	86	15

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	93	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	961	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %			-
Mov Cap-1 Maneuver	-	961	-
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	1.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Traffic Vol, veh/h	42	0	0	64	102	18
Future Vol, veh/h	42	0	0	64	102	18
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	46	0	0	70	111	20

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	191	121	130	0	-	0
Stage 1	121	-	-	-	-	-
Stage 2	70	-	-	-	-	-
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	796	928	1449	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	950	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	796	928	1449	-	-	-
Mov Cap-2 Maneuver	796	-	-	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	950	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1449	-	796	-	-
HCM Lane V/C Ratio	-	-	0.057	-	-
HCM Control Delay (s)	0	-	9.8	-	-
HCM Lane LOS	A	-	A	-	-
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	63	87	14
Future Vol, veh/h	0	0	0	63	87	14
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	68	95	15

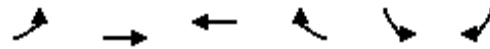
Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	102	-	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.23	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.327	-	-	-
Pot Cap-1 Maneuver	0	950	0	-	-
Stage 1	0	-	0	-	-
Stage 2	0	-	0	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	950	-	-	-
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

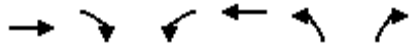
Near-Term With Project  
 Timing Plan: WKND-Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	↶↷	↶↷	↶↷	↶	↶	↶↷		
Traffic Volume (veh/h)	172	846	550	113	633	372		
Future Volume (veh/h)	172	846	550	113	633	372		
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	187	920	598	123	688	404		
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	672	1438	1438	611	788	1238		
Arrive On Green	0.39	0.39	0.39	0.39	0.45	0.45		
Sat Flow, veh/h	1400	3689	3689	1568	1757	2760		
Grp Volume(v), veh/h	187	920	598	123	688	404		
Grp Sat Flow(s),veh/h/ln	700	1845	1845	1568	1757	1380		
Q Serve(g_s), s	5.6	10.0	5.8	2.6	17.6	4.7		
Cycle Q Clear(g_c), s	11.4	10.0	5.8	2.6	17.6	4.7		
Prop In Lane	1.00			1.00	1.00	1.00		
Lane Grp Cap(c), veh/h	672	1438	1438	611	788	1238		
V/C Ratio(X)	0.28	0.64	0.42	0.20	0.87	0.33		
Avail Cap(c_a), veh/h	1541	3729	3729	1585	1456	2287		
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	15.1	12.3	11.0	10.0	12.4	8.8		
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.1	1.2	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	1.1	5.0	2.9	1.1	8.7	1.7		
LnGrp Delay(d),s/veh	15.2	12.4	11.1	10.1	13.6	8.9		
LnGrp LOS	B	B	B	B	B	A		
Approach Vol, veh/h		1107	721		1092			
Approach Delay, s/veh		12.9	10.9		11.9			
Approach LOS		B	B		B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				23.3		26.2		23.3
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				50.0		41.0		50.0
Max Q Clear Time (g_c+I1), s				13.4		19.6		7.8
Green Ext Time (p_c), s				5.9		2.6		5.9
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			12.0					
HCM 2010 LOS			B					

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

Near-Term With Project  
 Timing Plan: WKND-Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	↑↑	↑		↑↑	↑↑	↑		
Traffic Volume (veh/h)	1020	422	0	1187	148	129		
Future Volume (veh/h)	1020	422	0	1187	148	129		
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	1109	459	0	1290	161	140		
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	2103	894	0	2103	715	329		
Arrive On Green	0.57	0.57	0.00	0.57	0.21	0.21		
Sat Flow, veh/h	3689	1568	0	3689	3408	1568		
Grp Volume(v), veh/h	1109	459	0	1290	161	140		
Grp Sat Flow(s),veh/h/ln	1845	1568	0	1845	1704	1568		
Q Serve(g_s), s	6.7	6.5	0.0	8.4	1.4	2.8		
Cycle Q Clear(g_c), s	6.7	6.5	0.0	8.4	1.4	2.8		
Prop In Lane		1.00	0.00		1.00	1.00		
Lane Grp Cap(c), veh/h	2103	894	0	2103	715	329		
V/C Ratio(X)	0.53	0.51	0.00	0.61	0.23	0.43		
Avail Cap(c_a), veh/h	5078	2158	0	5078	3847	1770		
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	4.8	4.7	0.0	5.2	11.9	12.5		
Incr Delay (d2), s/veh	0.1	0.2	0.0	0.1	0.1	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	8.4	2.7	0.0	4.2	0.7	1.2		
LnGrp Delay(d),s/veh	4.9	4.9	0.0	5.3	12.0	12.8		
LnGrp LOS	A	A		A	B	B		
Approach Vol, veh/h	1568			1290	301			
Approach Delay, s/veh	4.9			5.3	12.3			
Approach LOS	A			A	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4				8
Phs Duration (G+Y+Rc), s		11.6		24.7				24.7
Change Period (Y+Rc), s		4.0		4.0				4.0
Max Green Setting (Gmax), s		41.0		50.0				50.0
Max Q Clear Time (g_c+I1), s		4.8		8.7				10.4
Green Ext Time (p_c), s		0.6		10.4				10.3
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay				5.8				
HCM 2010 LOS				A				

**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	44.8	57.9	0.11	7.1	F
Foothill Dr	II	45	42.4	39.0	81.4	0.48	21.3	D
John Muir Pkwy	II	35	21.2	18.2	39.4	0.17	15.5	E
Eagle Rock Ave	II	35	11.5	48.5	60.0	0.09	5.5	F
SR-4 SB Off Ramp	II	45	12.0	13.9	25.9	0.11	15.3	E
SR-4 NB Off Ramp	II	30	21.7	11.7	33.4	0.16	17.4	D
<b>Total</b>	<b>II</b>		<b>121.9</b>	<b>176.1</b>	<b>298.0</b>	<b>1.13</b>	<b>13.6</b>	<b>E</b>

**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	16.7	27.6	0.10	13.0	E
SR-4 SB Off Ramp	II	30	21.7	29.4	51.1	0.16	11.4	F
Cortona Wy	II	35	13.8	36.8	50.6	0.11	7.8	F
John Muir Pkwy	II	45	10.1	19.5	29.6	0.09	11.2	F
E Country Club Dr	II	45	18.5	42.7	61.2	0.17	10.0	F
W Country Club Dr	II	45	42.4	24.3	66.7	0.48	26.0	C
<b>Total</b>	<b>II</b>		<b>117.4</b>	<b>169.4</b>	<b>286.8</b>	<b>1.11</b>	<b>14.0</b>	<b>E</b>

## 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	36.0	49.1	0.11	8.3	F
Foothill Dr	II	45	42.4	41.6	84.0	0.48	20.6	D
John Muir Pkwy	II	35	21.2	25.3	46.5	0.17	13.1	E
Eagle Rock Ave	II	35	11.5	63.2	74.7	0.09	4.4	F
SR-4 SB Off Ramp	II	45	12.0	32.0	44.0	0.11	9.0	F
SR-4 NB Off Ramp	II	30	21.7	15.5	37.2	0.16	15.7	E
Total	II		121.9	213.6	335.5	1.13	12.1	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	11.9	22.8	0.10	15.8	E
SR-4 SB Off Ramp	II	30	21.7	27.7	49.4	0.16	11.8	F
Cortona Wy	II	35	13.8	36.2	50.0	0.11	7.9	F
John Muir Pkwy	II	45	10.1	25.8	35.9	0.09	9.2	F
E Country Club Dr	II	45	18.5	40.7	59.2	0.17	10.3	F
W Country Club Dr	II	45	42.4	28.3	70.7	0.48	24.5	C
Total	II		117.4	170.6	288.0	1.11	13.9	E

## 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	16.3	29.4	0.11	13.9	E
Foothill Dr	II	45	42.4	29.5	71.9	0.48	24.1	C
John Muir Pkwy	II	35	21.2	17.3	38.5	0.17	15.9	E
Eagle Rock Ave	II	35	11.5	36.2	47.7	0.09	7.0	F
SR-4 SB Off Ramp	II	45	12.0	22.2	34.2	0.11	11.6	F
SR-4 NB Off Ramp	II	30	21.7	14.8	36.5	0.16	16.0	E
Total	II		121.9	136.3	258.2	1.13	15.7	E

## 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	17.0	27.9	0.10	12.9	F
SR-4 SB Off Ramp	II	30	21.7	18.1	39.8	0.16	14.6	E
Cortona Wy	II	35	13.8	34.2	48.0	0.11	8.3	F
John Muir Pkwy	II	45	10.1	17.8	27.9	0.09	11.9	F
E Country Club Dr	II	45	18.5	23.3	41.8	0.17	14.6	E
W Country Club Dr	II	45	42.4	11.8	54.2	0.48	32.0	B
Total	II		117.4	122.2	239.6	1.11	16.8	E



Methodology	Scenario	Segment	Direction	segment length	average time	free flow time	=F/G delay index
Arterial	2020 AM	SR-4 to American Ave/Country Club Dr	EB	1.13	298.3	121.9	2.45
			WB	1.11	285.5	117.4	2.43
Arterial	2020 PM	SR-4 to American Ave/Country Club Dr	EB	1.13	313.0	121.9	2.57
			WB	1.11	278.9	117.4	2.38
Arterial	2020 SAT	SR-4 to American Ave/Country Club Dr	EB	1.13	253.0	121.9	2.08
			WB	1.11	233.0	117.4	1.98
Arterial	2020 + P AM	SR-4 to American Ave/Country Club Dr	EB	1.13	298.3	121.9	2.45
			WB	1.11	286.8	117.4	2.44
Arterial	2020 + P PM	SR-4 to American Ave/Country Club Dr	EB	1.13	335.5	121.9	2.75
			WB	1.11	288.0	117.4	2.45
Arterial	2020 + P SAT	SR-4 to American Ave/Country Club Dr	EB	1.13	258.2	121.9	2.12
			WB	1.11	239.6	117.4	2.04
Arterial	2020 + P AM - Mit	SR-4 to American Ave/Country Club Dr	EB	1.13	292.5	121.9	2.40
			WB	1.11	239.1	117.4	2.04
Arterial	2020 + P PM - Mit	SR-4 to American Ave/Country Club Dr	EB	1.13	323.3	121.9	2.65
			WB	1.11	272.3	117.4	2.32
Arterial	2020 + P SAT- Mit	SR-4 to American Ave/Country Club Dr	EB	1.13	257.4	121.9	2.11
			WB	1.11	239.8	117.4	2.04

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	2020 AM	Sand Creek to Balfour	NB	0.58	70.0	70.0	<b>29.8</b>	<b>29.8</b>	<b>1.00</b>	137.8	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
Basic Freeway	2020 PM	Sand Creek to Balfour	NB	0.58	70.0	70.0	<b>29.8</b>	<b>29.8</b>	<b>1.00</b>	137.8	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
Basic Freeway	2020 SAT	Sand Creek to Balfour	NB	0.58	70.0	70.0	<b>29.8</b>	<b>29.8</b>	<b>1.00</b>	137.8	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
Basic Freeway	2020 plus Project AM	Sand Creek to Balfour	NB	0.58	70.0	70.0	<b>29.8</b>	<b>29.8</b>	<b>1.00</b>	137.8	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
Basic Freeway	2020 plus Project PM	Sand Creek to Balfour	NB	0.58	70.0	70.0	<b>29.8</b>	<b>29.8</b>	<b>1.00</b>	137.8	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
Basic Freeway	2020 plus Project SAT	Sand Creek to Balfour	NB	0.58	69.9	70.0	<b>29.9</b>	<b>29.8</b>	<b>1.00</b>	137.9	137.8	<b>1.00</b>
			SB	1.1	70.0	70.0	<b>56.6</b>	<b>56.6</b>	<b>1.00</b>	164.6	164.6	<b>1.00</b>
		Balfour to Marsh Creek	NB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			
			SB	2.1	70.0	70.0	<b>108.0</b>	<b>108.0</b>	<b>1.00</b>			