

























Appendix 9

2040 Background Capacity Analysis

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 AM Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	346	229	112	267	131	243	603	157	507	1027	194
Future Volume (veh/h)	98	346	229	112	267	131	243	603	157	507	1027	194
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)	0.99		0.98	0.99		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	107	376	249	122	290	142	264	655	171	551	1116	211
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	483	544	216	471	689	274	991	259	501	1353	255
Arrive On Green	0.06	0.26	0.26	0.05	0.25	0.25	0.09	0.36	0.36	0.19	0.46	0.46
Sat Flow, veh/h	1774	1863	1552	1774	1863	1551	1774	2777	724	1774	2972	559
Grp Volume(v), veh/h	107	376	249	122	290	142	264	417	409	551	663	664
Grp Sat Flow(s),veh/h/ln	1774	1863	1552	1774	1863	1551	1774	1770	1731	1774	1770	1762
Q Serve(g_s), s	4.9	21.0	13.9	5.7	15.4	6.3	10.0	22.2	22.3	21.0	36.5	37.0
Cycle Q Clear(g_c), s	4.9	21.0	13.9	5.7	15.4	6.3	10.0	22.2	22.3	21.0	36.5	37.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.42	1.00		0.32
Lane Grp Cap(c), veh/h	279	483	544	216	471	689	274	632	618	501	806	802
V/C Ratio(X)	0.38	0.78	0.46	0.56	0.62	0.21	0.96	0.66	0.66	1.10	0.82	0.83
Avail Cap(c_a), veh/h	347	632	668	216	549	754	274	774	757	501	948	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	38.5	28.3	31.1	37.1	19.3	27.7	30.3	30.3	23.6	26.6	26.7
Incr Delay (d2), s/veh	0.3	5.5	0.9	2.1	2.1	0.2	43.8	0.8	0.9	70.0	4.4	4.7
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(95%),veh/ln	4.4	17.1	10.1	5.2	13.0	5.0	10.8	16.5	16.2	45.4	26.0	26.1
LnGrp Delay(d),s/veh	29.7	44.0	29.2	33.2	39.2	19.5	71.5	31.1	31.2	93.6	31.0	31.4
LnGrp LOS	C	D	C	C	D	B	E	C	C	F	C	C
Approach Vol, veh/h		732			554			1090			1878	
Approach Delay, s/veh		36.9			32.8			40.9			49.5	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	44.0	10.0	33.0	14.0	55.0	10.7	32.3				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	23.0	24.3	7.7	23.0	12.0	39.0	6.9	17.4				
Green Ext Time (p_c), s	0.0	0.8	0.0	3.9	0.0	1.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			42.9									
HCM 2010 LOS			D									
Notes												

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	5	2	11	3	11	11	80	986	30	26	1410	78
Future Vol, veh/h	5	2	11	3	11	11	80	986	30	26	1410	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	12	3	12	12	87	1072	33	28	1533	85

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2348	2911	809	2087	2937	553	1618	0	0	1105	0	0
Stage 1	1632	1632	-	1263	1263	-	-	-	-	-	-	-
Stage 2	716	1279	-	824	1674	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	19	15	323	30	15	477	399	-	-	628	-	-
Stage 1	106	158	-	180	239	-	-	-	-	-	-	-
Stage 2	387	235	-	333	151	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	11	323	20	~ 11	477	399	-	-	628	-	-
Mov Cap-2 Maneuver	-	11	-	20	~ 11	-	-	-	-	-	-	-
Stage 1	83	151	-	141	187	-	-	-	-	-	-	-
Stage 2	276	184	-	302	144	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		\$ 444.3	1.2	0.2
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	399	-	-	-	12	477	628
HCM Lane V/C Ratio	0.218	-	-	-	1.268	0.025	0.045
HCM Control Delay (s)	16.5	-	-	-	\$ 783.5	12.7	11
HCM Lane LOS	C	-	-	-	F	B	B
HCM 95th %tile Q(veh)	0.8	-	-	-	2.6	0.1	0.1

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	6	18	11	1099	1403	6
Future Vol, veh/h	6	18	11	1099	1403	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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	20	12	1195	1525	7























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2151	766	1532	0	-	0
Stage 1	1529	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	41	345	430	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40	345	430	-	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.6	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	430	-	119	-	-
HCM Lane V/C Ratio	0.028	-	0.219	-	-
HCM Control Delay (s)	13.6	-	43.6	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

HCM 2010 Signalized Intersection Summary
4: Kenwood Road & Kenwood Place/Towne Center

2040 AM Background
Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	3	30	0	5	13	1133	38	22	1381	18
Future Volume (veh/h)	3	0	3	30	0	5	13	1133	38	22	1381	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)	0.99		1.00	0.99		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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	3	0	3	33	0	5	14	1232	41	24	1501	20
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	0	74	236	0	138	211	1880	63	278	1971	26
Arrive On Green	0.01	0.00	0.05	0.05	0.00	0.09	0.02	0.54	0.54	0.04	0.55	0.55
Sat Flow, veh/h	1774	0	1576	1703	0	1576	1703	3495	116	1703	3576	48
Grp Volume(v), veh/h	3	0	3	33	0	5	14	623	650	24	742	779
Grp Sat Flow(s),veh/h/ln	1774	0	1576	1703	0	1576	1703	1770	1842	1703	1770	1854
Q Serve(g_s), s	0.1	0.0	0.1	1.3	0.0	0.2	0.3	18.7	18.7	0.5	24.1	24.2
Cycle Q Clear(g_c), s	0.1	0.0	0.1	1.3	0.0	0.2	0.3	18.7	18.7	0.5	24.1	24.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.03
Lane Grp Cap(c), veh/h	172	0	74	236	0	138	211	952	991	278	975	1022
V/C Ratio(X)	0.02	0.00	0.04	0.14	0.00	0.04	0.07	0.65	0.66	0.09	0.76	0.76
Avail Cap(c_a), veh/h	352	0	545	409	0	608	338	1435	1494	406	1459	1529
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	33.9	30.2	0.0	31.1	11.0	12.3	12.3	9.3	12.9	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.6	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(95%),veh/ln	0.1	0.0	0.1	1.1	0.0	0.2	0.2	14.0	14.5	0.4	17.3	18.0
LnGrp Delay(d),s/veh	33.5	0.0	34.3	30.3	0.0	31.1	11.0	12.5	12.5	9.4	13.5	13.5
LnGrp LOS	C		C	C		C	B	B	B	A	B	B
Approach Vol, veh/h		6			38			1287			1545	
Approach Delay, s/veh		33.9			30.4			12.5			13.4	
Approach LOS		C			C			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	9.4	46.7	7.5	10.8	8.5	47.7	4.4	13.8				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	2.5	20.7	3.3	2.1	2.3	26.2	2.1	2.2				
Green Ext Time (p_c), s	0.0	3.2	0.0	0.0	0.0	4.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			13.3									
HCM 2010 LOS			B									
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 AM Background
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	26	120	38	1224	1350	16		
Future Volume (veh/h)	26	120	38	1224	1350	16		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	28	130	41	1330	1467	17		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	42	193	275	2746	2789	32		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	273	1269	354	3632	3677	42		
Grp Volume(v), veh/h	159	0	41	1330	724	760		
Grp Sat Flow(s),veh/h/ln	1552	0	354	1770	1770	1855		
Q Serve(g_s), s	12.6	0.0	3.5	0.0	20.0	20.0		
Cycle Q Clear(g_c), s	12.6	0.0	23.5	0.0	20.0	20.0		
Prop In Lane	0.18	0.82	1.00			0.02		
Lane Grp Cap(c), veh/h	236	0	275	2746	1377	1444		
V/C Ratio(X)	0.67	0.00	0.15	0.48	0.53	0.53		
Avail Cap(c_a), veh/h	392	0	275	2746	1377	1444		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.36	0.36	0.78	0.78		
Uniform Delay (d), s/veh	52.6	0.0	2.3	0.0	5.4	5.4		
Incr Delay (d2), s/veh	3.3	0.0	0.4	0.2	1.1	1.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.5	0.0	0.7	0.2	14.7	15.3		
LnGrp Delay(d),s/veh	56.0	0.0	2.7	0.2	6.5	6.5		
LnGrp LOS	E		A	A	A	A		
Approach Vol, veh/h	159			1371	1484			
Approach Delay, s/veh	56.0			0.3	6.5			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		106.1		23.9		106.1		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		25.5		14.6		22.0		
Green Ext Time (p_c), s		10.3		0.6		9.1		
Intersection Summary								
HCM 2010 Ctrl Delay			6.3					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 AM Background
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	214	661	102	202	499	171	200	910	320	189	1005	286
Future Volume (veh/h)	214	661	102	202	499	171	200	910	320	189	1005	286
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	233	718	111	220	542	186	217	989	348	205	1092	311
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	285	814	126	223	949	561	240	1102	384	242	1165	329
Arrive On Green	0.08	0.27	0.25	0.08	0.27	0.26	0.10	0.43	0.41	0.09	0.43	0.41
Sat Flow, veh/h	1774	3071	475	1774	3539	1576	1774	2570	897	1703	2722	768
Grp Volume(v), veh/h	233	414	415	220	542	186	217	678	659	205	706	697
Grp Sat Flow(s),veh/h/ln	1774	1770	1776	1774	1770	1576	1774	1770	1697	1703	1770	1721
Q Serve(g_s), s	9.8	29.1	29.2	10.2	17.2	11.2	10.5	46.2	47.2	9.1	49.4	50.7
Cycle Q Clear(g_c), s	9.8	29.1	29.2	10.2	17.2	11.2	10.5	46.2	47.2	9.1	49.4	50.7
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.53	1.00		0.45
Lane Grp Cap(c), veh/h	285	469	471	223	949	561	240	759	728	242	757	736
V/C Ratio(X)	0.82	0.88	0.88	0.99	0.57	0.33	0.91	0.89	0.91	0.85	0.93	0.95
Avail Cap(c_a), veh/h	285	490	492	223	991	580	240	759	728	242	757	736
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	38.9	45.8	46.1	39.4	41.1	30.6	36.0	34.4	35.2	30.6	35.4	36.1
Incr Delay (d2), s/veh	16.7	16.5	16.5	55.9	0.7	0.3	34.1	15.2	16.9	19.8	17.0	19.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	8.5	23.0	23.1	10.5	13.3	8.6	15.1	33.9	33.7	12.8	35.5	35.8
LnGrp Delay(d),s/veh	55.6	62.3	62.7	95.3	41.8	30.9	70.2	49.6	52.1	50.4	52.4	55.5
LnGrp LOS	E	E	E	F	D	C	E	D	D	D	D	E
Approach Vol, veh/h		1062			948			1554			1608	
Approach Delay, s/veh		61.0			52.1			53.5			53.5	
Approach LOS		E			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	4.0	38.7	17.0	60.3	14.0	38.7	17.0	60.3				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	7.5	33.7	10.5	52.3	7.5	33.7	10.5	52.3				
Max Q Clear Time (g_c+1), s	11.2	31.2	12.5	52.7	11.8	19.2	11.1	49.2				
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	2.9	0.0	1.9				
Intersection Summary												
HCM 2010 Ctrl Delay			54.8									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	3	29	24	3	5	3
Future Vol, veh/h	3	29	24	3	5	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	32	26	3	5	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	29	0	-	0	66 28
Stage 1	-	-	-	-	28 -
Stage 2	-	-	-	-	38 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1584	-	-	-	939 1047
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	984 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1584	-	-	-	937 1047
Mov Cap-2 Maneuver	-	-	-	-	937 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	984 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	975
HCM Lane V/C Ratio	0.002	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 Midday Background
 Kenwood Road Development

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	355	373	142	285	261	328	798	200	283	718	139
Future Volume (veh/h)	122	355	373	142	285	261	328	798	200	283	718	139
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)	0.99		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	133	386	405	154	310	284	357	867	217	308	780	151
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	538	599	239	511	623	354	1062	266	340	1207	234
Arrive On Green	0.07	0.29	0.29	0.06	0.27	0.27	0.09	0.38	0.38	0.12	0.41	0.41
Sat Flow, veh/h	1774	1863	1555	1774	1863	1554	1774	2804	701	1774	2957	572
Grp Volume(v), veh/h	133	386	405	154	310	284	357	547	537	308	467	464
Grp Sat Flow(s),veh/h/ln	1774	1863	1555	1774	1863	1554	1774	1770	1736	1774	1770	1759
Q Serve(g_s), s	5.6	19.6	22.9	6.0	15.3	14.2	10.0	29.3	29.4	10.8	22.4	22.4
Cycle Q Clear(g_c), s	5.6	19.6	22.9	6.0	15.3	14.2	10.0	29.3	29.4	10.8	22.4	22.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		0.33
Lane Grp Cap(c), veh/h	300	538	599	239	511	623	354	670	658	340	722	718
V/C Ratio(X)	0.44	0.72	0.68	0.64	0.61	0.46	1.01	0.82	0.82	0.90	0.65	0.65
Avail Cap(c_a), veh/h	359	670	710	239	582	682	354	821	806	473	1006	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	33.7	27.1	29.6	33.3	23.4	28.0	29.5	29.5	22.2	25.1	25.1
Incr Delay (d2), s/veh	0.4	3.4	2.5	4.6	1.9	0.7	50.3	4.4	4.5	13.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	15.9	15.5	3.1	12.8	10.2	8.9	21.5	21.2	10.7	16.4	16.3
LnGrp Delay(d),s/veh	26.2	37.1	29.6	34.2	35.2	24.1	78.4	33.8	34.0	35.9	25.5	25.5
LnGrp LOS	C	D	C	C	D	C	F	C	C	D	C	C
Approach Vol, veh/h		924			748			1441			1239	
Approach Delay, s/veh		32.3			30.8			44.9			28.1	
Approach LOS		C			C			D			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	17.1	44.0	10.0	34.5	14.0	47.1	11.5	33.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	12.8	31.4	8.0	24.9	12.0	24.4	7.6	17.3				
Green Ext Time (p_c), s	0.3	1.1	0.0	4.6	0.0	0.9	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay			35.0									
HCM 2010 LOS			D									
Notes												

Intersection												
Int Delay, s/veh	24.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	6	2	19	38	0	171	45	1158	32	107	1160	30
Future Vol, veh/h	6	2	19	38	0	171	45	1158	32	107	1160	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	2	21	41	0	186	49	1259	35	116	1261	33

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2238	2902	647	2239	2901	647	1294	0	0	1294	0	0
Stage 1	1510	1510	-	1375	1375	-	-	-	-	-	-	-
Stage 2	728	1392	-	864	1526	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	23	16	414	~23	16	414	531	-	-	531	-	-
Stage 1	126	181	-	153	211	-	-	-	-	-	-	-
Stage 2	381	207	-	315	178	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	10	11	414	~14	11	414	531	-	-	531	-	-
Mov Cap-2 Maneuver	10	11	-	~14	11	-	-	-	-	-	-	-
Stage 1	114	142	-	139	192	-	-	-	-	-	-	-
Stage 2	191	188	-	230	139	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	299.6		277.2		0.5		1.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	531	-	-	33	14	414	531	-	-
HCM Lane V/C Ratio	0.092	-	-	0.889	2.95	0.449	0.219	-	-
HCM Control Delay (s)	12.5	-	-	299.6	1431.7	20.6	13.7	-	-
HCM Lane LOS	B	-	-	F	F	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.1	6	2.3	0.8	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	11	21	8	1074	1378	24
Future Vol, veh/h	11	21	8	1074	1378	24
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	23	9	1167	1498	26






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2113	762	1524	0	-	0
Stage 1	1511	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	44	347	434	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	347	434	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	510	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.3	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	434	-	101	-	-
HCM Lane V/C Ratio	0.02	-	0.344	-	-
HCM Control Delay (s)	13.5	-	58.3	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 Midday Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	16	37	270	6	66	38	1146	254	75	1077	62
Future Volume (veh/h)	45	16	37	270	6	66	38	1146	254	75	1077	62
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	49	17	40	293	7	72	41	1246	276	82	1171	67
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	53	125	358	24	242	246	1360	298	199	1655	95
Arrive On Green	0.05	0.11	0.11	0.11	0.17	0.17	0.05	0.47	0.47	0.06	0.49	0.49
Sat Flow, veh/h	1774	492	1158	1703	142	1458	1703	2888	632	1703	3403	195
Grp Volume(v), veh/h	49	0	57	293	0	79	41	758	764	82	608	630
Grp Sat Flow(s),veh/h/ln	1774	0	1651	1703	0	1599	1703	1770	1751	1703	1770	1828
Q Serve(g_s), s	2.4	0.0	3.2	11.0	0.0	4.3	1.2	39.5	40.9	2.4	26.8	26.9
Cycle Q Clear(g_c), s	2.4	0.0	3.2	11.0	0.0	4.3	1.2	39.5	40.9	2.4	26.8	26.9
Prop In Lane	1.00		0.70	1.00		0.91	1.00		0.36	1.00		0.11
Lane Grp Cap(c), veh/h	306	0	178	358	0	266	246	833	824	199	860	889
V/C Ratio(X)	0.16	0.00	0.32	0.82	0.00	0.30	0.17	0.91	0.93	0.41	0.71	0.71
Avail Cap(c_a), veh/h	356	0	426	358	0	460	290	1070	1059	234	1088	1124
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	41.1	36.9	0.0	36.5	15.4	24.4	24.8	21.7	20.1	20.1
Incr Delay (d2), s/veh	0.5	0.0	2.2	13.1	0.0	0.2	0.1	8.3	10.3	0.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	2.8	7.5	0.0	3.5	1.0	28.6	29.6	2.0	19.2	19.8
LnGrp Delay(d),s/veh	36.7	0.0	43.3	50.0	0.0	36.7	15.5	32.7	35.1	22.2	21.0	21.0
LnGrp LOS	D		D	D		D	B	C	D	C	C	C
Approach Vol, veh/h		106			372			1563			1320	
Approach Delay, s/veh		40.2			47.1			33.4			21.1	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	53.7	15.0	18.1	11.5	55.2	9.2	23.9				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	4.4	42.9	13.0	5.2	3.2	28.9	4.4	6.3				
Green Ext Time (p_c), s	0.0	4.1	0.0	0.3	0.0	3.1	0.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			30.3									
HCM 2010 LOS			C									
Notes												



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	58	110	122	1598	1365	53		
Future Volume (veh/h)	58	110	122	1598	1365	53		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.96	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	63	120	133	1737	1484	58		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	88	167	254	2715	2672	104		
Arrive On Green	0.16	0.15	1.00	1.00	0.77	0.76		
Sat Flow, veh/h	546	1041	335	3632	3566	135		
Grp Volume(v), veh/h	184	0	133	1737	755	787		
Grp Sat Flow(s),veh/h/ln	1596	0	335	1770	1770	1839		
Q Serve(g_s), s	14.3	0.0	24.2	0.0	22.3	22.5		
Cycle Q Clear(g_c), s	14.3	0.0	46.7	0.0	22.3	22.5		
Prop In Lane	0.34	0.65	1.00			0.07		
Lane Grp Cap(c), veh/h	256	0	254	2715	1361	1414		
V/C Ratio(X)	0.72	0.00	0.52	0.64	0.55	0.56		
Avail Cap(c_a), veh/h	403	0	254	2715	1361	1414		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.62	0.62		
Uniform Delay (d), s/veh	52.2	0.0	5.3	0.0	6.0	6.1		
Incr Delay (d2), s/veh	3.7	0.0	0.7	0.1	1.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.8	0.0	3.0	0.1	15.4	15.9		
LnGrp Delay(d),s/veh	55.9	0.0	6.0	0.1	7.0	7.1		
LnGrp LOS	E		A	A	A	A		
Approach Vol, veh/h	184			1870	1542			
Approach Delay, s/veh	55.9			0.5	7.0			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		104.9		25.1		104.9		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		48.7		16.3		24.5		
Green Ext Time (p_c), s		18.2		0.7		9.8		
Intersection Summary								
HCM 2010 Ctrl Delay			6.2					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 Midday Background
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	848	290	440	811	461	370	925	493	352	813	282
Future Volume (veh/h)	360	848	290	440	811	461	370	925	493	352	813	282
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	391	922	315	478	882	501	402	1005	536	383	884	307
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	396	717	244	360	912	573	203	691	357	247	865	300
Arrive On Green	0.19	0.28	0.26	0.17	0.26	0.25	0.08	0.31	0.29	0.04	0.11	0.11
Sat Flow, veh/h	1774	2591	881	1774	3539	1576	1774	2251	1162	1703	2574	891
Grp Volume(v), veh/h	391	629	608	478	882	501	402	783	758	383	607	584
Grp Sat Flow(s),veh/h/ln	1774	1770	1702	1774	1770	1576	1774	1770	1643	1703	1770	1696
Q Serve(g_s), s	24.3	36.0	36.0	22.2	32.0	32.6	10.8	39.9	39.9	14.6	43.7	43.7
Cycle Q Clear(g_c), s	24.3	36.0	36.0	22.2	32.0	32.6	10.8	39.9	39.9	14.6	43.7	43.7
Prop In Lane	1.00		0.52	1.00		1.00	1.00		0.71	1.00		0.53
Lane Grp Cap(c), veh/h	396	490	471	360	912	573	203	543	504	247	595	570
V/C Ratio(X)	0.99	1.28	1.29	1.33	0.97	0.87	1.98	1.44	1.50	1.55	1.02	1.02
Avail Cap(c_a), veh/h	396	490	471	360	912	573	203	543	504	247	595	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	39.9	47.0	47.6	40.4	47.7	38.7	36.4	45.0	45.7	44.2	57.8	57.9
Incr Delay (d2), s/veh	42.0	142.1	146.0	166.0	22.1	14.1	457.8	209.2	236.3	263.8	37.7	39.7
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(95%),veh/ln	25.7	66.4	64.8	53.1	25.5	26.2	59.6	91.8	92.1	48.5	49.8	48.3
LnGrp Delay(d),s/veh	81.9	189.1	193.6	206.4	69.8	52.7	494.2	254.2	282.0	308.0	95.5	97.6
LnGrp LOS	F	F	F	F	E	D	F	F	F	F	F	F
Approach Vol, veh/h		1628			1861			1943			1574	
Approach Delay, s/veh		165.0			100.3			314.7			148.0	
Approach LOS		F			F			F			F	
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	36.0	40.2	15.4	48.4	28.9	37.3	19.3	44.5				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	39.5	33.7	8.9	41.9	22.4	30.8	12.8	38.0				
Max Q Clear Time (g_c+T), s	24.2	38.0	12.8	45.7	26.3	34.6	16.6	41.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			185.5									
HCM 2010 LOS			F									

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	18	30	8	8	2
Future Vol, veh/h	5	18	30	8	8	2
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, %	2	2	2	2	2	2
Mvmt Flow	5	20	33	9	9	2

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	42	0	-	0	68 38
Stage 1	-	-	-	-	38 -
Stage 2	-	-	-	-	30 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1567	-	-	-	937 1034
Stage 1	-	-	-	-	984 -
Stage 2	-	-	-	-	993 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1567	-	-	-	934 1034
Mov Cap-2 Maneuver	-	-	-	-	934 -
Stage 1	-	-	-	-	981 -
Stage 2	-	-	-	-	993 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1567	-	-	-	952
HCM Lane V/C Ratio	0.003	-	-	-	0.011
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 PM Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	434	314	138	373	414	222	989	114	339	1038	106
Future Volume (veh/h)	222	434	314	138	373	414	222	989	114	339	1038	106
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	241	472	341	150	405	450	241	1075	124	368	1128	115
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	558	594	186	483	671	265	1127	130	371	1432	146
Arrive On Green	0.09	0.30	0.30	0.05	0.26	0.26	0.08	0.35	0.35	0.17	0.44	0.44
Sat Flow, veh/h	1774	1863	1556	1774	1863	1552	1774	3197	368	1774	3243	330
Grp Volume(v), veh/h	241	472	341	150	405	450	241	595	604	368	615	628
Grp Sat Flow(s),veh/h/ln	1774	1863	1556	1774	1863	1552	1774	1770	1796	1774	1770	1803
Q Serve(g_s), s	11.0	29.4	21.5	6.0	25.4	28.8	10.0	40.5	40.6	20.8	36.8	36.9
Cycle Q Clear(g_c), s	11.0	29.4	21.5	6.0	25.4	28.8	10.0	40.5	40.6	20.8	36.8	36.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.18
Lane Grp Cap(c), veh/h	250	558	594	186	483	671	265	624	633	371	781	796
V/C Ratio(X)	0.96	0.85	0.57	0.81	0.84	0.67	0.91	0.95	0.95	0.99	0.79	0.79
Avail Cap(c_a), veh/h	250	573	607	186	497	683	265	701	712	371	859	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	40.6	30.4	40.6	43.4	28.4	30.5	39.0	39.1	38.4	29.5	29.6
Incr Delay (d2), s/veh	46.1	11.5	1.6	21.3	12.3	2.8	31.5	21.1	21.2	44.6	3.9	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	23.6	14.6	5.9	21.0	18.7	9.5	31.4	31.9	23.8	25.9	26.4
LnGrp Delay(d),s/veh	81.5	52.1	32.0	61.9	55.7	31.2	62.0	60.1	60.3	83.0	33.4	33.5
LnGrp LOS	F	D	C	E	E	C	E	E	E	F	C	C
Approach Vol, veh/h		1054			1005			1440			1611	
Approach Delay, s/veh		52.3			45.7			60.5			44.8	
Approach LOS		D			D			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	25.0	47.6	10.0	41.0	14.0	58.6	15.0	36.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	22.8	42.6	8.0	31.4	12.0	38.9	13.0	30.8				
Green Ext Time (p_c), s	0.0	1.0	0.0	3.1	0.0	1.3	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			50.9									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 100.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	2	34	59	0	160	18	1302	50	109	1461	6
Future Vol, veh/h	8	2	34	59	0	160	18	1302	50	109	1461	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	37	64	0	174	20	1415	54	118	1588	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2576	3337	798	2513	3313	735	1595	0	0	1469	0	0
Stage 1	1828	1828	-	1482	1482	-	-	-	-	-	-	-
Stage 2	748	1509	-	1031	1831	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	13	8	329	~ 14	8	362	407	-	-	455	-	-
Stage 1	79	126	-	131	187	-	-	-	-	-	-	-
Stage 2	371	182	-	249	126	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 5	6	329	~ 7	6	362	407	-	-	455	-	-
Mov Cap-2 Maneuver	~ 5	6	-	~ 7	6	-	-	-	-	-	-	-
Stage 1	75	93	-	125	178	-	-	-	-	-	-	-
Stage 2	183	173	-	160	93	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	\$ 912.2	\$ 1283.4	0.2	1.1
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	407	-	-	22	7	362	455	-	-
HCM Lane V/C Ratio	0.048	-	-	2.174	9.161	0.48	0.26	-	-
HCM Control Delay (s)	14.3	-	-	\$ 912.2	\$ 4699.2	23.8	15.7	-	-
HCM Lane LOS	B	-	-	F	F	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-	6.1	9.6	2.5	1	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	11	22	26	1355	1509	40
Future Vol, veh/h	11	22	26	1355	1509	40
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	24	28	1473	1640	43





















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2455	842	1683	0	-	0
Stage 1	1662	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	25	308	376	-	-	-
Stage 1	140	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	23	308	376	-	-	-
Mov Cap-2 Maneuver	23	-	-	-	-	-
Stage 1	130	-	-	-	-	-
Stage 2	406	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	130.5	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	376	-	60	-	-
HCM Lane V/C Ratio	0.075	-	0.598	-	-
HCM Control Delay (s)	15.4	-	130.5	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	2.5	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 PM Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	5	48	261	2	54	34	1291	232	91	1363	53
Future Volume (veh/h)	64	5	48	261	2	54	34	1291	232	91	1363	53
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)	0.99		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	70	5	52	284	2	59	37	1403	252	99	1482	58
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	14	148	330	8	226	194	1510	267	189	1808	71
Arrive On Green	0.06	0.10	0.10	0.10	0.15	0.15	0.04	0.50	0.50	0.06	0.52	0.52
Sat Flow, veh/h	1774	140	1456	1703	52	1533	1703	3006	532	1703	3473	136
Grp Volume(v), veh/h	70	0	57	284	0	61	37	817	838	99	754	786
Grp Sat Flow(s),veh/h/ln	1774	0	1596	1703	0	1585	1703	1770	1768	1703	1770	1839
Q Serve(g_s), s	3.7	0.0	3.6	11.0	0.0	3.6	1.1	45.6	47.9	2.9	38.0	38.3
Cycle Q Clear(g_c), s	3.7	0.0	3.6	11.0	0.0	3.6	1.1	45.6	47.9	2.9	38.0	38.3
Prop In Lane	1.00		0.91	1.00		0.97	1.00		0.30	1.00		0.07
Lane Grp Cap(c), veh/h	304	0	162	330	0	233	194	889	888	189	921	957
V/C Ratio(X)	0.23	0.00	0.35	0.86	0.00	0.26	0.19	0.92	0.94	0.52	0.82	0.82
Avail Cap(c_a), veh/h	335	0	384	330	0	426	236	999	998	215	1015	1055
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	44.7	41.0	0.0	40.4	18.2	24.6	25.1	23.8	21.4	21.4
Incr Delay (d2), s/veh	0.8	0.0	2.8	19.1	0.0	0.2	0.2	11.7	14.9	0.8	4.4	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.0	3.0	8.5	0.0	2.9	0.9	33.3	35.5	2.7	26.8	27.8
LnGrp Delay(d),s/veh	40.2	0.0	47.5	60.0	0.0	40.6	18.4	36.3	40.1	24.6	25.8	25.8
LnGrp LOS	D		D	E		D	B	D	D	C	C	C
Approach Vol, veh/h		127			345			1692			1639	
Approach Delay, s/veh		43.5			56.6			37.8			25.7	
Approach LOS		D			E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	60.4	15.0	18.1	11.4	62.3	10.1	23.0				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	4.9	49.9	13.0	5.6	3.1	40.3	5.7	5.6				
Green Ext Time (p_c), s	0.0	3.8	0.0	0.3	0.0	4.2	0.1	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			34.5									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 PM Background
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	58	82	146	1557	1600	74		
Future Volume (veh/h)	58	82	146	1557	1600	74		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	63	89	159	1692	1739	80		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	97	137	198	2764	2699	123		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	662	936	256	3632	3540	158		
Grp Volume(v), veh/h	153	0	159	1692	888	931		
Grp Sat Flow(s),veh/h/ln	1609	0	256	1770	1770	1835		
Q Serve(g_s), s	11.7	0.0	72.4	0.0	28.4	29.1		
Cycle Q Clear(g_c), s	11.7	0.0	101.5	0.0	28.4	29.1		
Prop In Lane	0.41	0.58	1.00			0.09		
Lane Grp Cap(c), veh/h	236	0	198	2764	1386	1437		
V/C Ratio(X)	0.65	0.00	0.80	0.61	0.64	0.65		
Avail Cap(c_a), veh/h	406	0	198	2764	1386	1437		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.45	0.45		
Uniform Delay (d), s/veh	52.7	0.0	18.3	0.0	6.1	6.2		
Incr Delay (d2), s/veh	3.0	0.0	3.2	0.1	1.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.2	0.0	7.1	0.1	18.1	19.2		
LnGrp Delay(d),s/veh	55.6	0.0	21.5	0.1	7.2	7.3		
LnGrp LOS	E		C	A	A	A		
Approach Vol, veh/h	153			1851	1819			
Approach Delay, s/veh	55.6			1.9	7.2			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		106.7		23.3		106.7		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		103.5		13.7		31.1		
Green Ext Time (p_c), s		0.0		0.6		14.0		
Intersection Summary								
HCM 2010 Ctrl Delay			6.6					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 PM Background
 Kenwood Road Development



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	472	1046	294	467	795	323	250	946	411	298	1149	251
Future Volume (veh/h)	472	1046	294	467	795	323	250	946	411	298	1149	251
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	513	1137	320	508	864	351	272	1028	447	324	1249	273
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	757	211	359	912	573	203	740	315	247	972	210
Arrive On Green	0.19	0.28	0.26	0.17	0.26	0.25	0.08	0.31	0.29	0.08	0.23	0.22
Sat Flow, veh/h	1774	2734	760	1774	3539	1576	1774	2411	1027	1703	2891	624
Grp Volume(v), veh/h	513	731	726	508	864	351	272	749	726	324	758	764
Grp Sat Flow(s),veh/h/ln	1774	1770	1724	1774	1770	1576	1774	1770	1669	1703	1770	1746
Q Serve(g_s), s	24.7	36.0	36.0	22.2	31.2	23.7	10.8	39.9	39.9	14.6	43.7	43.7
Cycle Q Clear(g_c), s	24.7	36.0	36.0	22.2	31.2	23.7	10.8	39.9	39.9	14.6	43.7	43.7
Prop In Lane	1.00		0.44	1.00		1.00	1.00		0.62	1.00		0.36
Lane Grp Cap(c), veh/h	399	490	478	359	912	573	203	543	512	247	595	587
V/C Ratio(X)	1.28	1.49	1.52	1.41	0.95	0.61	1.34	1.38	1.42	1.31	1.28	1.30
Avail Cap(c_a), veh/h	399	490	478	359	912	573	203	543	512	247	595	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.66	0.66
Uniform Delay (d), s/veh	39.6	47.0	47.5	40.5	47.4	33.9	36.4	45.0	45.6	41.8	50.4	50.6
Incr Delay (d2), s/veh	146.0	232.0	244.5	201.7	18.4	1.9	182.2	181.7	199.3	159.0	132.4	143.7
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(95%),veh/ln	54.9	88.5	89.2	59.4	24.4	16.0	31.6	84.4	84.1	35.6	77.8	80.1
LnGrp Delay(d),s/veh	185.6	279.0	292.0	242.2	65.7	35.9	218.6	226.7	244.9	200.7	182.8	194.3
LnGrp LOS	F	F	F	F	E	D	F	F	F	F	F	F
Approach Vol, veh/h		1970			1723			1747			1846	
Approach Delay, s/veh		259.5			111.7			233.0			190.7	
Approach LOS		F			F			F			F	
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	36.0	40.2	15.4	48.4	28.9	37.3	19.3	44.5				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	19.5	33.7	8.9	41.9	22.4	30.8	12.8	38.0				
Max Q Clear Time (g_c+T), s	24.2	38.0	12.8	45.7	26.7	33.2	16.6	41.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			200.8									
HCM 2010 LOS			F									

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	16	59	0	18	0
Future Vol, veh/h	0	16	59	0	18	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	64	0	20	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	64	0	-	0	81	64
Stage 1	-	-	-	-	64	-
Stage 2	-	-	-	-	17	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1538	-	-	-	921	1000
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	1006	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1538	-	-	-	921	1000
Mov Cap-2 Maneuver	-	-	-	-	921	-
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	1006	-
Approach	EB	WB	SB			
HCM Control Delay, s	0	0	9			
HCM LOS						A
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1538	-	-	-	921	
HCM Lane V/C Ratio	-	-	-	-	0.021	
HCM Control Delay (s)	0	-	-	-	9	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 2010 Signalized Intersection Summary
1: Kenwood Road & Galbraith Road

2040 SAT Background
Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	200	170	98	170	208	171	702	136	221	614	75
Future Volume (veh/h)	72	200	170	98	170	208	171	702	136	221	614	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	78	217	185	107	185	226	186	763	148	240	667	82
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	419	472	310	431	512	441	1298	252	400	1453	178
Arrive On Green	0.06	0.22	0.22	0.06	0.23	0.23	0.08	0.44	0.44	0.10	0.46	0.46
Sat Flow, veh/h	1774	1863	1547	1774	1863	1548	1774	2956	573	1774	3173	390
Grp Volume(v), veh/h	78	217	185	107	185	226	186	457	454	240	372	377
Grp Sat Flow(s),veh/h/ln	1774	1863	1547	1774	1863	1548	1774	1770	1759	1774	1770	1792
Q Serve(g_s), s	3.0	9.3	8.6	4.2	7.7	10.5	5.1	17.8	17.8	6.6	13.1	13.2
Cycle Q Clear(g_c), s	3.0	9.3	8.6	4.2	7.7	10.5	5.1	17.8	17.8	6.6	13.1	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.22
Lane Grp Cap(c), veh/h	320	419	472	310	431	512	441	777	773	400	810	821
V/C Ratio(X)	0.24	0.52	0.39	0.35	0.43	0.44	0.42	0.59	0.59	0.60	0.46	0.46
Avail Cap(c_a), veh/h	434	777	770	315	675	715	496	952	946	637	1166	1181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	31.0	25.1	25.1	29.9	24.0	12.8	19.3	19.3	14.2	16.9	17.0
Incr Delay (d2), s/veh	0.1	1.4	0.8	0.2	1.0	0.9	0.2	0.3	0.3	0.5	0.2	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(95%),veh/ln	2.6	8.6	6.8	3.7	7.3	8.1	4.5	13.5	13.5	5.7	10.6	10.7
LnGrp Delay(d),s/veh	25.0	32.4	25.9	25.4	30.8	24.9	13.1	19.6	19.6	14.7	17.1	17.1
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		480			518			1097			989	
Approach Delay, s/veh		28.7			27.1			18.5			16.5	
Approach LOS		C			C			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	12.9	44.0	9.8	24.5	11.2	45.7	9.2	25.1				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	8.6	19.8	6.2	11.3	7.1	15.2	5.0	12.5				
Green Ext Time (p_c), s	0.3	0.9	0.0	2.8	0.1	0.7	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			20.9									
HCM 2010 LOS			C									
Notes												

Intersection												
Int Delay, s/veh	30.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	0	22	104	2	238	18	763	62	110	770	16
Future Vol, veh/h	8	0	22	104	2	238	18	763	62	110	770	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	24	113	2	259	20	829	67	120	837	17

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1542	2022	427	1562	1997	448	854	0	0	896	0	0
Stage 1	1086	1086	-	903	903	-	-	-	-	-	-	-
Stage 2	456	936	-	659	1094	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	78	57	576	~ 76	59	558	781	-	-	753	-	-
Stage 1	231	291	-	299	354	-	-	-	-	-	-	-
Stage 2	554	342	-	419	288	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	35	47	576	~ 63	48	558	781	-	-	753	-	-
Mov Cap-2 Maneuver	35	47	-	~ 63	48	-	-	-	-	-	-	-
Stage 1	225	245	-	291	345	-	-	-	-	-	-	-
Stage 2	288	333	-	338	242	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	49.8	176.5	0.2	1.3
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	781	-	-	112	63	558	753	-	-
HCM Lane V/C Ratio	0.025	-	-	0.291	1.829	0.464	0.159	-	-
HCM Control Delay (s)	9.7	-	-	49.8	534.7	16.9	10.7	-	-
HCM Lane LOS	A	-	-	E	F	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	10.6	2.4	0.6	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑↑	↑↑	
Traffic Vol, veh/h	3	16	22	885	827	11
Future Vol, veh/h	3	16	22	885	827	11
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	17	24	962	899	12























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1434	456	911	0	-	0
Stage 1	905	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	125	551	743	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	551	743	-	-	-
Mov Cap-2 Maneuver	121	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	743	-	353	-	-
HCM Lane V/C Ratio	0.032	-	0.059	-	-
HCM Control Delay (s)	10	-	15.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 2010 Signalized Intersection Summary
4: Kenwood Road & Kenwood Place/Towne Center

2040 SAT Background
Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	8	46	384	8	88	26	690	323	104	699	72
Future Volume (veh/h)	48	8	46	384	8	88	26	690	323	104	699	72
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	52	9	50	417	9	96	28	750	351	113	760	78
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	28	158	383	24	260	330	1007	471	277	1498	154
Arrive On Green	0.06	0.12	0.12	0.12	0.18	0.18	0.04	0.43	0.43	0.07	0.46	0.46
Sat Flow, veh/h	1774	246	1367	1703	137	1462	1703	2343	1095	1703	3241	332
Grp Volume(v), veh/h	52	0	59	417	0	105	28	566	535	113	415	423
Grp Sat Flow(s),veh/h/ln	1774	0	1613	1703	0	1599	1703	1770	1669	1703	1770	1804
Q Serve(g_s), s	2.3	0.0	3.1	11.0	0.0	5.4	0.8	25.0	25.0	3.3	15.3	15.3
Cycle Q Clear(g_c), s	2.3	0.0	3.1	11.0	0.0	5.4	0.8	25.0	25.0	3.3	15.3	15.3
Prop In Lane	1.00		0.85	1.00		0.91	1.00		0.66	1.00		0.18
Lane Grp Cap(c), veh/h	323	0	186	383	0	285	330	761	717	277	818	834
V/C Ratio(X)	0.16	0.00	0.32	1.09	0.00	0.37	0.08	0.74	0.75	0.41	0.51	0.51
Avail Cap(c_a), veh/h	377	0	445	383	0	493	397	1147	1081	308	1166	1188
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	0.0	37.8	35.9	0.0	33.7	14.2	22.2	22.3	16.8	17.6	17.6
Incr Delay (d2), s/veh	0.5	0.0	2.1	71.5	0.0	0.3	0.0	0.6	0.6	0.4	0.2	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(95%),veh/ln	2.1	0.0	2.7	22.0	0.0	4.3	0.7	18.0	17.1	2.8	12.0	12.2
LnGrp Delay(d),s/veh	33.4	0.0	39.9	107.4	0.0	33.9	14.3	22.8	22.8	17.1	17.8	17.8
LnGrp LOS	C		D	F		C	B	C	C	B	B	B
Approach Vol, veh/h		111			522			1129			951	
Approach Delay, s/veh		36.9			92.7			22.6			17.7	
Approach LOS		D			F			C			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	13.3	46.7	15.0	18.0	10.3	49.7	9.2	23.9				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	5.3	27.0	13.0	5.1	2.8	17.3	4.3	7.4				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	1.9	0.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			34.9									
HCM 2010 LOS			C									
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 SAT Background
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	67	90	85	1403	1010	38		
Future Volume (veh/h)	67	90	85	1403	1010	38		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	73	98	92	1525	1098	41		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	106	142	385	2736	2698	101		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	685	920	492	3632	3572	130		
Grp Volume(v), veh/h	172	0	92	1525	558	581		
Grp Sat Flow(s),veh/h/ln	1614	0	492	1770	1770	1840		
Q Serve(g_s), s	13.1	0.0	4.3	0.0	13.5	13.5		
Cycle Q Clear(g_c), s	13.1	0.0	17.8	0.0	13.5	13.5		
Prop In Lane	0.42	0.57	1.00			0.07		
Lane Grp Cap(c), veh/h	250	0	385	2736	1372	1426		
V/C Ratio(X)	0.69	0.00	0.24	0.56	0.41	0.41		
Avail Cap(c_a), veh/h	407	0	385	2736	1372	1426		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.55	0.55		
Uniform Delay (d), s/veh	52.3	0.0	1.2	0.0	4.8	4.8		
Incr Delay (d2), s/veh	3.4	0.0	0.1	0.1	0.5	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.1	0.0	1.0	0.1	9.9	10.2		
LnGrp Delay(d),s/veh	55.7	0.0	1.3	0.1	5.3	5.3		
LnGrp LOS	E		A	A	A	A		
Approach Vol, veh/h	172			1617	1139			
Approach Delay, s/veh	55.7			0.1	5.3			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		105.7		24.3		105.7		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		19.8		15.1		15.5		
Green Ext Time (p_c), s		14.1		0.6		5.8		
Intersection Summary								
HCM 2010 Ctrl Delay			5.4					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	306	667	190	334	571	373	259	826	426	317	627	186
Future Volume (veh/h)	306	667	190	334	571	373	259	826	426	317	627	186
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	333	725	207	363	621	405	282	898	463	345	682	202
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	418	752	215	368	999	612	259	695	353	247	903	267
Arrive On Green	0.17	0.28	0.26	0.17	0.28	0.28	0.08	0.31	0.29	0.04	0.11	0.11
Sat Flow, veh/h	1774	2716	775	1774	3539	1576	1774	2265	1151	1703	2687	796
Grp Volume(v), veh/h	333	472	460	363	621	405	282	699	662	345	449	435
Grp Sat Flow(s),veh/h/ln	1774	1770	1722	1774	1770	1576	1774	1770	1646	1703	1770	1714
Q Serve(g_s), s	16.8	34.2	34.3	21.7	19.9	27.5	10.8	39.9	39.9	14.6	32.0	32.0
Cycle Q Clear(g_c), s	16.8	34.2	34.3	21.7	19.9	27.5	10.8	39.9	39.9	14.6	32.0	32.0
Prop In Lane	1.00		0.45	1.00		1.00	1.00		0.70	1.00		0.46
Lane Grp Cap(c), veh/h	418	490	477	368	999	612	259	543	505	247	595	576
V/C Ratio(X)	0.80	0.96	0.96	0.99	0.62	0.66	1.09	1.29	1.31	1.40	0.75	0.76
Avail Cap(c_a), veh/h	462	490	477	368	999	612	259	543	505	247	595	576
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	28.2	46.4	46.9	38.9	40.6	32.8	38.0	45.0	45.7	44.2	52.6	52.7
Incr Delay (d2), s/veh	8.7	31.5	32.0	43.0	1.2	2.7	81.2	142.5	153.6	200.1	7.8	8.1
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(95%),veh/ln	4.0	28.5	27.9	24.2	15.1	18.2	17.8	73.7	71.4	40.7	23.4	22.9
LnGrp Delay(d),s/veh	36.8	77.9	78.9	81.9	41.8	35.5	119.2	187.5	199.3	244.4	60.4	60.8
LnGrp LOS	D	E	E	F	D	D	F	F	F	F	E	E
Approach Vol, veh/h		1265			1389			1643			1229	
Approach Delay, s/veh		67.4			50.4			180.6			112.2	
Approach LOS		E			D			F			F	
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	36.0	40.2	15.4	48.4	25.7	40.5	19.3	44.5				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	39.5	33.7	8.9	41.9	22.4	30.8	12.8	38.0				
Max Q Clear Time (g_c+Rc), s	23.5	36.3	12.8	34.0	18.8	29.5	16.6	41.9				
Green Ext Time (p_c), s	0.0	0.0	0.0	2.5	0.5	0.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay					106.8							
HCM 2010 LOS					F							

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	13	27	0	0	0
Future Vol, veh/h	2	13	27	0	0	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	29	0	0	0

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	29	0	-	0	47 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	18 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1584	-	-	-	963 1046
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	1005 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1584	-	-	-	962 1046
Mov Cap-2 Maneuver	-	-	-	-	962 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1005 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 BF Mid Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	560	370	181	432	210	392	976	253	818	1659	312
Future Volume (veh/h)	160	560	370	181	432	210	392	976	253	818	1659	312
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	174	609	402	197	470	228	426	1061	275	889	1803	339
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	544	577	137	473	650	192	1050	270	342	1380	251
Arrive On Green	0.08	0.29	0.29	0.05	0.25	0.25	0.08	0.38	0.38	0.16	0.46	0.46
Sat Flow, veh/h	1774	1863	1556	1774	1863	1552	1774	2785	717	1774	2990	545
Grp Volume(v), veh/h	174	609	402	197	470	228	426	672	664	889	1044	1098
Grp Sat Flow(s),veh/h/ln	1774	1863	1556	1774	1863	1552	1774	1770	1733	1774	1770	1765
Q Serve(g_s), s	9.1	38.0	28.6	6.0	32.7	13.1	10.0	49.0	49.0	21.0	60.0	60.0
Cycle Q Clear(g_c), s	9.1	38.0	28.6	6.0	32.7	13.1	10.0	49.0	49.0	21.0	60.0	60.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.41	1.00		0.31
Lane Grp Cap(c), veh/h	207	544	577	137	473	650	192	667	653	342	817	814
V/C Ratio(X)	0.84	1.12	0.70	1.44	0.99	0.35	2.22	1.01	1.02	2.60	1.28	1.35
Avail Cap(c_a), veh/h	207	544	577	137	473	650	192	667	653	342	817	814
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.8	46.0	34.9	43.5	48.4	26.0	38.1	40.5	40.5	43.4	35.0	35.0
Incr Delay (d2), s/veh	24.2	75.4	4.1	232.3	39.8	0.5	565.8	36.6	39.5	728.3	134.4	165.1
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(95%),veh/ln	9.8	55.6	18.8	15.9	29.8	9.6	66.6	55.2	55.0	146.6	107.6	119.8
LnGrp Delay(d),s/veh	59.0	121.4	38.9	275.8	88.2	26.5	603.8	77.1	80.0	771.7	169.4	200.1
LnGrp LOS	E	F	D	F	F	C	F	F	F	F	F	F
Approach Vol, veh/h		1185			895			1762			3031	
Approach Delay, s/veh		84.3			113.8			205.6			357.2	
Approach LOS		F			F			F			F	
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	25.0	53.0	10.0	42.0	14.0	64.0	15.0	37.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	23.0	51.0	8.0	40.0	12.0	62.0	11.1	34.7				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			239.6									
HCM 2010 LOS			F									
Notes												

Intersection												
Int Delay, s/veh	110.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	2	19	6	19	19	130	1589	50	43	2277	125
Future Vol, veh/h	8	2	19	6	19	19	130	1589	50	43	2277	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	21	7	21	21	141	1727	54	47	2475	136

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	3793	4700	1306	3369	4741	891	2611	0	0	1781	0	0
Stage 1	2637	2637	-	2036	2036	-	-	-	-	-	-	-
Stage 2	1156	2063	-	1333	2705	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 1	~ 1	150	~ 3	~ 1	285	162	-	-	345	-	-
Stage 1	24	48	-	58	99	-	-	-	-	-	-	-
Stage 2	209	96	-	162	44	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	0	0	150	~ 1	0	285	162	-	-	345	-	-
Mov Cap-2 Maneuver	0	0	-	~ 1	0	-	-	-	-	-	-	-
Stage 1	~ 3	41	-	8	~ 13	-	-	-	-	-	-	-
Stage 2	-	12	-	114	38	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.3	\$ 10443	7.1	0.3
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	162	-	-	150	1	285	345	-	-
HCM Lane V/C Ratio	0.872	-	-	0.21	27.174	0.072	0.135	-	-
HCM Control Delay (s)	96.2	-	-	35.3	18365.6	18.6	17.1	-	-
HCM Lane LOS	F	-	-	E	F	C	C	-	-
HCM 95th %tile Q(veh)	6.1	-	-	0.8	5.2	0.2	0.5	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	12.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	↑↑	↑↑	
Traffic Vol, veh/h	10	27	19	1776	2264	10
Future Vol, veh/h	10	27	19	1776	2264	10
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	29	21	1930	2461	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3474	1236	2472	0	-	0
Stage 1	2467	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 5	168	184	-	-	-
Stage 1	50	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 4	168	184	-	-	-
Mov Cap-2 Maneuver	~ 4	-	-	-	-	-
Stage 1	44	-	-	-	-	-
Stage 2	314	-	-	-	-	-






















Approach	EB	NB	SB
HCM Control Delay, \$	1397.6	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	184	-	14	-	-
HCM Lane V/C Ratio	0.112	-	2.873	-	-
HCM Control Delay (s)	27	\$	1397.6	-	-
HCM Lane LOS	D	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	5.9	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 BF Mid Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	16	69	538	72	187	56	1197	707	245	1426	173
Future Volume (veh/h)	74	16	69	538	72	187	56	1197	707	245	1426	173
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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	80	17	75	585	78	203	61	1301	768	266	1550	188
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	164	55	241	312	85	220	154	1067	573	217	1675	201
Arrive On Green	0.05	0.18	0.18	0.05	0.18	0.18	0.05	0.48	0.48	0.09	0.53	0.53
Sat Flow, veh/h	1774	300	1324	1703	457	1191	1703	2226	1195	1703	3183	381
Grp Volume(v), veh/h	80	0	92	585	0	281	61	1008	1061	266	853	885
Grp Sat Flow(s),veh/h/ln	1774	0	1624	1703	0	1648	1703	1770	1651	1703	1770	1795
Q Serve(g_s), s	4.7	0.0	6.4	7.0	0.0	21.8	2.3	62.3	62.3	12.3	57.3	59.9
Cycle Q Clear(g_c), s	4.7	0.0	6.4	7.0	0.0	21.8	2.3	62.3	62.3	12.3	57.3	59.9
Prop In Lane	1.00		0.82	1.00		0.72	1.00		0.72	1.00		0.21
Lane Grp Cap(c), veh/h	164	0	295	312	0	305	154	849	792	217	931	945
V/C Ratio(X)	0.49	0.00	0.31	1.87	0.00	0.92	0.39	1.19	1.34	1.23	0.92	0.94
Avail Cap(c_a), veh/h	279	0	421	312	0	326	182	849	792	217	931	945
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.0	0.0	46.1	52.4	0.0	52.0	28.8	33.8	33.8	43.4	28.1	28.8
Incr Delay (d2), s/veh	2.2	0.0	1.3	405.3	0.0	28.8	0.6	96.3	161.6	136.2	13.2	16.0
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(95%),veh/ln	4.3	0.0	5.3	77.5	0.0	18.1	1.9	95.6	115.0	28.7	40.3	43.2
LnGrp Delay(d),s/veh	44.2	0.0	47.4	457.7	0.0	80.9	29.4	130.1	195.4	179.6	41.3	44.7
LnGrp LOS	D		D	F		F	C	F	F	F	D	D
Approach Vol, veh/h		172			866			2130			2004	
Approach Delay, s/veh		45.9			335.4			159.7			61.2	
Approach LOS		D			F			F			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	19.0	69.0	11.0	30.9	12.9	75.1	10.6	31.3				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 12	* 62	7.0	33.7	* 8.3	* 66	15.0	25.7				
Max Q Clear Time (g_c+I1), s	14.3	64.3	9.0	8.4	4.3	61.9	6.7	23.8				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.7	0.0	2.3	0.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay	147.2											
HCM 2010 LOS	F											
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 BF Mid Background
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	130	142	195	2363	1702	134		
Future Volume (veh/h)	130	142	195	2363	1702	134		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.97	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	141	154	212	2568	1850	146		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	158	172	134	2586	2438	190		
Arrive On Green	0.20	0.19	0.97	0.97	0.73	0.72		
Sat Flow, veh/h	780	852	215	3632	3420	259		
Grp Volume(v), veh/h	296	0	212	2568	972	1024		
Grp Sat Flow(s),veh/h/ln	1638	0	215	1770	1770	1817		
Q Serve(g_s), s	24.7	0.0	53.9	82.4	45.6	48.4		
Cycle Q Clear(g_c), s	24.7	0.0	102.3	82.4	45.6	48.4		
Prop In Lane	0.48	0.52	1.00			0.14		
Lane Grp Cap(c), veh/h	331	0	134	2586	1297	1331		
V/C Ratio(X)	0.89	0.00	1.58	0.99	0.75	0.77		
Avail Cap(c_a), veh/h	360	0	134	2586	1297	1331		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.09	0.09		
Uniform Delay (d), s/veh	54.7	0.0	36.5	1.7	11.1	11.5		
Incr Delay (d2), s/veh	22.4	0.0	263.8	4.0	0.4	0.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.2	0.0	27.0	31.2	24.6	26.5		
LnGrp Delay(d),s/veh	77.1	0.0	300.4	5.7	11.5	11.9		
LnGrp LOS	E		F	A	B	B		
Approach Vol, veh/h	296			2780	1996			
Approach Delay, s/veh	77.1			28.2	11.7			
Approach LOS	E			C	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		107.5		32.5		107.5		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		99.0		29.5		99.0		
Max Q Clear Time (g_c+I1), s		104.3		26.7		50.4		
Green Ext Time (p_c), s		0.0		0.4		17.1		
Intersection Summary								
HCM 2010 Ctrl Delay			24.5					
HCM 2010 LOS			C					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 BF Mid Background
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	506	883	352	429	656	776	352	1242	474	418	1002	386
Future Volume (veh/h)	506	883	352	429	656	776	352	1242	474	418	1002	386
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	550	960	383	466	713	843	383	1350	515	454	1089	420
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	338	633	250	321	915	627	310	825	298	298	811	306
Arrive On Green	0.15	0.26	0.24	0.15	0.26	0.25	0.15	0.32	0.31	0.05	0.11	0.10
Sat Flow, veh/h	1774	2476	978	1774	3539	1576	1774	2543	917	1703	2507	947
Grp Volume(v), veh/h	550	683	660	466	713	843	383	916	949	454	762	747
Grp Sat Flow(s),veh/h/ln	1774	1770	1684	1774	1770	1576	1774	1770	1690	1703	1770	1685
Q Serve(g_s), s	20.8	35.8	35.8	21.2	26.2	35.3	20.4	45.4	45.4	20.3	45.3	45.3
Cycle Q Clear(g_c), s	20.8	35.8	35.8	21.2	26.2	35.3	20.4	45.4	45.4	20.3	45.3	45.3
Prop In Lane	1.00		0.58	1.00		1.00	1.00		0.54	1.00		0.56
Lane Grp Cap(c), veh/h	338	453	431	321	915	627	310	574	548	298	573	545
V/C Ratio(X)	1.63	1.51	1.53	1.45	0.78	1.34	1.23	1.60	1.73	1.52	1.33	1.37
Avail Cap(c_a), veh/h	338	453	431	321	915	627	310	574	548	298	573	545
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.45	0.45	0.45
Uniform Delay (d), s/veh	38.7	52.1	52.8	44.1	48.2	42.2	45.7	47.3	47.8	52.1	62.5	62.7
Incr Delay (d2), s/veh	296.2	240.8	250.6	219.5	4.3	165.6	130.4	276.5	336.6	242.3	154.3	172.0
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(95%),veh/ln	173.5	85.9	83.9	57.6	19.3	95.3	41.8	119.2	130.4	57.0	84.1	84.9
LnGrp Delay(d),s/veh	334.9	292.9	303.4	263.6	52.5	207.8	176.1	323.8	384.4	294.4	216.8	234.7
LnGrp LOS	F	F	F	F	D	F	F	F	F	F	F	F
Approach Vol, veh/h		1893			2022			2248			1963	
Approach Delay, s/veh		308.8			165.9			324.2			241.5	
Approach LOS		F			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	40.0	25.0	50.0	25.0	40.0	25.0	50.0				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	33.5	33.5	18.5	43.5	18.5	33.5	18.5	43.5				
Max Q Clear Time (g_c+Rc), s	37.8	37.8	22.4	47.3	22.8	37.3	22.3	47.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay				261.3								
HCM 2010 LOS				F								

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	6	46	37	6	8	6
Future Vol, veh/h	6	46	37	6	8	6
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, %	2	2	2	2	2	2
Mvmt Flow	7	50	40	7	9	7

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	47	0	-	0	108 44
Stage 1	-	-	-	-	44 -
Stage 2	-	-	-	-	64 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1560	-	-	-	889 1026
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	959 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1560	-	-	-	885 1026
Mov Cap-2 Maneuver	-	-	-	-	885 -
Stage 1	-	-	-	-	973 -
Stage 2	-	-	-	-	959 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1560	-	-	-	940
HCM Lane V/C Ratio	0.004	-	-	-	0.016
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 BF PM Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	701	507	221	602	669	360	1595	182	546	1675	170
Future Volume (veh/h)	245	701	507	221	602	669	360	1595	182	546	1675	170
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	266	762	551	240	654	727	391	1734	198	593	1821	185
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	544	577	137	473	650	192	1209	135	342	1500	150
Arrive On Green	0.08	0.29	0.29	0.05	0.25	0.25	0.08	0.38	0.38	0.16	0.46	0.46
Sat Flow, veh/h	1774	1863	1556	1774	1863	1552	1774	3208	359	1774	3249	324
Grp Volume(v), veh/h	266	762	551	240	654	727	391	942	990	593	977	1029
Grp Sat Flow(s),veh/h/ln	1774	1863	1556	1774	1863	1552	1774	1770	1798	1774	1770	1804
Q Serve(g_s), s	11.0	38.0	38.0	6.0	33.0	33.0	10.0	49.0	49.0	21.0	60.0	60.0
Cycle Q Clear(g_c), s	11.0	38.0	38.0	6.0	33.0	33.0	10.0	49.0	49.0	21.0	60.0	60.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.20	1.00		0.18
Lane Grp Cap(c), veh/h	205	544	577	137	473	650	192	667	678	342	817	833
V/C Ratio(X)	1.29	1.40	0.96	1.75	1.38	1.12	2.04	1.41	1.46	1.73	1.20	1.24
Avail Cap(c_a), veh/h	205	544	577	137	473	650	192	667	678	342	817	833
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	46.0	40.0	43.5	48.5	38.1	38.1	40.5	40.5	43.4	35.0	35.0
Incr Delay (d2), s/veh	163.7	190.7	26.9	365.1	185.2	72.8	484.9	194.2	215.8	342.4	100.3	116.2
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(95%),veh/ln	26.4	87.0	31.6	25.1	74.3	65.5	58.9	107.8	116.8	80.6	93.6	102.1
LnGrp Delay(d),s/veh	199.1	236.7	66.9	408.6	233.7	110.9	522.9	234.7	256.3	385.8	135.3	151.2
LnGrp LOS	F	F	E	F	F	F	F	F	F	F	F	F
Approach Vol, veh/h		1579			1621			2323			2599	
Approach Delay, s/veh		171.1			204.5			292.4			198.8	
Approach LOS		F			F			F			F	
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	25.0	53.0	10.0	42.0	14.0	64.0	15.0	37.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	23.0	51.0	8.0	40.0	12.0	62.0	13.0	35.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			221.3									
HCM 2010 LOS			F									
Notes												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	16	2	54	96	0	256	27	2102	80	174	2357	10
Future Vol, veh/h	16	2	54	96	0	256	27	2102	80	174	2357	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	2	59	104	0	278	29	2285	87	189	2562	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	4147	5376	1287	4047	5338	1186	2573	0	0	2372	0	0
Stage 1	2946	2946	-	2387	2387	-	-	-	-	-	-	-
Stage 2	1201	2430	-	1660	2951	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 1	0	155	~ 1	0	~ 181	168	-	-	202	-	-
Stage 1	~ 15	33	-	~ 35	65	-	-	-	-	-	-	-
Stage 2	196	62	-	~ 101	33	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	0	155	0	0	~ 181	168	-	-	202	-	-
Mov Cap-2 Maneuver	-	0	-	0	0	-	-	-	-	-	-	-
Stage 1	~ 12	~ 2	-	~ 29	54	-	-	-	-	-	-	-
Stage 2	-	51	-	-	2	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.4	6.6
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	168	-	-	-	-	-	181	202	-
HCM Lane V/C Ratio	0.175	-	-	-	-	-	1.537	0.936	-
HCM Control Delay (s)	30.9	-	-	-	-	-	\$ 314.3	96.3	-
HCM Lane LOS	D	-	-	-	-	-	F	F	-
HCM 95th %tile Q(veh)	0.6	-	-	-	-	-	18	7.7	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	120.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	19	35	43	2187	2437	64
Future Vol, veh/h	19	35	43	2187	2437	64
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	38	47	2377	2649	70

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3967	1360	2719	0	-	0
Stage 1	2684	-	-	-	-	-
Stage 2	1283	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 2	138	147	-	-	-
Stage 1	37	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 1	138	147	-	-	-
Mov Cap-2 Maneuver	~ 1	-	-	-	-	-
Stage 1	25	-	-	-	-	-
Stage 2	224	-	-	-	-	-






















Approach	EB	NB	SB
HCM Control Delay, \$	10675	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	147	-	3	-	-
HCM Lane V/C Ratio	0.318	-	19.565	-	-
HCM Control Delay (s)	40.5		\$ 10675	-	-
HCM Lane LOS	E	-	F	-	-
HCM 95th %tile Q(veh)	1.3	-	9.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 BF PM Background
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	24	82	656	11	154	51	1290	440	227	1454	134
Future Volume (veh/h)	112	24	82	656	11	154	51	1290	440	227	1454	134
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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	122	26	89	713	12	167	55	1402	478	247	1580	146
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	45	153	285	14	200	167	1246	405	237	1733	159
Arrive On Green	0.08	0.12	0.12	0.09	0.13	0.13	0.05	0.47	0.47	0.10	0.53	0.53
Sat Flow, veh/h	1774	369	1263	1703	107	1486	1703	2628	853	1703	3279	300
Grp Volume(v), veh/h	122	0	115	713	0	179	55	921	959	247	846	880
Grp Sat Flow(s),veh/h/ln	1774	0	1632	1703	0	1593	1703	1770	1712	1703	1770	1809
Q Serve(g_s), s	7.0	0.0	7.9	11.0	0.0	13.0	1.9	56.3	56.3	12.3	51.2	53.0
Cycle Q Clear(g_c), s	7.0	0.0	7.9	11.0	0.0	13.0	1.9	56.3	56.3	12.3	51.2	53.0
Prop In Lane	1.00		0.77	1.00		0.93	1.00		0.50	1.00		0.17
Lane Grp Cap(c), veh/h	231	0	198	285	0	214	167	839	812	237	935	956
V/C Ratio(X)	0.53	0.00	0.58	2.50	0.00	0.84	0.33	1.10	1.18	1.04	0.90	0.92
Avail Cap(c_a), veh/h	404	0	491	285	0	345	202	839	812	237	935	956
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	49.3	47.6	0.0	50.1	25.3	31.2	31.2	39.3	25.3	25.7
Incr Delay (d2), s/veh	3.9	0.0	5.7	685.9	0.0	4.6	0.4	61.2	94.0	69.7	11.8	13.5
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(95%),veh/ln	6.6	0.0	7.0	105.3	0.0	10.0	1.6	74.8	85.6	22.1	36.6	39.0
LnGrp Delay(d),s/veh	45.3	0.0	55.0	733.5	0.0	54.7	25.7	92.4	125.2	109.0	37.0	39.1
LnGrp LOS	D		D	F		D	C	F	F	F	D	D
Approach Vol, veh/h		237			892			1935			1973	
Approach Delay, s/veh		50.0			597.3			106.7			47.0	
Approach LOS		D			F			F			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	19.0	63.0	15.0	21.7	12.6	69.4	13.4	23.3				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 12	* 56	11.0	35.7	* 8.3	* 60	21.0	25.7				
Max Q Clear Time (g_c+I1), s	14.3	58.3	13.0	9.9	3.9	55.0	9.0	15.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.9	0.0	2.6	0.6	0.3				
Intersection Summary												
HCM 2010 Ctrl Delay				167.5								
HCM 2010 LOS				F								
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 BF PM Background
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	120	112	160	1914	1970	98		
Future Volume (veh/h)	120	112	160	1914	1970	98		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.96	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	130	122	174	2080	2141	107		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	153	143	108	2662	2588	128		
Arrive On Green	0.18	0.17	1.00	1.00	0.75	0.75		
Sat Flow, veh/h	844	792	168	3632	3525	170		
Grp Volume(v), veh/h	253	0	174	2080	1095	1153		
Grp Sat Flow(s),veh/h/ln	1643	0	168	1770	1770	1832		
Q Serve(g_s), s	20.9	0.0	46.8	0.0	55.9	58.4		
Cycle Q Clear(g_c), s	20.9	0.0	105.3	0.0	55.9	58.4		
Prop In Lane	0.51	0.48	1.00			0.09		
Lane Grp Cap(c), veh/h	297	0	108	2662	1335	1382		
V/C Ratio(X)	0.85	0.00	1.62	0.78	0.82	0.83		
Avail Cap(c_a), veh/h	362	0	108	2662	1335	1382		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.09	0.09	0.09	0.09		
Uniform Delay (d), s/veh	55.8	0.0	40.4	0.0	11.1	11.4		
Incr Delay (d2), s/veh	15.0	0.0	281.4	0.2	0.6	0.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	6.1	0.0	22.6	0.1	29.5	32.0		
LnGrp Delay(d),s/veh	70.9	0.0	321.9	0.2	11.6	12.0		
LnGrp LOS	E		F	A	B	B		
Approach Vol, veh/h	253			2254	2248			
Approach Delay, s/veh	70.9			25.0	11.8			
Approach LOS	E			C	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		110.5		29.5		110.5		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		99.0		29.5		99.0		
Max Q Clear Time (g_c+I1), s		107.3		22.9		60.4		
Green Ext Time (p_c), s		0.0		0.6		20.4		
Intersection Summary								
HCM 2010 Ctrl Delay			21.2					
HCM 2010 LOS			C					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 BF PM Background
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	427	901	312	483	709	554	344	1115	446	518	1270	291
Future Volume (veh/h)	427	901	312	483	709	554	344	1115	446	518	1270	291
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	464	979	339	525	771	602	374	1212	485	563	1380	316
Adj No. of Lanes	1	2	0	1	2	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	624	214	321	865	616	272	826	318	311	1031	231
Arrive On Green	0.15	0.24	0.22	0.15	0.24	0.24	0.12	0.33	0.32	0.10	0.24	0.23
Sat Flow, veh/h	1774	2583	888	1774	3539	1575	1774	2493	960	1703	2870	643
Grp Volume(v), veh/h	464	668	650	525	771	602	374	847	850	563	839	857
Grp Sat Flow(s),veh/h/ln	1774	1770	1701	1774	1770	1575	1774	1770	1683	1703	1770	1743
Q Serve(g_s), s	20.8	33.8	33.8	21.2	29.5	33.3	17.4	46.4	46.4	21.3	50.3	50.3
Cycle Q Clear(g_c), s	20.8	33.8	33.8	21.2	29.5	33.3	17.4	46.4	46.4	21.3	50.3	50.3
Prop In Lane	1.00		0.52	1.00		1.00	1.00		0.57	1.00		0.37
Lane Grp Cap(c), veh/h	327	427	411	321	865	616	272	586	558	311	636	626
V/C Ratio(X)	1.42	1.56	1.58	1.63	0.89	0.98	1.37	1.44	1.53	1.81	1.32	1.37
Avail Cap(c_a), veh/h	327	427	411	321	865	616	272	586	558	311	636	626
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.28	0.28	0.28
Uniform Delay (d), s/veh	40.9	53.1	53.7	43.8	51.1	42.1	45.2	46.8	47.3	49.3	53.1	53.4
Incr Delay (d2), s/veh	205.3	265.3	273.3	299.2	11.5	30.6	190.0	209.1	245.3	369.4	147.1	168.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	56.3	86.4	84.6	70.4	22.2	36.9	44.8	102.1	107.2	78.0	90.4	95.5
LnGrp Delay(d),s/veh	246.2	318.4	327.0	343.0	62.6	72.8	235.2	255.9	292.6	418.8	200.3	222.1
LnGrp LOS	F	F	F	F	E	E	F	F	F	F	F	F
Approach Vol, veh/h		1782			1898			2071			2259	
Approach Delay, s/veh		302.7			143.4			267.2			263.0	
Approach LOS		F			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	38.0	22.0	55.0	25.0	38.0	26.0	51.0				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	48.5	31.5	15.5	48.5	18.5	31.5	19.5	44.5				
Max Q Clear Time (g_c+Rc), s	23.2	35.8	19.4	52.3	22.8	35.3	23.3	48.4				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	244.6											
HCM 2010 LOS	F											

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	26	96	0	27	0
Future Vol, veh/h	0	26	96	0	27	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	28	104	0	29	0

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	104	0	-	0	132 104
Stage 1	-	-	-	-	104 -
Stage 2	-	-	-	-	28 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1488	-	-	-	862 951
Stage 1	-	-	-	-	920 -
Stage 2	-	-	-	-	995 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1488	-	-	-	862 951
Mov Cap-2 Maneuver	-	-	-	-	862 -
Stage 1	-	-	-	-	920 -
Stage 2	-	-	-	-	995 -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	9.3
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1488	-	-	-	862
HCM Lane V/C Ratio	-	-	-	-	0.034
HCM Control Delay (s)	0	-	-	-	9.3
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 AM Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	98	346	229	112	267	131	243	603	157	507	1027	194
Future Volume (veh/h)	98	346	229	112	267	131	243	603	157	507	1027	194
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)	0.99		0.98	0.99		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	107	376	249	122	290	142	264	655	171	551	1116	211
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	483	544	216	471	689	274	991	259	501	1353	255
Arrive On Green	0.06	0.26	0.26	0.05	0.25	0.25	0.09	0.36	0.36	0.19	0.46	0.46
Sat Flow, veh/h	1774	1863	1552	1774	1863	1551	1774	2777	724	1774	2972	559
Grp Volume(v), veh/h	107	376	249	122	290	142	264	417	409	551	663	664
Grp Sat Flow(s),veh/h/ln	1774	1863	1552	1774	1863	1551	1774	1770	1731	1774	1770	1762
Q Serve(g_s), s	4.9	21.0	13.9	5.7	15.4	6.3	10.0	22.2	22.3	21.0	36.5	37.0
Cycle Q Clear(g_c), s	4.9	21.0	13.9	5.7	15.4	6.3	10.0	22.2	22.3	21.0	36.5	37.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.42	1.00		0.32
Lane Grp Cap(c), veh/h	279	483	544	216	471	689	274	632	618	501	806	802
V/C Ratio(X)	0.38	0.78	0.46	0.56	0.62	0.21	0.96	0.66	0.66	1.10	0.82	0.83
Avail Cap(c_a), veh/h	347	632	668	216	549	754	274	774	757	501	948	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	38.5	28.3	31.1	37.1	19.3	27.7	30.3	30.3	23.6	26.6	26.7
Incr Delay (d2), s/veh	0.3	5.5	0.9	2.1	2.1	0.2	43.8	0.8	0.9	70.0	4.4	4.7
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(95%),veh/ln	4.4	17.1	10.1	5.2	13.0	5.0	10.8	16.5	16.2	45.4	26.0	26.1
LnGrp Delay(d),s/veh	29.7	44.0	29.2	33.2	39.2	19.5	71.5	31.1	31.2	93.6	31.0	31.4
LnGrp LOS	C	D	C	C	D	B	E	C	C	F	C	C
Approach Vol, veh/h		732			554			1090			1878	
Approach Delay, s/veh		36.9			32.8			40.9			49.5	
Approach LOS		D			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.0	44.0	10.0	33.0	14.0	55.0	10.7	32.3				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	23.0	24.3	7.7	23.0	12.0	39.0	6.9	17.4				
Green Ext Time (p_c), s	0.0	0.8	0.0	3.9	0.0	1.4	0.0	2.7				
Intersection Summary												
HCM 2010 Ctrl Delay			42.9									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	5	2	11	3	11	11	80	986	30	26	1410	78
Future Vol, veh/h	5	2	11	3	11	11	80	986	30	26	1410	78
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	2	12	3	12	12	87	1072	33	28	1533	85

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2348	2911	809	2087	2937	553	1618	0	0	1105	0	0
Stage 1	1632	1632	-	1263	1263	-	-	-	-	-	-	-
Stage 2	716	1279	-	824	1674	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	19	15	323	30	15	477	399	-	-	628	-	-
Stage 1	106	158	-	180	239	-	-	-	-	-	-	-
Stage 2	387	235	-	333	151	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	11	323	20	~ 11	477	399	-	-	628	-	-
Mov Cap-2 Maneuver	-	11	-	20	~ 11	-	-	-	-	-	-	-
Stage 1	83	151	-	141	187	-	-	-	-	-	-	-
Stage 2	276	184	-	302	144	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s		\$ 444.3	1.2	0.2
HCM LOS	-	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1WBLn2	SBL	SBT	SBR
Capacity (veh/h)	399	-	-	- 12 477 628	-	-	-
HCM Lane V/C Ratio	0.218	-	-	- 1.268 0.025 0.045	-	-	-
HCM Control Delay (s)	16.5	-	-	- \$ 783.5 12.7 11	-	-	-
HCM Lane LOS	C	-	-	- F B B	-	-	-
HCM 95th %tile Q(veh)	0.8	-	-	- 2.6 0.1 0.1	-	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	6	18	11	1099	1403	6
Future Vol, veh/h	6	18	11	1099	1403	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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	20	12	1195	1525	7























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2151	766	1532	0	-	0
Stage 1	1529	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	41	345	430	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40	345	430	-	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	160	-	-	-	-	-
Stage 2	498	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	43.6	0.1	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	430	-	119	-	-
HCM Lane V/C Ratio	0.028	-	0.219	-	-
HCM Control Delay (s)	13.6	-	43.6	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.8	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 AM Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	0	3	30	0	5	13	1133	38	22	1381	18
Future Volume (veh/h)	3	0	3	30	0	5	13	1133	38	22	1381	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)	0.99		1.00	0.99		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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	3	0	3	33	0	5	14	1232	41	24	1501	20
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	172	0	74	236	0	138	211	1880	63	278	1971	26
Arrive On Green	0.01	0.00	0.05	0.05	0.00	0.09	0.02	0.54	0.54	0.04	0.55	0.55
Sat Flow, veh/h	1774	0	1576	1703	0	1576	1703	3495	116	1703	3576	48
Grp Volume(v), veh/h	3	0	3	33	0	5	14	623	650	24	742	779
Grp Sat Flow(s),veh/h/ln	1774	0	1576	1703	0	1576	1703	1770	1842	1703	1770	1854
Q Serve(g_s), s	0.1	0.0	0.1	1.3	0.0	0.2	0.3	18.7	18.7	0.5	24.1	24.2
Cycle Q Clear(g_c), s	0.1	0.0	0.1	1.3	0.0	0.2	0.3	18.7	18.7	0.5	24.1	24.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.06	1.00		0.03
Lane Grp Cap(c), veh/h	172	0	74	236	0	138	211	952	991	278	975	1022
V/C Ratio(X)	0.02	0.00	0.04	0.14	0.00	0.04	0.07	0.65	0.66	0.09	0.76	0.76
Avail Cap(c_a), veh/h	352	0	545	409	0	608	338	1435	1494	406	1459	1529
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.5	0.0	33.9	30.2	0.0	31.1	11.0	12.3	12.3	9.3	12.9	12.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	0.0	0.0	0.0	0.3	0.3	0.0	0.6	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(95%),veh/ln	0.1	0.0	0.1	1.1	0.0	0.2	0.2	14.0	14.5	0.4	17.3	18.0
LnGrp Delay(d),s/veh	33.5	0.0	34.3	30.3	0.0	31.1	11.0	12.5	12.5	9.4	13.5	13.5
LnGrp LOS	C		C	C		C	B	B	B	A	B	B
Approach Vol, veh/h		6			38			1287			1545	
Approach Delay, s/veh		33.9			30.4			12.5			13.4	
Approach LOS		C			C			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	9.4	46.7	7.5	10.8	8.5	47.7	4.4	13.8				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	2.5	20.7	3.3	2.1	2.3	26.2	2.1	2.2				
Green Ext Time (p_c), s	0.0	3.2	0.0	0.0	0.0	4.2	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			13.3									
HCM 2010 LOS			B									
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 AM Background with Imp
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	26	120	38	1224	1350	16		
Future Volume (veh/h)	26	120	38	1224	1350	16		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	28	130	41	1330	1467	17		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	42	193	275	2746	2789	32		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	273	1269	354	3632	3677	42		
Grp Volume(v), veh/h	159	0	41	1330	724	760		
Grp Sat Flow(s),veh/h/ln	1552	0	354	1770	1770	1855		
Q Serve(g_s), s	12.6	0.0	3.5	0.0	20.0	20.0		
Cycle Q Clear(g_c), s	12.6	0.0	23.5	0.0	20.0	20.0		
Prop In Lane	0.18	0.82	1.00			0.02		
Lane Grp Cap(c), veh/h	236	0	275	2746	1377	1444		
V/C Ratio(X)	0.67	0.00	0.15	0.48	0.53	0.53		
Avail Cap(c_a), veh/h	392	0	275	2746	1377	1444		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.87	0.87	0.78	0.78		
Uniform Delay (d), s/veh	52.6	0.0	2.3	0.0	5.4	5.4		
Incr Delay (d2), s/veh	3.3	0.0	1.0	0.5	1.1	1.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.5	0.0	0.7	0.4	14.7	15.3		
LnGrp Delay(d),s/veh	56.0	0.0	3.3	0.5	6.5	6.5		
LnGrp LOS	E		A	A	A	A		
Approach Vol, veh/h	159			1371	1484			
Approach Delay, s/veh	56.0			0.6	6.5			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		106.1		23.9		106.1		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		25.5		14.6		22.0		
Green Ext Time (p_c), s		10.3		0.6		9.1		
Intersection Summary								
HCM 2010 Ctrl Delay			6.4					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 AM Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑↑	↗
Traffic Volume (veh/h)	214	661	102	202	499	171	200	910	320	189	1005	286
Future Volume (veh/h)	214	661	102	202	499	171	200	910	320	189	1005	286
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	233	718	111	220	542	186	217	989	348	205	1092	311
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	345	850	472	338	842	510	315	2220	786	305	2224	796
Arrive On Green	0.10	0.24	0.22	0.10	0.24	0.23	0.09	0.44	0.42	0.03	0.14	0.14
Sat Flow, veh/h	3442	3539	1575	3442	3539	1575	3442	5085	1572	3304	5085	1572
Grp Volume(v), veh/h	233	718	111	220	542	186	217	989	348	205	1092	311
Grp Sat Flow(s),veh/h/ln	1721	1770	1575	1721	1770	1575	1721	1695	1572	1652	1695	1572
Q Serve(g_s), s	8.5	25.1	6.9	8.0	17.9	11.8	7.9	17.7	18.5	8.0	25.7	20.3
Cycle Q Clear(g_c), s	8.5	25.1	6.9	8.0	17.9	11.8	7.9	17.7	18.5	8.0	25.7	20.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	345	850	472	338	842	510	315	2220	786	305	2224	796
V/C Ratio(X)	0.68	0.84	0.24	0.65	0.64	0.36	0.69	0.45	0.44	0.67	0.49	0.39
Avail Cap(c_a), veh/h	408	907	497	349	847	512	328	2220	786	369	2224	796
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81
Uniform Delay (d), s/veh	56.4	47.1	34.3	56.5	44.6	33.8	57.3	25.6	20.9	61.1	42.3	31.1
Incr Delay (d2), s/veh	3.5	7.1	0.3	4.1	1.7	0.4	5.7	0.6	1.8	2.9	0.6	1.2
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(95%),veh/ln	7.6	19.0	5.4	7.2	13.8	8.9	7.3	13.1	13.2	6.7	17.4	13.6
LnGrp Delay(d),s/veh	59.9	54.1	34.6	60.6	46.2	34.2	63.0	26.3	22.7	64.0	42.9	32.3
LnGrp LOS	E	D	C	E	D	C	E	C	C	E	D	C
Approach Vol, veh/h		1062			948			1554			1608	
Approach Delay, s/veh		53.4			47.2			30.6			43.6	
Approach LOS		D			D			C			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	6.5	35.4	16.5	61.5	17.2	34.7	16.7	61.3				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	10.5	31.0	10.5	52.0	13.1	28.4	12.7	49.8				
Max Q Clear Time (g_c+110), s	10.5	27.1	9.9	27.7	10.5	19.9	10.0	20.5				
Green Ext Time (p_c), s	0.0	1.4	0.1	7.2	0.2	2.2	0.2	7.0				
Intersection Summary												
HCM 2010 Ctrl Delay			42.4									
HCM 2010 LOS			D									
Notes												

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↶	↷		↶	
Traffic Vol, veh/h	3	29	24	3	5	3
Future Vol, veh/h	3	29	24	3	5	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	32	26	3	5	3

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	29	0	-	0	66 28
Stage 1	-	-	-	-	28 -
Stage 2	-	-	-	-	38 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1584	-	-	-	939 1047
Stage 1	-	-	-	-	995 -
Stage 2	-	-	-	-	984 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1584	-	-	-	937 1047
Mov Cap-2 Maneuver	-	-	-	-	937 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	984 -

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	975
HCM Lane V/C Ratio	0.002	-	-	-	0.009
HCM Control Delay (s)	7.3	0	-	-	8.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 Midday Background with Imp
 Kenwood Road Development

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	122	355	373	142	285	261	328	798	200	283	718	139
Future Volume (veh/h)	122	355	373	142	285	261	328	798	200	283	718	139
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)	0.99		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	133	386	405	154	310	284	357	867	217	308	780	151
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	538	599	239	511	623	354	1062	266	340	1207	234
Arrive On Green	0.07	0.29	0.29	0.06	0.27	0.27	0.09	0.38	0.38	0.12	0.41	0.41
Sat Flow, veh/h	1774	1863	1555	1774	1863	1554	1774	2804	701	1774	2957	572
Grp Volume(v), veh/h	133	386	405	154	310	284	357	547	537	308	467	464
Grp Sat Flow(s),veh/h/ln	1774	1863	1555	1774	1863	1554	1774	1770	1736	1774	1770	1759
Q Serve(g_s), s	5.6	19.6	22.9	6.0	15.3	14.2	10.0	29.3	29.4	10.8	22.4	22.4
Cycle Q Clear(g_c), s	5.6	19.6	22.9	6.0	15.3	14.2	10.0	29.3	29.4	10.8	22.4	22.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.40	1.00		0.33
Lane Grp Cap(c), veh/h	300	538	599	239	511	623	354	670	658	340	722	718
V/C Ratio(X)	0.44	0.72	0.68	0.64	0.61	0.46	1.01	0.82	0.82	0.90	0.65	0.65
Avail Cap(c_a), veh/h	359	670	710	239	582	682	354	821	806	473	1006	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	33.7	27.1	29.6	33.3	23.4	28.0	29.5	29.5	22.2	25.1	25.1
Incr Delay (d2), s/veh	0.4	3.4	2.5	4.6	1.9	0.7	50.3	4.4	4.5	13.6	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	15.9	15.5	3.1	12.8	10.2	8.9	21.5	21.2	10.7	16.4	16.3
LnGrp Delay(d),s/veh	26.2	37.1	29.6	34.2	35.2	24.1	78.4	33.8	34.0	35.9	25.5	25.5
LnGrp LOS	C	D	C	C	D	C	F	C	C	D	C	C
Approach Vol, veh/h		924			748			1441			1239	
Approach Delay, s/veh		32.3			30.8			44.9			28.1	
Approach LOS		C			C			D			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	17.1	44.0	10.0	34.5	14.0	47.1	11.5	33.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	12.8	31.4	8.0	24.9	12.0	24.4	7.6	17.3				
Green Ext Time (p_c), s	0.3	1.1	0.0	4.6	0.0	0.9	0.0	3.7				
Intersection Summary												
HCM 2010 Ctrl Delay			35.0									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 24.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	6	2	19	38	0	171	45	1158	32	107	1160	30
Future Vol, veh/h	6	2	19	38	0	171	45	1158	32	107	1160	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	2	21	41	0	186	49	1259	35	116	1261	33

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2238	2902	647	2239	2901	647	1294	0	0	1294	0	0
Stage 1	1510	1510	-	1375	1375	-	-	-	-	-	-	-
Stage 2	728	1392	-	864	1526	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	23	16	414	~23	16	414	531	-	-	531	-	-
Stage 1	126	181	-	153	211	-	-	-	-	-	-	-
Stage 2	381	207	-	315	178	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	10	11	414	~14	11	414	531	-	-	531	-	-
Mov Cap-2 Maneuver	10	11	-	~14	11	-	-	-	-	-	-	-
Stage 1	114	142	-	139	192	-	-	-	-	-	-	-
Stage 2	191	188	-	230	139	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	299.6		277.2		0.5		1.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	531	-	-	33	14	414	531	-	-
HCM Lane V/C Ratio	0.092	-	-	0.889	2.95	0.449	0.219	-	-
HCM Control Delay (s)	12.5	-	-	299.6	1431.7	20.6	13.7	-	-
HCM Lane LOS	B	-	-	F	F	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	3.1	6	2.3	0.8	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗		↘	↑↑	↑↑	
Traffic Vol, veh/h	11	21	8	1074	1378	24
Future Vol, veh/h	11	21	8	1074	1378	24
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	23	9	1167	1498	26






















Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2113	762	1524	0	-	0
Stage 1	1511	-	-	-	-	-
Stage 2	602	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	44	347	434	-	-	-
Stage 1	169	-	-	-	-	-
Stage 2	510	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	43	347	434	-	-	-
Mov Cap-2 Maneuver	43	-	-	-	-	-
Stage 1	165	-	-	-	-	-
Stage 2	510	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	58.3	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	434	-	101	-	-
HCM Lane V/C Ratio	0.02	-	0.344	-	-
HCM Control Delay (s)	13.5	-	58.3	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.1	-	1.4	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 Midday Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	16	37	270	6	66	38	1146	254	75	1077	62
Future Volume (veh/h)	45	16	37	270	6	66	38	1146	254	75	1077	62
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	49	17	40	293	7	72	41	1246	276	82	1171	67
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	306	53	125	358	24	242	246	1360	298	199	1655	95
Arrive On Green	0.05	0.11	0.11	0.11	0.17	0.17	0.05	0.47	0.47	0.06	0.49	0.49
Sat Flow, veh/h	1774	492	1158	1703	142	1458	1703	2888	632	1703	3403	195
Grp Volume(v), veh/h	49	0	57	293	0	79	41	758	764	82	608	630
Grp Sat Flow(s),veh/h/ln	1774	0	1651	1703	0	1599	1703	1770	1751	1703	1770	1828
Q Serve(g_s), s	2.4	0.0	3.2	11.0	0.0	4.3	1.2	39.5	40.9	2.4	26.8	26.9
Cycle Q Clear(g_c), s	2.4	0.0	3.2	11.0	0.0	4.3	1.2	39.5	40.9	2.4	26.8	26.9
Prop In Lane	1.00		0.70	1.00		0.91	1.00		0.36	1.00		0.11
Lane Grp Cap(c), veh/h	306	0	178	358	0	266	246	833	824	199	860	889
V/C Ratio(X)	0.16	0.00	0.32	0.82	0.00	0.30	0.17	0.91	0.93	0.41	0.71	0.71
Avail Cap(c_a), veh/h	356	0	426	358	0	460	290	1070	1059	234	1088	1124
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	41.1	36.9	0.0	36.5	15.4	24.4	24.8	21.7	20.1	20.1
Incr Delay (d2), s/veh	0.5	0.0	2.2	13.1	0.0	0.2	0.1	8.3	10.3	0.5	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.2	0.0	2.8	7.5	0.0	3.5	1.0	28.6	29.6	2.0	19.2	19.8
LnGrp Delay(d),s/veh	36.7	0.0	43.3	50.0	0.0	36.7	15.5	32.7	35.1	22.2	21.0	21.0
LnGrp LOS	D		D	D		D	B	C	D	C	C	C
Approach Vol, veh/h		106			372			1563			1320	
Approach Delay, s/veh		40.2			47.1			33.4			21.1	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	53.7	15.0	18.1	11.5	55.2	9.2	23.9				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	4.4	42.9	13.0	5.2	3.2	28.9	4.4	6.3				
Green Ext Time (p_c), s	0.0	4.1	0.0	0.3	0.0	3.1	0.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			30.3									
HCM 2010 LOS			C									
Notes												



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	58	110	122	1598	1365	53		
Future Volume (veh/h)	58	110	122	1598	1365	53		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.96	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	63	120	133	1737	1484	58		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	88	167	254	2715	2672	104		
Arrive On Green	0.16	0.15	1.00	1.00	0.77	0.76		
Sat Flow, veh/h	546	1041	335	3632	3566	135		
Grp Volume(v), veh/h	184	0	133	1737	755	787		
Grp Sat Flow(s),veh/h/ln	1596	0	335	1770	1770	1839		
Q Serve(g_s), s	14.3	0.0	24.2	0.0	22.3	22.5		
Cycle Q Clear(g_c), s	14.3	0.0	46.7	0.0	22.3	22.5		
Prop In Lane	0.34	0.65	1.00			0.07		
Lane Grp Cap(c), veh/h	256	0	254	2715	1361	1414		
V/C Ratio(X)	0.72	0.00	0.52	0.64	0.55	0.56		
Avail Cap(c_a), veh/h	403	0	254	2715	1361	1414		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.62	0.62	0.62	0.62		
Uniform Delay (d), s/veh	52.2	0.0	5.3	0.0	6.0	6.1		
Incr Delay (d2), s/veh	3.7	0.0	4.7	0.7	1.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	0.8	0.0	4.6	0.5	15.4	15.9		
LnGrp Delay(d),s/veh	55.9	0.0	10.0	0.7	7.0	7.1		
LnGrp LOS	E		B	A	A	A		
Approach Vol, veh/h	184			1870	1542			
Approach Delay, s/veh	55.9			1.4	7.0			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		104.9		25.1		104.9		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		48.7		16.3		24.5		
Green Ext Time (p_c), s		18.2		0.7		9.8		
Intersection Summary								
HCM 2010 Ctrl Delay			6.6					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 Midday Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↔	↔↔	↑↑	↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	360	848	290	440	811	461	370	925	493	352	813	282
Future Volume (veh/h)	360	848	290	440	811	461	370	925	493	352	813	282
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	391	922	315	478	882	501	402	1005	536	383	884	307
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	471	915	568	561	1007	669	461	1524	672	481	1584	655
Arrive On Green	0.14	0.26	0.24	0.16	0.28	0.28	0.13	0.30	0.29	0.05	0.10	0.10
Sat Flow, veh/h	3442	3539	1575	3442	3539	1576	3442	5085	1567	3304	5085	1567
Grp Volume(v), veh/h	391	922	315	478	882	501	402	1005	536	383	884	307
Grp Sat Flow(s),veh/h/ln	1721	1770	1575	1721	1770	1576	1721	1695	1567	1652	1695	1567
Q Serve(g_s), s	14.4	33.6	20.8	17.5	30.9	34.9	14.9	22.4	37.1	14.9	21.5	20.4
Cycle Q Clear(g_c), s	14.4	33.6	20.8	17.5	30.9	34.9	14.9	22.4	37.1	14.9	21.5	20.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	471	915	568	561	1007	669	461	1524	672	481	1584	655
V/C Ratio(X)	0.83	1.01	0.55	0.85	0.88	0.75	0.87	0.66	0.80	0.80	0.56	0.47
Avail Cap(c_a), veh/h	471	915	568	561	1007	669	461	1524	672	506	1584	655
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.78	0.78	0.78
Uniform Delay (d), s/veh	54.6	48.2	33.3	52.9	44.3	31.7	55.2	39.7	32.4	60.0	49.8	36.0
Incr Delay (d2), s/veh	11.8	31.7	1.2	12.0	8.8	4.7	16.6	2.3	9.6	6.5	1.1	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.1	36.8	14.2	14.3	22.9	22.6	12.8	16.2	25.6	11.2	14.9	13.6
LnGrp Delay(d),s/veh	66.4	79.9	34.5	64.9	53.1	36.4	71.8	42.0	42.0	66.5	50.9	37.9
LnGrp LOS	E	F	C	E	D	D	E	D	D	E	D	D
Approach Vol, veh/h		1628			1861			1943			1574	
Approach Delay, s/veh		67.9			51.6			48.2			52.2	
Approach LOS		E			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	35.0	37.8	22.0	45.2	22.0	40.8	23.6	43.6				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	38.5	31.3	15.5	38.7	15.5	34.3	18.1	36.1				
Max Q Clear Time (g_c+1), s	19.5	35.6	16.9	23.5	16.4	36.9	16.9	39.1				
Green Ext Time (p_c), s	0.0	0.0	0.0	5.0	0.0	0.0	0.2	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			54.6									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	1.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	5	18	30	8	8	2
Future Vol, veh/h	5	18	30	8	8	2
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, %	2	2	2	2	2	2
Mvmt Flow	5	20	33	9	9	2

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	42	0	-	0	68 38
Stage 1	-	-	-	-	38 -
Stage 2	-	-	-	-	30 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1567	-	-	-	937 1034
Stage 1	-	-	-	-	984 -
Stage 2	-	-	-	-	993 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1567	-	-	-	934 1034
Mov Cap-2 Maneuver	-	-	-	-	934 -
Stage 1	-	-	-	-	981 -
Stage 2	-	-	-	-	993 -

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0	8.8
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1567	-	-	-	952
HCM Lane V/C Ratio	0.003	-	-	-	0.011
HCM Control Delay (s)	7.3	0	-	-	8.8
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 PM Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	434	314	138	373	414	222	989	114	339	1038	106
Future Volume (veh/h)	222	434	314	138	373	414	222	989	114	339	1038	106
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	241	472	341	150	405	450	241	1075	124	368	1128	115
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	250	558	594	186	483	671	265	1127	130	371	1432	146
Arrive On Green	0.09	0.30	0.30	0.05	0.26	0.26	0.08	0.35	0.35	0.17	0.44	0.44
Sat Flow, veh/h	1774	1863	1556	1774	1863	1552	1774	3197	368	1774	3243	330
Grp Volume(v), veh/h	241	472	341	150	405	450	241	595	604	368	615	628
Grp Sat Flow(s),veh/h/ln	1774	1863	1556	1774	1863	1552	1774	1770	1796	1774	1770	1803
Q Serve(g_s), s	11.0	29.4	21.5	6.0	25.4	28.8	10.0	40.5	40.6	20.8	36.8	36.9
Cycle Q Clear(g_c), s	11.0	29.4	21.5	6.0	25.4	28.8	10.0	40.5	40.6	20.8	36.8	36.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.21	1.00		0.18
Lane Grp Cap(c), veh/h	250	558	594	186	483	671	265	624	633	371	781	796
V/C Ratio(X)	0.96	0.85	0.57	0.81	0.84	0.67	0.91	0.95	0.95	0.99	0.79	0.79
Avail Cap(c_a), veh/h	250	573	607	186	497	683	265	701	712	371	859	875
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.4	40.6	30.4	40.6	43.4	28.4	30.5	39.0	39.1	38.4	29.5	29.6
Incr Delay (d2), s/veh	46.1	11.5	1.6	21.3	12.3	2.8	31.5	21.1	21.2	44.6	3.9	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	23.6	14.6	5.9	21.0	18.7	9.5	31.4	31.9	23.8	25.9	26.4
LnGrp Delay(d),s/veh	81.5	52.1	32.0	61.9	55.7	31.2	62.0	60.1	60.3	83.0	33.4	33.5
LnGrp LOS	F	D	C	E	E	C	E	E	E	F	C	C
Approach Vol, veh/h		1054			1005			1440			1611	
Approach Delay, s/veh		52.3			45.7			60.5			44.8	
Approach LOS		D			D			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	25.0	47.6	10.0	41.0	14.0	58.6	15.0	36.0				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	22.8	42.6	8.0	31.4	12.0	38.9	13.0	30.8				
Green Ext Time (p_c), s	0.0	1.0	0.0	3.1	0.0	1.3	0.0	1.2				
Intersection Summary												
HCM 2010 Ctrl Delay			50.9									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 100.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	2	34	59	0	160	18	1302	50	109	1461	6
Future Vol, veh/h	8	2	34	59	0	160	18	1302	50	109	1461	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	37	64	0	174	20	1415	54	118	1588	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	2576	3337	798	2513	3313	735	1595	0	0	1469	0	0
Stage 1	1828	1828	-	1482	1482	-	-	-	-	-	-	-
Stage 2	748	1509	-	1031	1831	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	13	8	329	~ 14	8	362	407	-	-	455	-	-
Stage 1	79	126	-	131	187	-	-	-	-	-	-	-
Stage 2	371	182	-	249	126	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 5	6	329	~ 7	6	362	407	-	-	455	-	-
Mov Cap-2 Maneuver	~ 5	6	-	~ 7	6	-	-	-	-	-	-	-
Stage 1	75	93	-	125	178	-	-	-	-	-	-	-
Stage 2	183	173	-	160	93	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	\$ 912.2		\$ 1283.4		0.2		1.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	407	-	-	22	7	362	455	-	-
HCM Lane V/C Ratio	0.048	-	-	2.174	9.161	0.48	0.26	-	-
HCM Control Delay (s)	14.3	-	-	\$ 912.2	\$ 4699.2	23.8	15.7	-	-
HCM Lane LOS	B	-	-	F	F	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-	6.1	9.6	2.5	1	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	11	22	26	1355	1509	40
Future Vol, veh/h	11	22	26	1355	1509	40
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	24	28	1473	1640	43























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2455	842	1683	0	-	0
Stage 1	1662	-	-	-	-	-
Stage 2	793	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	25	308	376	-	-	-
Stage 1	140	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	23	308	376	-	-	-
Mov Cap-2 Maneuver	23	-	-	-	-	-
Stage 1	130	-	-	-	-	-
Stage 2	406	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	130.5	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	376	-	60	-	-
HCM Lane V/C Ratio	0.075	-	0.598	-	-
HCM Control Delay (s)	15.4	-	130.5	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	0.2	-	2.5	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 PM Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	5	48	261	2	54	34	1291	232	91	1363	53
Future Volume (veh/h)	64	5	48	261	2	54	34	1291	232	91	1363	53
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)	0.99		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	70	5	52	284	2	59	37	1403	252	99	1482	58
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	14	148	330	8	226	194	1510	267	189	1808	71
Arrive On Green	0.06	0.10	0.10	0.10	0.15	0.15	0.04	0.50	0.50	0.06	0.52	0.52
Sat Flow, veh/h	1774	140	1456	1703	52	1533	1703	3006	532	1703	3473	136
Grp Volume(v), veh/h	70	0	57	284	0	61	37	817	838	99	754	786
Grp Sat Flow(s),veh/h/ln	1774	0	1596	1703	0	1585	1703	1770	1768	1703	1770	1839
Q Serve(g_s), s	3.7	0.0	3.6	11.0	0.0	3.6	1.1	45.6	47.9	2.9	38.0	38.3
Cycle Q Clear(g_c), s	3.7	0.0	3.6	11.0	0.0	3.6	1.1	45.6	47.9	2.9	38.0	38.3
Prop In Lane	1.00		0.91	1.00		0.97	1.00		0.30	1.00		0.07
Lane Grp Cap(c), veh/h	304	0	162	330	0	233	194	889	888	189	921	957
V/C Ratio(X)	0.23	0.00	0.35	0.86	0.00	0.26	0.19	0.92	0.94	0.52	0.82	0.82
Avail Cap(c_a), veh/h	335	0	384	330	0	426	236	999	998	215	1015	1055
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	44.7	41.0	0.0	40.4	18.2	24.6	25.1	23.8	21.4	21.4
Incr Delay (d2), s/veh	0.8	0.0	2.8	19.1	0.0	0.2	0.2	11.7	14.9	0.8	4.4	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.4	0.0	3.0	8.5	0.0	2.9	0.9	33.3	35.5	2.7	26.8	27.8
LnGrp Delay(d),s/veh	40.2	0.0	47.5	60.0	0.0	40.6	18.4	36.3	40.1	24.6	25.8	25.8
LnGrp LOS	D		D	E		D	B	D	D	C	C	C
Approach Vol, veh/h		127			345			1692			1639	
Approach Delay, s/veh		43.5			56.6			37.8			25.7	
Approach LOS		D			E			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.3	60.4	15.0	18.1	11.4	62.3	10.1	23.0				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	4.9	49.9	13.0	5.6	3.1	40.3	5.7	5.6				
Green Ext Time (p_c), s	0.0	3.8	0.0	0.3	0.0	4.2	0.1	0.1				
Intersection Summary												
HCM 2010 Ctrl Delay			34.5									
HCM 2010 LOS			C									
Notes												



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	58	82	146	1557	1600	74		
Future Volume (veh/h)	58	82	146	1557	1600	74		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	63	89	159	1692	1739	80		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	97	137	198	2764	2699	123		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	662	936	256	3632	3540	158		
Grp Volume(v), veh/h	153	0	159	1692	888	931		
Grp Sat Flow(s),veh/h/ln	1609	0	256	1770	1770	1835		
Q Serve(g_s), s	11.7	0.0	72.4	0.0	28.4	29.1		
Cycle Q Clear(g_c), s	11.7	0.0	101.5	0.0	28.4	29.1		
Prop In Lane	0.41	0.58	1.00			0.09		
Lane Grp Cap(c), veh/h	236	0	198	2764	1386	1437		
V/C Ratio(X)	0.65	0.00	0.80	0.61	0.64	0.65		
Avail Cap(c_a), veh/h	406	0	198	2764	1386	1437		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.55	0.55	0.45	0.45		
Uniform Delay (d), s/veh	52.7	0.0	18.3	0.0	6.1	6.2		
Incr Delay (d2), s/veh	3.0	0.0	17.3	0.6	1.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/ln	9.2	0.0	9.8	0.4	18.1	19.2		
LnGrp Delay(d),s/veh	55.6	0.0	35.6	0.6	7.2	7.3		
LnGrp LOS	E		D	A	A	A		
Approach Vol, veh/h	153			1851	1819			
Approach Delay, s/veh	55.6			3.6	7.2			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		106.7		23.3		106.7		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		103.5		13.7		31.1		
Green Ext Time (p_c), s		0.0		0.6		14.0		
Intersection Summary								
HCM 2010 Ctrl Delay			7.4					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 PM Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↖↗	↖	↖↗	↖↗	↖	↖↗	↖↗↖	↖	↖↗	↖↗↖	↖
Traffic Volume (veh/h)	472	1046	294	467	795	323	250	946	411	298	1149	251
Future Volume (veh/h)	472	1046	294	467	795	323	250	946	411	298	1149	251
Number	5	2	12	1	6	16	3	8	18	7	4	14
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		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	513	1137	320	508	864	351	272	1028	447	324	1249	273
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	616	1198	629	556	1136	674	318	1291	597	374	1397	664
Arrive On Green	0.18	0.34	0.32	0.16	0.32	0.31	0.09	0.25	0.24	0.04	0.09	0.09
Sat Flow, veh/h	3442	3539	1577	3442	3539	1577	3442	5085	1563	3304	5085	1565
Grp Volume(v), veh/h	513	1137	320	508	864	351	272	1028	447	324	1249	273
Grp Sat Flow(s),veh/h/ln	1721	1770	1577	1721	1770	1577	1721	1695	1563	1652	1695	1565
Q Serve(g_s), s	18.7	40.7	19.9	18.9	28.5	21.3	10.1	24.6	31.1	12.7	31.6	17.2
Cycle Q Clear(g_c), s	18.7	40.7	19.9	18.9	28.5	21.3	10.1	24.6	31.1	12.7	31.6	17.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	616	1198	629	556	1136	674	318	1291	597	374	1397	664
V/C Ratio(X)	0.83	0.95	0.51	0.91	0.76	0.52	0.86	0.80	0.75	0.87	0.89	0.41
Avail Cap(c_a), veh/h	635	1198	629	556	1136	674	318	1291	597	374	1397	664
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	0.66	0.66
Uniform Delay (d), s/veh	51.5	41.9	29.5	53.6	39.6	27.4	58.1	45.4	35.0	61.6	57.2	33.0
Incr Delay (d2), s/veh	9.1	15.4	0.7	19.7	3.1	0.7	20.0	5.2	8.4	13.4	6.3	1.2
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(95%),veh/ln	4.8	30.2	13.6	15.8	20.6	14.5	9.6	17.8	21.6	9.9	20.9	11.4
LnGrp Delay(d),s/veh	60.5	57.3	30.2	73.3	42.7	28.2	78.1	50.5	43.4	75.0	63.6	34.2
LnGrp LOS	E	E	C	E	D	C	E	D	D	E	E	C
Approach Vol, veh/h		1970			1723			1747			1846	
Approach Delay, s/veh		53.8			48.8			53.0			61.2	
Approach LOS		D			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	48.2	16.6	40.4	27.5	45.5	19.4	37.6				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	41.7	10.1	33.9	21.7	38.3	12.9	31.1					
Max Q Clear Time (g_c+20), s	42.7	12.1	33.6	20.7	30.5	14.7	33.1					
Green Ext Time (p_c), s	0.0	0.0	0.0	0.2	0.3	3.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			54.3									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	16	59	0	18	0
Future Vol, veh/h	0	16	59	0	18	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	64	0	20	0

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	64	0	-	0	81 64
Stage 1	-	-	-	-	64 -
Stage 2	-	-	-	-	17 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1538	-	-	-	921 1000
Stage 1	-	-	-	-	959 -
Stage 2	-	-	-	-	1006 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1538	-	-	-	921 1000
Mov Cap-2 Maneuver	-	-	-	-	921 -
Stage 1	-	-	-	-	959 -
Stage 2	-	-	-	-	1006 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1538	-	-	-	921
HCM Lane V/C Ratio	-	-	-	-	0.021
HCM Control Delay (s)	0	-	-	-	9
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 SAT Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	72	200	170	98	170	208	171	702	136	221	614	75
Future Volume (veh/h)	72	200	170	98	170	208	171	702	136	221	614	75
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	78	217	185	107	185	226	186	763	148	240	667	82
Adj No. of Lanes	1	1	1	1	1	1	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	320	419	472	310	431	512	441	1298	252	400	1453	178
Arrive On Green	0.06	0.22	0.22	0.06	0.23	0.23	0.08	0.44	0.44	0.10	0.46	0.46
Sat Flow, veh/h	1774	1863	1547	1774	1863	1548	1774	2956	573	1774	3173	390
Grp Volume(v), veh/h	78	217	185	107	185	226	186	457	454	240	372	377
Grp Sat Flow(s),veh/h/ln	1774	1863	1547	1774	1863	1548	1774	1770	1759	1774	1770	1792
Q Serve(g_s), s	3.0	9.3	8.6	4.2	7.7	10.5	5.1	17.8	17.8	6.6	13.1	13.2
Cycle Q Clear(g_c), s	3.0	9.3	8.6	4.2	7.7	10.5	5.1	17.8	17.8	6.6	13.1	13.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.33	1.00		0.22
Lane Grp Cap(c), veh/h	320	419	472	310	431	512	441	777	773	400	810	821
V/C Ratio(X)	0.24	0.52	0.39	0.35	0.43	0.44	0.42	0.59	0.59	0.60	0.46	0.46
Avail Cap(c_a), veh/h	434	777	770	315	675	715	496	952	946	637	1166	1181
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	31.0	25.1	25.1	29.9	24.0	12.8	19.3	19.3	14.2	16.9	17.0
Incr Delay (d2), s/veh	0.1	1.4	0.8	0.2	1.0	0.9	0.2	0.3	0.3	0.5	0.2	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(95%),veh/ln	2.6	8.6	6.8	3.7	7.3	8.1	4.5	13.5	13.5	5.7	10.6	10.7
LnGrp Delay(d),s/veh	25.0	32.4	25.9	25.4	30.8	24.9	13.1	19.6	19.6	14.7	17.1	17.1
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h		480			518			1097			989	
Approach Delay, s/veh		28.7			27.1			18.5			16.5	
Approach LOS		C			C			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	12.9	44.0	9.8	24.5	11.2	45.7	9.2	25.1				
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	21.0	49.0	6.0	38.0	10.0	60.0	11.0	33.0				
Max Q Clear Time (g_c+I1), s	8.6	19.8	6.2	11.3	7.1	15.2	5.0	12.5				
Green Ext Time (p_c), s	0.3	0.9	0.0	2.8	0.1	0.7	0.0	2.6				
Intersection Summary												
HCM 2010 Ctrl Delay			20.9									
HCM 2010 LOS			C									
Notes												

Intersection

Int Delay, s/veh 30.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	0	22	104	2	238	18	763	62	110	770	16
Future Vol, veh/h	8	0	22	104	2	238	18	763	62	110	770	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	0	24	113	2	259	20	829	67	120	837	17

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1542	2022	427	1562	1997	448	854	0	0	896	0	0
Stage 1	1086	1086	-	903	903	-	-	-	-	-	-	-
Stage 2	456	936	-	659	1094	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	78	57	576	~ 76	59	558	781	-	-	753	-	-
Stage 1	231	291	-	299	354	-	-	-	-	-	-	-
Stage 2	554	342	-	419	288	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	35	47	576	~ 63	48	558	781	-	-	753	-	-
Mov Cap-2 Maneuver	35	47	-	~ 63	48	-	-	-	-	-	-	-
Stage 1	225	245	-	291	345	-	-	-	-	-	-	-
Stage 2	288	333	-	338	242	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	49.8		176.5		0.2		1.3	
HCM LOS	E		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	781	-	-	112	63	558	753	-	-
HCM Lane V/C Ratio	0.025	-	-	0.291	1.829	0.464	0.159	-	-
HCM Control Delay (s)	9.7	-	-	49.8	534.7	16.9	10.7	-	-
HCM Lane LOS	A	-	-	E	F	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.1	10.6	2.4	0.6	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	16	22	885	827	11
Future Vol, veh/h	3	16	22	885	827	11
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	17	24	962	899	12























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1434	456	911	0	-	0
Stage 1	905	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	125	551	743	-	-	-
Stage 1	355	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	121	551	743	-	-	-
Mov Cap-2 Maneuver	121	-	-	-	-	-
Stage 1	344	-	-	-	-	-
Stage 2	555	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	743	-	353	-	-
HCM Lane V/C Ratio	0.032	-	0.059	-	-
HCM Control Delay (s)	10	-	15.8	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 SAT Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	8	46	384	8	88	26	690	323	104	699	72
Future Volume (veh/h)	48	8	46	384	8	88	26	690	323	104	699	72
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1900	1788	1863	1900
Adj Flow Rate, veh/h	52	9	50	417	9	96	28	750	351	113	760	78
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	323	28	158	383	24	260	330	1007	471	277	1498	154
Arrive On Green	0.06	0.12	0.12	0.12	0.18	0.18	0.04	0.43	0.43	0.07	0.46	0.46
Sat Flow, veh/h	1774	246	1367	1703	137	1462	1703	2343	1095	1703	3241	332
Grp Volume(v), veh/h	52	0	59	417	0	105	28	566	535	113	415	423
Grp Sat Flow(s),veh/h/ln	1774	0	1613	1703	0	1599	1703	1770	1669	1703	1770	1804
Q Serve(g_s), s	2.3	0.0	3.1	11.0	0.0	5.4	0.8	25.0	25.0	3.3	15.3	15.3
Cycle Q Clear(g_c), s	2.3	0.0	3.1	11.0	0.0	5.4	0.8	25.0	25.0	3.3	15.3	15.3
Prop In Lane	1.00		0.85	1.00		0.91	1.00		0.66	1.00		0.18
Lane Grp Cap(c), veh/h	323	0	186	383	0	285	330	761	717	277	818	834
V/C Ratio(X)	0.16	0.00	0.32	1.09	0.00	0.37	0.08	0.74	0.75	0.41	0.51	0.51
Avail Cap(c_a), veh/h	377	0	445	383	0	493	397	1147	1081	308	1166	1188
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.9	0.0	37.8	35.9	0.0	33.7	14.2	22.2	22.3	16.8	17.6	17.6
Incr Delay (d2), s/veh	0.5	0.0	2.1	71.5	0.0	0.3	0.0	0.6	0.6	0.4	0.2	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(95%),veh/ln	2.1	0.0	2.7	22.0	0.0	4.3	0.7	18.0	17.1	2.8	12.0	12.2
LnGrp Delay(d),s/veh	33.4	0.0	39.9	107.4	0.0	33.9	14.3	22.8	22.8	17.1	17.8	17.8
LnGrp LOS	C		D	F		C	B	C	C	B	B	B
Approach Vol, veh/h		111			522			1129			951	
Approach Delay, s/veh		36.9			92.7			22.6			17.7	
Approach LOS		D			F			C			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	13.3	46.7	15.0	18.0	10.3	49.7	9.2	23.9				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 8.3	* 60	11.0	25.7	* 7.3	* 61	8.0	28.7				
Max Q Clear Time (g_c+I1), s	5.3	27.0	13.0	5.1	2.8	17.3	4.3	7.4				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	1.9	0.1	0.2				
Intersection Summary												
HCM 2010 Ctrl Delay			34.9									
HCM 2010 LOS			C									
Notes												



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	67	90	85	1403	1010	38		
Future Volume (veh/h)	67	90	85	1403	1010	38		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.95	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	73	98	92	1525	1098	41		
Adj No. of Lanes	0	0	1	2	2	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	106	142	385	2736	2698	101		
Arrive On Green	0.15	0.14	1.00	1.00	0.78	0.77		
Sat Flow, veh/h	685	920	492	3632	3572	130		
Grp Volume(v), veh/h	172	0	92	1525	558	581		
Grp Sat Flow(s),veh/h/ln	1614	0	492	1770	1770	1840		
Q Serve(g_s), s	13.1	0.0	4.3	0.0	13.5	13.5		
Cycle Q Clear(g_c), s	13.1	0.0	17.8	0.0	13.5	13.5		
Prop In Lane	0.42	0.57	1.00			0.07		
Lane Grp Cap(c), veh/h	250	0	385	2736	1372	1426		
V/C Ratio(X)	0.69	0.00	0.24	0.56	0.41	0.41		
Avail Cap(c_a), veh/h	407	0	385	2736	1372	1426		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.79	0.79	0.55	0.55		
Uniform Delay (d), s/veh	52.3	0.0	1.2	0.0	4.8	4.8		
Incr Delay (d2), s/veh	3.4	0.0	1.2	0.6	0.5	0.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/lt	0.1	0.0	1.3	0.4	9.9	10.2		
LnGrp Delay(d),s/veh	55.7	0.0	2.3	0.6	5.3	5.3		
LnGrp LOS	E		A	A	A	A		
Approach Vol, veh/h	172			1617	1139			
Approach Delay, s/veh	55.7			0.7	5.3			
Approach LOS	E			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		105.7		24.3		105.7		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		87.0		31.5		87.0		
Max Q Clear Time (g_c+I1), s		19.8		15.1		15.5		
Green Ext Time (p_c), s		14.1		0.6		5.8		
Intersection Summary								
HCM 2010 Ctrl Delay			5.7					
HCM 2010 LOS			A					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 SAT Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑	↗	↔↔	↑↑	↗	↔↔	↑↑↑	↗	↔↔	↑↑↑	↗
Traffic Volume (veh/h)	306	667	190	334	571	373	259	826	426	317	627	186
Future Volume (veh/h)	306	667	190	334	571	373	259	826	426	317	627	186
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	333	725	207	363	621	405	282	898	463	345	682	202
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	408	907	504	349	847	543	328	2022	730	369	2105	788
Arrive On Green	0.12	0.26	0.24	0.10	0.24	0.23	0.10	0.40	0.38	0.04	0.14	0.13
Sat Flow, veh/h	3442	3539	1575	3442	3539	1575	3442	5085	1571	3304	5085	1571
Grp Volume(v), veh/h	333	725	207	363	621	405	282	898	463	345	682	202
Grp Sat Flow(s),veh/h/ln	1721	1770	1575	1721	1770	1575	1721	1695	1571	1652	1695	1571
Q Serve(g_s), s	12.3	24.9	13.4	13.2	21.0	29.5	10.5	16.8	29.1	13.5	15.8	12.6
Cycle Q Clear(g_c), s	12.3	24.9	13.4	13.2	21.0	29.5	10.5	16.8	29.1	13.5	15.8	12.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	408	907	504	349	847	543	328	2022	730	369	2105	788
V/C Ratio(X)	0.82	0.80	0.41	1.04	0.73	0.75	0.86	0.44	0.63	0.94	0.32	0.26
Avail Cap(c_a), veh/h	408	907	504	349	847	543	328	2022	730	369	2105	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	0.90	0.90
Uniform Delay (d), s/veh	55.9	45.2	34.7	58.4	45.6	37.7	57.9	28.6	26.5	62.1	39.7	28.0
Incr Delay (d2), s/veh	12.2	5.1	0.5	58.6	3.3	5.6	19.8	0.7	4.2	29.0	0.4	0.7
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(95%),veh/ln	0.7	18.7	9.9	16.4	16.0	19.8	9.9	12.6	19.4	12.0	11.7	9.3
LnGrp Delay(d),s/veh	68.1	50.4	35.2	117.0	48.9	43.3	77.8	29.3	30.7	91.1	40.1	28.7
LnGrp LOS	E	D	D	F	D	D	E	C	C	F	D	C
Approach Vol, veh/h		1265			1389			1643			1229	
Approach Delay, s/veh		52.6			65.1			38.0			52.5	
Approach LOS		D			E			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	7.0	37.5	17.0	58.5	19.6	34.9	19.2	56.3				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	10.5	31.0	10.5	52.0	13.1	28.4	12.7	49.8				
Max Q Clear Time (g_c+1), s	11.5	26.9	12.5	17.8	14.3	31.5	15.5	31.1				
Green Ext Time (p_c), s	0.0	1.7	0.0	4.3	0.0	0.0	0.0	6.2				
Intersection Summary												
HCM 2010 Ctrl Delay				51.4								
HCM 2010 LOS				D								

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	2	13	27	0	0	0
Future Vol, veh/h	2	13	27	0	0	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	29	0	0	0

























Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	29	0	-	0	47 29
Stage 1	-	-	-	-	29 -
Stage 2	-	-	-	-	18 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1584	-	-	-	963 1046
Stage 1	-	-	-	-	994 -
Stage 2	-	-	-	-	1005 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1584	-	-	-	962 1046
Mov Cap-2 Maneuver	-	-	-	-	962 -
Stage 1	-	-	-	-	993 -
Stage 2	-	-	-	-	1005 -

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

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1584	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-
HCM Control Delay (s)	7.3	0	-	-	0
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 BF Mid Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	560	370	181	432	210	392	976	253	818	1659	312
Future Volume (veh/h)	160	560	370	181	432	210	392	976	253	818	1659	312
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	174	609	402	197	470	228	426	1061	275	889	1803	339
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	869	601	214	856	781	479	1582	590	883	2180	782
Arrive On Green	0.07	0.25	0.25	0.06	0.24	0.24	0.14	0.31	0.31	0.26	0.43	0.43
Sat Flow, veh/h	3442	3539	1550	3442	3539	1550	3442	5085	1579	3442	5085	1580
Grp Volume(v), veh/h	174	609	402	197	470	228	426	1061	275	889	1803	339
Grp Sat Flow(s),veh/h/ln	1721	1770	1550	1721	1770	1550	1721	1695	1579	1721	1695	1580
Q Serve(g_s), s	6.4	20.2	27.7	7.3	14.9	11.1	15.6	23.4	17.0	33.0	40.3	17.7
Cycle Q Clear(g_c), s	6.4	20.2	27.7	7.3	14.9	11.1	15.6	23.4	17.0	33.0	40.3	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	227	869	601	214	856	781	479	1582	590	883	2180	782
V/C Ratio(X)	0.77	0.70	0.67	0.92	0.55	0.29	0.89	0.67	0.47	1.01	0.83	0.43
Avail Cap(c_a), veh/h	321	881	606	214	856	781	535	1622	602	883	2180	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.1	44.2	32.9	60.0	42.6	19.0	54.4	38.5	30.6	47.8	32.5	20.9
Incr Delay (d2), s/veh	3.9	2.7	3.2	39.4	1.0	0.3	14.6	0.8	0.2	31.8	2.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.7	15.4	18.1	8.2	11.9	8.4	13.2	16.5	11.9	35.1	26.6	12.3
LnGrp Delay(d),s/veh	63.0	46.9	36.0	99.3	43.6	19.2	69.0	39.4	30.8	79.6	35.1	21.0
LnGrp LOS	E	D	D	F	D	B	E	D	C	F	D	C
Approach Vol, veh/h		1185			895			1762			3031	
Approach Delay, s/veh		45.6			49.6			45.2			46.6	
Approach LOS		D			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	37.0	44.0	12.0	35.6	21.9	59.1	12.5	35.1				
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	33.0	41.0	8.0	32.0	20.0	54.0	12.0	28.0				
Max Q Clear Time (g_c+I1), s	35.0	25.4	9.3	29.7	17.6	42.3	8.4	16.9				
Green Ext Time (p_c), s	0.0	1.4	0.0	1.5	0.2	2.7	0.1	3.9				
Intersection Summary												
HCM 2010 Ctrl Delay			46.5									
HCM 2010 LOS			D									
Notes												

Intersection

Int Delay, s/veh 110.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	8	2	19	6	19	19	130	1589	50	43	2277	125
Future Vol, veh/h	8	2	19	6	19	19	130	1589	50	43	2277	125
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	21	7	21	21	141	1727	54	47	2475	136

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	3793	4700	1306	3369	4741	891	2611	0	0	1781	0	0
Stage 1	2637	2637	-	2036	2036	-	-	-	-	-	-	-
Stage 2	1156	2063	-	1333	2705	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 1	~ 1	150	~ 3	~ 1	285	162	-	-	345	-	-
Stage 1	24	48	-	58	99	-	-	-	-	-	-	-
Stage 2	209	96	-	162	44	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	0	0	150	~ 1	0	285	162	-	-	345	-	-
Mov Cap-2 Maneuver	0	0	-	~ 1	0	-	-	-	-	-	-	-
Stage 1	~ 3	41	-	8	~ 13	-	-	-	-	-	-	-
Stage 2	-	12	-	114	38	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.3	\$ 10443	7.1	0.3
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	162	-	-	150	1	285	345	-	-
HCM Lane V/C Ratio	0.872	-	-	0.21	27.174	0.072	0.135	-	-
HCM Control Delay (s)	96.2	-	-	35.3	18365.6	18.6	17.1	-	-
HCM Lane LOS	F	-	-	E	F	C	C	-	-
HCM 95th %tile Q(veh)	6.1	-	-	0.8	5.2	0.2	0.5	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	12.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	10	27	19	1776	2264	10
Future Vol, veh/h	10	27	19	1776	2264	10
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	29	21	1930	2461	11

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3474	1236	2472	0	-	0
Stage 1	2467	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 5	168	184	-	-	-
Stage 1	50	-	-	-	-	-
Stage 2	314	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 4	168	184	-	-	-
Mov Cap-2 Maneuver	~ 4	-	-	-	-	-
Stage 1	44	-	-	-	-	-
Stage 2	314	-	-	-	-	-























Approach	EB	NB	SB
HCM Control Delay, \$	1397.6	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	184	-	14	-	-
HCM Lane V/C Ratio	0.112	-	2.873	-	-
HCM Control Delay (s)	27	\$	1397.6	-	-
HCM Lane LOS	D	-	F	-	-
HCM 95th %tile Q(veh)	0.4	-	5.9	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 BF Mid Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	74	16	69	538	72	187	56	1197	707	245	1426	173
Future Volume (veh/h)	74	16	69	538	72	187	56	1197	707	245	1426	173
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	80	17	75	585	78	203	61	1301	768	266	1550	188
Adj No. of Lanes	1	1	0	2	1	0	1	2	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	211	25	111	610	99	256	210	1453	942	280	2461	850
Arrive On Green	0.05	0.08	0.08	0.18	0.22	0.22	0.05	0.41	0.41	0.12	0.48	0.48
Sat Flow, veh/h	1774	299	1320	3304	458	1191	1703	3539	1582	1703	5085	1582
Grp Volume(v), veh/h	80	0	92	585	0	281	61	1301	768	266	1550	188
Grp Sat Flow(s),veh/h/ln	1774	0	1619	1652	0	1649	1703	1770	1582	1703	1695	1582
Q Serve(g_s), s	5.1	0.0	6.9	21.9	0.0	20.1	2.5	42.7	47.6	14.1	28.2	7.8
Cycle Q Clear(g_c), s	5.1	0.0	6.9	21.9	0.0	20.1	2.5	42.7	47.6	14.1	28.2	7.8
Prop In Lane	1.00		0.82	1.00		0.72	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	211	0	136	610	0	355	210	1453	942	280	2461	850
V/C Ratio(X)	0.38	0.00	0.68	0.96	0.00	0.79	0.29	0.90	0.82	0.95	0.63	0.22
Avail Cap(c_a), veh/h	216	0	325	610	0	542	226	1476	952	280	2461	850
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	0.0	55.5	50.4	0.0	46.3	20.7	34.2	19.9	37.1	23.9	15.1
Incr Delay (d2), s/veh	1.1	0.0	11.8	26.7	0.0	2.1	0.3	7.2	5.1	40.1	0.4	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(95%),veh/ln	4.6	0.0	6.4	18.0	0.0	14.4	2.1	30.0	29.6	17.9	19.3	6.1
LnGrp Delay(d),s/veh	49.8	0.0	67.3	77.1	0.0	48.4	21.0	41.4	25.0	77.2	24.3	15.2
LnGrp LOS	D		E	E		D	C	D	C	E	C	B
Approach Vol, veh/h		172			866			2130			2004	
Approach Delay, s/veh		59.1			67.8			34.9			30.4	
Approach LOS		E			E			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	22.0	57.9	27.0	17.8	12.9	67.0	10.6	34.1				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 15	* 52	23.0	25.0	* 7.3	* 60	7.0	41.0				
Max Q Clear Time (g_c+I1), s	16.1	49.6	23.9	8.9	4.5	30.2	7.1	22.1				
Green Ext Time (p_c), s	0.0	1.6	0.0	0.5	0.0	5.9	0.0	0.7				
Intersection Summary												
HCM 2010 Ctrl Delay			39.5									
HCM 2010 LOS			D									
Notes												

HCM 2010 Signalized Intersection Summary
5: Kenwood Road & Orchard Lane

2040 BF Mid Background with Imp
Kenwood Road Development



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	130	142	195	2363	1702	134		
Future Volume (veh/h)	130	142	195	2363	1702	134		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.97	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	141	154	212	2568	1850	146		
Adj No. of Lanes	0	0	1	2	3	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	158	172	172	2586	3522	277		
Arrive On Green	0.20	0.19	0.97	0.97	0.73	0.72		
Sat Flow, veh/h	780	852	215	3632	4975	378		
Grp Volume(v), veh/h	296	0	212	2568	1303	693		
Grp Sat Flow(s),veh/h/ln	1638	0	215	1770	1695	1795		
Q Serve(g_s), s	24.7	0.0	78.6	82.4	23.4	23.7		
Cycle Q Clear(g_c), s	24.7	0.0	102.3	82.4	23.4	23.7		
Prop In Lane	0.48	0.52	1.00			0.21		
Lane Grp Cap(c), veh/h	331	0	172	2586	2484	1315		
V/C Ratio(X)	0.89	0.00	1.23	0.99	0.52	0.53		
Avail Cap(c_a), veh/h	360	0	172	2586	2484	1315		
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.45	0.45	0.56	0.56		
Uniform Delay (d), s/veh	54.7	0.0	25.5	1.7	8.1	8.2		
Incr Delay (d2), s/veh	22.4	0.0	124.4	10.4	0.4	0.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/lt	9.2	0.0	22.7	36.9	15.1	16.1		
LnGrp Delay(d),s/veh	77.1	0.0	150.0	12.1	8.6	9.1		
LnGrp LOS	E		F	B	A	A		
Approach Vol, veh/h	296			2780	1996			
Approach Delay, s/veh	77.1			22.6	8.7			
Approach LOS	E			C	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		107.5		32.5		107.5		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		99.0		29.5		99.0		
Max Q Clear Time (g_c+I1), s		104.3		26.7		25.7		
Green Ext Time (p_c), s		0.0		0.4		16.0		
Intersection Summary								
HCM 2010 Ctrl Delay			20.3					
HCM 2010 LOS			C					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 BF Mid Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	506	883	352	429	656	776	352	1242	474	418	1002	386
Future Volume (veh/h)	506	883	352	429	656	776	352	1242	474	418	1002	386
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	550	960	383	466	713	843	383	1350	515	454	1089	420
Adj No. of Lanes	2	3	1	2	3	2	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	647	1210	545	546	1061	1004	472	1631	702	526	1743	789
Arrive On Green	0.19	0.24	0.22	0.16	0.21	0.20	0.14	0.32	0.31	0.05	0.11	0.11
Sat Flow, veh/h	3442	5085	1575	3442	5085	2770	3442	5085	1568	3304	5085	1569
Grp Volume(v), veh/h	550	960	383	466	713	843	383	1350	515	454	1089	420
Grp Sat Flow(s),veh/h/ln	1721	1695	1575	1721	1695	1385	1721	1695	1568	1652	1695	1569
Q Serve(g_s), s	21.6	24.8	29.5	18.4	18.1	28.3	15.1	34.4	37.9	19.1	28.6	27.3
Cycle Q Clear(g_c), s	21.6	24.8	29.5	18.4	18.1	28.3	15.1	34.4	37.9	19.1	28.6	27.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	647	1210	545	546	1061	1004	472	1631	702	526	1743	789
V/C Ratio(X)	0.85	0.79	0.70	0.85	0.67	0.84	0.81	0.83	0.73	0.86	0.62	0.53
Avail Cap(c_a), veh/h	669	1210	545	546	1061	1004	492	1631	702	526	1743	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.79	0.79	0.79
Uniform Delay (d), s/veh	55.0	50.1	39.7	57.3	51.0	41.0	58.6	44.0	31.9	64.8	53.5	32.2
Incr Delay (d2), s/veh	10.0	3.7	4.1	12.5	1.7	6.5	9.6	5.0	6.7	11.3	1.3	2.0
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(95%),veh/ln	6.7	17.8	19.5	14.9	13.4	22.3	12.4	23.6	24.6	14.1	19.1	17.4
LnGrp Delay(d),s/veh	64.9	53.8	43.7	69.8	52.7	47.5	68.2	49.0	38.6	76.1	54.8	34.2
LnGrp LOS	E	D	D	E	D	D	E	D	D	E	D	C
Approach Vol, veh/h		1893			2022			2248			1963	
Approach Delay, s/veh		55.0			54.5			49.9			55.3	
Approach LOS		E			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	36.0	37.5	23.8	52.7	30.5	33.0	27.0	49.5				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	39.5	31.0	18.1	45.4	24.9	25.6	20.5	43.0				
Max Q Clear Time (g_c+20), s	20.4	31.5	17.1	30.6	23.6	30.3	21.1	39.9				
Green Ext Time (p_c), s	0.0	0.0	0.2	6.3	0.4	0.0	0.0	2.3				
Intersection Summary												
HCM 2010 Ctrl Delay			53.5									
HCM 2010 LOS			D									

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↔	↔		↔	
Traffic Vol, veh/h	6	46	37	6	8	6
Future Vol, veh/h	6	46	37	6	8	6
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, %	2	2	2	2	2	2
Mvmt Flow	7	50	40	7	9	7

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	47	0	-	0	108 44
Stage 1	-	-	-	-	44 -
Stage 2	-	-	-	-	64 -
Critical Hdwy	4.12	-	-	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	2.218	-	-	-	3.518 3.318
Pot Cap-1 Maneuver	1560	-	-	-	889 1026
Stage 1	-	-	-	-	978 -
Stage 2	-	-	-	-	959 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1560	-	-	-	885 1026
Mov Cap-2 Maneuver	-	-	-	-	885 -
Stage 1	-	-	-	-	973 -
Stage 2	-	-	-	-	959 -

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	8.9
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1560	-	-	-	940
HCM Lane V/C Ratio	0.004	-	-	-	0.016
HCM Control Delay (s)	7.3	0	-	-	8.9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

HCM 2010 Signalized Intersection Summary
 1: Kenwood Road & Galbraith Road

2040 BF PM Background with Imp
 Kenwood Road Development

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	245	701	507	221	602	669	360	1595	182	546	1675	170
Future Volume (veh/h)	245	701	507	221	602	669	360	1595	182	546	1675	170
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		0.98	1.00		0.98	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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	266	762	551	240	654	727	391	1734	198	593	1821	185
Adj No. of Lanes	2	2	1	2	2	1	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	274	902	602	247	874	682	449	1815	677	651	2113	783
Arrive On Green	0.08	0.25	0.25	0.07	0.25	0.25	0.13	0.36	0.36	0.19	0.42	0.42
Sat Flow, veh/h	3442	3539	1552	3442	3539	1551	3442	5085	1579	3442	5085	1580
Grp Volume(v), veh/h	266	762	551	240	654	727	391	1734	198	593	1821	185
Grp Sat Flow(s),veh/h/ln	1721	1770	1552	1721	1770	1551	1721	1695	1579	1721	1695	1580
Q Serve(g_s), s	9.7	25.7	32.0	8.7	21.4	31.0	14.0	41.8	10.3	21.2	40.9	8.4
Cycle Q Clear(g_c), s	9.7	25.7	32.0	8.7	21.4	31.0	14.0	41.8	10.3	21.2	40.9	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	274	902	602	247	874	682	449	1815	677	651	2113	783
V/C Ratio(X)	0.97	0.84	0.92	0.97	0.75	1.07	0.87	0.96	0.29	0.91	0.86	0.24
Avail Cap(c_a), veh/h	274	902	602	247	874	682	576	1863	692	740	2113	783
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.6	44.4	36.8	58.2	43.7	35.5	53.5	39.4	23.4	49.9	33.4	18.1
Incr Delay (d2), s/veh	45.8	7.7	19.0	49.3	3.9	53.2	9.5	11.7	0.1	13.4	3.7	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(95%),veh/ln	10.5	19.6	28.8	9.8	16.3	60.4	11.7	29.2	8.0	16.8	27.1	6.6
LnGrp Delay(d),s/veh	103.5	52.1	55.8	107.5	47.5	88.8	63.1	51.1	23.5	63.3	37.1	18.2
LnGrp LOS	F	D	E	F	D	F	E	D	C	E	D	B
Approach Vol, veh/h		1579			1621			2323			2599	
Approach Delay, s/veh		62.0			74.9			50.8			41.8	
Approach LOS		E			E			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	27.7	48.8	13.0	36.0	20.4	56.2	14.0	35.0				
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	27.0	46.0	9.0	32.0	21.0	52.0	10.0	31.0				
Max Q Clear Time (g_c+I1), s	23.2	43.8	10.7	34.0	16.0	42.9	11.7	33.0				
Green Ext Time (p_c), s	0.6	1.0	0.0	0.0	0.4	2.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			54.9									
HCM 2010 LOS			D									
Notes												

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↕		↕	↕	
Traffic Vol, veh/h	16	2	54	96	0	256	27	2102	80	174	2357	10
Future Vol, veh/h	16	2	54	96	0	256	27	2102	80	174	2357	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	95	-	-	90	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	2	59	104	0	278	29	2285	87	189	2562	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	4147	5376	1287	4047	5338	1186	2573	0	0	2372	0	0
Stage 1	2946	2946	-	2387	2387	-	-	-	-	-	-	-
Stage 2	1201	2430	-	1660	2951	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 1	0	155	~ 1	0	~ 181	168	-	-	202	-	-
Stage 1	~ 15	33	-	~ 35	65	-	-	-	-	-	-	-
Stage 2	196	62	-	~ 101	33	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	-	0	155	0	0	~ 181	168	-	-	202	-	-
Mov Cap-2 Maneuver	-	0	-	0	0	-	-	-	-	-	-	-
Stage 1	~ 12	~ 2	-	~ 29	54	-	-	-	-	-	-	-
Stage 2	-	51	-	-	2	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.4	6.6
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	168	-	-	-	-	-	181	202	-
HCM Lane V/C Ratio	0.175	-	-	-	-	-	1.537	0.936	-
HCM Control Delay (s)	30.9	-	-	-	-	-	\$ 314.3	96.3	-
HCM Lane LOS	D	-	-	-	-	-	F	F	-
HCM 95th %tile Q(veh)	0.6	-	-	-	-	-	18	7.7	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Int Delay, s/veh	120.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑↑	↑↑	
Traffic Vol, veh/h	19	35	43	2187	2437	64
Future Vol, veh/h	19	35	43	2187	2437	64
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	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	38	47	2377	2649	70

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	3967	1360	2719	0	-	0
Stage 1	2684	-	-	-	-	-
Stage 2	1283	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	~ 2	138	147	-	-	-
Stage 1	37	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 1	138	147	-	-	-
Mov Cap-2 Maneuver	~ 1	-	-	-	-	-
Stage 1	25	-	-	-	-	-
Stage 2	224	-	-	-	-	-























Approach	EB	NB	SB
HCM Control Delay, \$	10675	0.8	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	147	-	3	-	-
HCM Lane V/C Ratio	0.318	-	19.565	-	-
HCM Control Delay (s)	40.5		\$ 10675	-	-
HCM Lane LOS	E	-	F	-	-
HCM 95th %tile Q(veh)	1.3	-	9.3	-	-

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
 4: Kenwood Road & Kenwood Place/Towne Center

2040 BF PM Background with Imp
 Kenwood Road Development

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	24	82	656	11	154	51	1290	440	227	1454	134
Future Volume (veh/h)	112	24	82	656	11	154	51	1290	440	227	1454	134
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		0.99	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	1863	1863	1900	1788	1863	1900	1788	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	122	26	89	713	12	167	55	1402	478	247	1580	146
Adj No. of Lanes	1	1	0	2	1	0	1	2	1	1	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	287	36	123	632	24	334	199	1475	962	232	2376	840
Arrive On Green	0.06	0.10	0.10	0.19	0.22	0.22	0.05	0.42	0.42	0.10	0.47	0.47
Sat Flow, veh/h	1774	369	1262	3304	107	1488	1703	3539	1582	1703	5085	1582
Grp Volume(v), veh/h	122	0	115	713	0	179	55	1402	478	247	1580	146
Grp Sat Flow(s),veh/h/ln	1774	0	1631	1652	0	1595	1703	1770	1582	1703	1695	1582
Q Serve(g_s), s	7.8	0.0	8.6	24.0	0.0	12.3	2.2	48.0	21.3	12.3	30.1	6.0
Cycle Q Clear(g_c), s	7.8	0.0	8.6	24.0	0.0	12.3	2.2	48.0	21.3	12.3	30.1	6.0
Prop In Lane	1.00		0.77	1.00		0.93	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	287	0	159	632	0	358	199	1475	962	232	2376	840
V/C Ratio(X)	0.43	0.00	0.73	1.13	0.00	0.50	0.28	0.95	0.50	1.06	0.66	0.17
Avail Cap(c_a), veh/h	287	0	325	632	0	521	213	1523	983	232	2402	848
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.4	0.0	55.0	50.8	0.0	42.5	21.4	35.3	13.8	38.1	25.8	15.2
Incr Delay (d2), s/veh	2.1	0.0	12.6	76.8	0.0	0.4	0.3	12.7	0.1	77.0	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	7.1	0.0	7.9	31.7	0.0	9.3	1.9	34.3	14.2	23.3	20.3	4.7
LnGrp Delay(d),s/veh	49.6	0.0	67.6	127.5	0.0	42.9	21.7	48.1	14.0	115.1	26.4	15.2
LnGrp LOS	D		E	F		D	C	D	B	F	C	B
Approach Vol, veh/h		237			892			1935			1973	
Approach Delay, s/veh		58.3			110.5			38.9			36.7	
Approach LOS		E			F			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	19.0	59.0	28.0	19.5	12.7	65.4	12.0	35.5				
Change Period (Y+Rc), s	* 6.7	* 6.7	4.0	7.3	* 6.7	* 6.7	4.0	7.3				
Max Green Setting (Gmax), s	* 12	* 54	24.0	25.0	* 7	* 59	8.0	41.0				
Max Q Clear Time (g_c+I1), s	14.3	50.0	26.0	10.6	4.2	32.1	9.8	14.3				
Green Ext Time (p_c), s	0.0	2.3	0.0	0.7	0.0	5.9	0.0	0.5				
Intersection Summary												
HCM 2010 Ctrl Delay			51.6									
HCM 2010 LOS			D									
Notes												



Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	120	112	160	1914	1970	98		
Future Volume (veh/h)	120	112	160	1914	1970	98		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	0.96	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	1863	1900	1863	1863	1863	1900		
Adj Flow Rate, veh/h	130	122	174	2080	2141	107		
Adj No. of Lanes	0	0	1	2	3	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	0	2	2	2	2		
Cap, veh/h	153	143	146	2662	3743	186		
Arrive On Green	0.18	0.17	1.00	1.00	0.75	0.75		
Sat Flow, veh/h	844	792	168	3632	5130	247		
Grp Volume(v), veh/h	253	0	174	2080	1460	788		
Grp Sat Flow(s),veh/h/ln	1643	0	168	1770	1695	1819		
Q Serve(g_s), s	20.9	0.0	78.9	0.0	26.0	26.4		
Cycle Q Clear(g_c), s	20.9	0.0	105.3	0.0	26.0	26.4		
Prop In Lane	0.51	0.48	1.00			0.14		
Lane Grp Cap(c), veh/h	297	0	146	2662	2557	1372		
V/C Ratio(X)	0.85	0.00	1.19	0.78	0.57	0.57		
Avail Cap(c_a), veh/h	362	0	146	2662	2557	1372		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.57	0.57	0.42	0.42		
Uniform Delay (d), s/veh	55.8	0.0	27.1	0.0	7.4	7.5		
Incr Delay (d2), s/veh	15.0	0.0	117.9	1.4	0.4	0.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(95%),veh/lt	6.1	0.0	18.7	0.9	15.8	17.3		
LnGrp Delay(d),s/veh	70.9	0.0	145.0	1.4	7.8	8.2		
LnGrp LOS	E		F	A	A	A		
Approach Vol, veh/h	253			2254	2248			
Approach Delay, s/veh	70.9			12.4	8.0			
Approach LOS	E			B	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		110.5		29.5		110.5		
Change Period (Y+Rc), s		6.0		5.5		6.0		
Max Green Setting (Gmax), s		99.0		29.5		99.0		
Max Q Clear Time (g_c+I1), s		107.3		22.9		28.4		
Green Ext Time (p_c), s		0.0		0.6		20.6		
Intersection Summary								
HCM 2010 Ctrl Delay			13.4					
HCM 2010 LOS			B					
Notes								

HCM 2010 Signalized Intersection Summary
 6: Kenwood Road & Montgomery Road (US 22/SR 3)

2040 BF PM Background with Imp
 Kenwood Road Development



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔↔	↔↔	↑↑↑	↔	↔↔	↑↑↑	↔
Traffic Volume (veh/h)	427	901	312	483	709	554	344	1115	446	518	1270	291
Future Volume (veh/h)	427	901	312	483	709	554	344	1115	446	518	1270	291
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
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	1863	1863	1863	1863	1863	1863	1863	1863	1863	1788	1863	1863
Adj Flow Rate, veh/h	464	979	339	525	771	602	374	1212	485	563	1380	316
Adj No. of Lanes	2	3	1	2	3	2	2	3	1	2	3	1
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	577	1170	512	595	1197	1162	428	1445	667	625	1775	767
Arrive On Green	0.17	0.23	0.21	0.17	0.24	0.23	0.12	0.28	0.27	0.06	0.12	0.11
Sat Flow, veh/h	3442	5085	1574	3442	5085	2772	3442	5085	1566	3304	5085	1569
Grp Volume(v), veh/h	464	979	339	525	771	602	374	1212	485	563	1380	316
Grp Sat Flow(s),veh/h/ln	1721	1695	1574	1721	1695	1386	1721	1695	1566	1652	1695	1569
Q Serve(g_s), s	18.2	25.7	26.0	20.8	19.1	22.6	14.9	31.4	36.2	23.7	36.9	20.7
Cycle Q Clear(g_c), s	18.2	25.7	26.0	20.8	19.1	22.6	14.9	31.4	36.2	23.7	36.9	20.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	577	1170	512	595	1197	1162	428	1445	667	625	1775	767
V/C Ratio(X)	0.80	0.84	0.66	0.88	0.64	0.52	0.87	0.84	0.73	0.90	0.78	0.41
Avail Cap(c_a), veh/h	678	1210	524	595	1197	1162	428	1445	667	625	1775	767
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	0.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.73	0.73	0.73
Uniform Delay (d), s/veh	56.1	51.4	40.7	56.5	48.2	30.3	60.2	47.1	33.6	64.3	56.6	31.8
Incr Delay (d2), s/veh	6.1	5.2	3.0	14.5	1.2	0.4	17.9	6.0	6.8	12.5	2.5	1.2
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(95%),veh/ln	4.1	18.4	17.3	16.6	14.1	13.6	12.9	22.0	23.6	16.8	23.7	13.5
LnGrp Delay(d),s/veh	62.1	56.5	43.7	71.0	49.4	30.7	78.1	53.1	40.5	76.8	59.2	32.9
LnGrp LOS	E	E	D	E	D	C	E	D	D	E	E	C
Approach Vol, veh/h		1782			1898			2071			2259	
Approach Delay, s/veh		55.6			49.5			54.6			59.9	
Approach LOS		E			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	38.0	36.4	22.0	53.6	27.7	36.8	31.2	44.4				
Change Period (Y+Rc), s	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5				
Max Green Setting (Gmax), s	21.5	31.0	15.5	46.0	25.3	27.2	24.7	36.8				
Max Q Clear Time (g_c+Q2), s	22.8	28.0	16.9	38.9	20.2	24.6	25.7	38.2				
Green Ext Time (p_c), s	0.0	1.8	0.0	4.5	1.0	1.7	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			55.1									
HCM 2010 LOS			E									

Intersection						
Int Delay, s/veh	1.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	0	26	96	0	27	0
Future Vol, veh/h	0	26	96	0	27	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	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	28	104	0	29	0
Major/Minor	Major1	Major2	Minor2			
Conflicting Flow All	104	0	0	132	104	
Stage 1	-	-	-	104	-	
Stage 2	-	-	-	28	-	
Critical Hdwy	4.12	-	-	6.42	6.22	
Critical Hdwy Stg 1	-	-	-	5.42	-	
Critical Hdwy Stg 2	-	-	-	5.42	-	
Follow-up Hdwy	2.218	-	-	3.518	3.318	
Pot Cap-1 Maneuver	1488	-	-	862	951	
Stage 1	-	-	-	920	-	
Stage 2	-	-	-	995	-	
Platoon blocked, %		-	-			
Mov Cap-1 Maneuver	1488	-	-	862	951	
Mov Cap-2 Maneuver	-	-	-	862	-	
Stage 1	-	-	-	920	-	
Stage 2	-	-	-	995	-	
Approach	EB	WB	SB			
HCM Control Delay, s	0	0	9.3			
HCM LOS			A			
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBRn1
Capacity (veh/h)	1488	-	-	-	862	
HCM Lane V/C Ratio	-	-	-	-	0.034	
HCM Control Delay (s)	0	-	-	-	9.3	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	