

## APPENDIX G

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HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

AM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↗↘	↗		↕↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	387	136	0	953	202	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	421	148	0	1036	220	0
RTOR Reduction (vph)	0	117	0	0	0	0
Lane Group Flow (vph)	421	31	0	1036	220	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	16.2	16.2		60.1	60.1	
Effective Green, g (s)	18.2	18.2		62.1	62.1	
Actuated g/C Ratio	0.21	0.21		0.70	0.70	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	708	326		2489	2489	
v/s Ratio Prot	c0.12			c0.29	0.06	
v/s Ratio Perm		0.02				
v/c Ratio	0.59	0.09		0.42	0.09	
Uniform Delay, d1	31.7	28.4		5.5	4.1	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.3	0.1		0.5	0.1	
Delay (s)	33.1	28.5		6.0	4.2	
Level of Service	C	C		A	A	
Approach Delay (s)	31.9			6.0	4.2	
Approach LOS	C			A	A	
<b>Intersection Summary</b>						
HCM Average Control Delay			13.9		HCM Level of Service	B
HCM Volume to Capacity ratio			0.46			
Actuated Cycle Length (s)			88.3		Sum of lost time (s)	8.0
Intersection Capacity Utilization			44.1%		ICU Level of Service	A
Analysis Period (min)			15			
c Critical Lane Group						

# HCM Signalized Intersection Capacity Analysis

## 10: Sycamore Plaza 1 & Kenwood Rd

AM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583			1770	1583	1770	3522		1770	3533	
Flt Permitted	1.00	1.00			1.00	1.00	0.35	1.00		0.35	1.00	
Satd. Flow (perm)	1863	1583			1863	1583	647	3522		660	3533	
Volume (vph)	10	0	1	2	0	2	9	699	23	9	733	8
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	0	1	2	0	2	10	760	25	10	797	9
RTOR Reduction (vph)	0	1	0	0	0	2	0	0	0	0	0	0
Lane Group Flow (vph)	11	0	0	0	2	0	10	785	0	10	806	0
Turn Type	Perm		Perm		Perm	Perm	Perm			Perm		
Protected Phases	4		8		8	8	2		6			
Permitted Phases	4		8		8	8	2		6			
Actuated Green, G (s)	1.6	1.6			1.6	1.6	110.4	110.4		110.4	110.4	
Effective Green, g (s)	1.6	1.6			1.6	1.6	110.4	110.4		110.4	110.4	
Actuated g/C Ratio	0.01	0.01			0.01	0.01	0.92	0.92		0.92	0.92	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	25	21			25	21	595	3240		607	3250	
v/s Ratio Prot	0.00						0.22				c0.23	
v/s Ratio Perm	c0.01				0.00	0.00	0.02			0.02		
v/c Ratio	0.44	0.00			0.08	0.00	0.02	0.24		0.02	0.25	
Uniform Delay, d1	58.8	58.4			58.5	58.4	0.4	0.5		0.4	0.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.9	0.0			1.4	0.0	0.1	0.2		0.0	0.2	
Delay (s)	70.6	58.4			59.8	58.4	0.4	0.7		0.4	0.7	
Level of Service	E	E			E	E	A	A		A	A	
Approach Delay (s)	69.6				59.1		0.7				0.7	
Approach LOS	E				E		A				A	

### Intersection Summary

HCM Average Control Delay	1.3	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	36.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

## 13: Kenwood Rd &

AM Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3441		1770	3539	1583	1770	3372		1770	3413		
Flt Permitted	0.50	1.00		0.39	1.00	1.00	0.26	1.00		0.12	1.00		
Satd. Flow (perm)	937	3441		730	3539	1583	480	3372		222	3413		
Volume (vph)	132	343	78	126	326	123	127	450	207	150	413	129	
Peak-hour factor, PHF	0.83	0.83	0.83	0.97	0.97	0.97	0.97	0.97	0.97	0.90	0.90	0.90	
Adj. Flow (vph)	159	413	94	130	336	127	131	464	213	167	459	143	
RTOR Reduction (vph)	0	13	0	0	0	58	0	46	0	0	26	0	
Lane Group Flow (vph)	159	494	0	130	336	69	131	631	0	167	576	0	
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	63.1	52.7		61.5	51.9	65.8	38.8	29.1		47.2	33.3		
Effective Green, g (s)	67.7	55.0		66.9	54.6	70.3	42.6	31.0		50.7	35.1		
Actuated g/C Ratio	0.52	0.42		0.51	0.42	0.54	0.33	0.24		0.39	0.27		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	569	1456		474	1486	905	272	804		274	922		
v/s Ratio Prot	c0.03	c0.14		0.03	0.09	0.01	0.04	c0.19		c0.07	0.17		
v/s Ratio Perm	0.12			0.12		0.03	0.11			0.16			
v/c Ratio	0.28	0.34		0.27	0.23	0.08	0.48	0.79		0.61	0.63		
Uniform Delay, d1	16.5	25.3		16.9	24.2	14.3	32.4	46.4		29.7	41.7		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.3	0.6		0.3	0.4	0.0	1.3	5.1		3.8	1.3		
Delay (s)	16.8	25.9		17.2	24.5	14.3	33.8	51.5		33.5	43.0		
Level of Service	B	C		B	C	B	C	D		C	D		
Approach Delay (s)		23.7			20.7			48.6			40.9		
Approach LOS		C			C			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			34.8									HCM Level of Service	C
HCM Volume to Capacity ratio			0.48										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			59.7%									ICU Level of Service	B
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

Mldday Existing

























Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗		↖↗	↖↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	588	171	0	595	362	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	639	186	0	647	393	0
RTOR Reduction (vph)	0	136	0	0	0	0
Lane Group Flow (vph)	639	50	0	647	393	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	23.7	23.7		60.2	60.2	
Effective Green, g (s)	25.7	25.7		62.2	62.2	
Actuated g/C Ratio	0.27	0.27		0.65	0.65	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	920	424		2295	2295	
v/s Ratio Prot	c0.19			c0.18	0.11	
v/s Ratio Perm		0.03				
v/c Ratio	0.69	0.12		0.28	0.17	
Uniform Delay, d1	31.6	26.5		7.2	6.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.1		0.3	0.2	
Delay (s)	33.9	26.7		7.6	6.8	
Level of Service	C	C		A	A	
Approach Delay (s)	32.2			7.6	6.8	
Approach LOS	C			A	A	

**Intersection Summary**

HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	95.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			






















HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

Mldday Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.87			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1628			1777	1583	1770	3472		1770	3511		
Flt Permitted	0.69	1.00			0.71	1.00	0.32	1.00		0.24	1.00		
Satd. Flow (perm)	1285	1628			1325	1583	597	3472		451	3511		
Volume (vph)	38	5	24	92	4	15	24	869	125	17	739	41	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	41	5	26	100	4	16	26	945	136	18	803	45	
RTOR Reduction (vph)	0	22	0	0	0	14	0	6	0	0	2	0	
Lane Group Flow (vph)	41	9	0	0	104	2	26	1075	0	18	846	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	10.3	10.3			10.3	10.3	52.5	52.5		52.5	52.5		
Effective Green, g (s)	10.3	10.3			10.3	10.3	52.5	52.5		52.5	52.5		
Actuated g/C Ratio	0.15	0.15			0.15	0.15	0.74	0.74		0.74	0.74		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	187	237			193	230	443	2575		334	2603		
v/s Ratio Prot		0.01						c0.31			0.24		
v/s Ratio Perm	0.03				c0.08	0.00	0.04			0.04			
v/c Ratio	0.22	0.04			0.54	0.01	0.06	0.42		0.05	0.32		
Uniform Delay, d1	26.7	26.0			28.0	25.9	2.5	3.4		2.5	3.1		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.6	0.1			2.9	0.0	0.3	0.5		0.3	0.3		
Delay (s)	27.3	26.1			30.9	25.9	2.7	3.9		2.8	3.4		
Level of Service	C	C			C	C	A	A		A	A		
Approach Delay (s)		26.8			30.3			3.9			3.4		
Approach LOS		C			C			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			5.9									HCM Level of Service	A
HCM Volume to Capacity ratio			0.44										
Actuated Cycle Length (s)			70.8									Sum of lost time (s)	8.0
Intersection Capacity Utilization			46.6%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
15: Montgomery Road & Kenwood Rd

Mldday Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.95		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3374		1770	3539	1583	1770	3352		1770	3396		
Flt Permitted	0.43	1.00		0.17	1.00	1.00	0.26	1.00		0.11	1.00		
Satd. Flow (perm)	807	3374		309	3539	1583	492	3352		206	3396		
Volume (vph)	187	476	215	275	446	226	182	510	277	238	429	159	
Peak-hour factor, PHF	0.91	0.91	0.91	0.87	0.87	0.87	0.95	0.95	0.95	0.93	0.93	0.93	
Adj. Flow (vph)	205	523	236	316	513	260	192	537	292	256	461	171	
RTOR Reduction (vph)	0	40	0	0	0	60	0	56	0	0	29	0	
Lane Group Flow (vph)	205	719	0	316	513	200	192	773	0	256	603	0	
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	49.5	39.8		62.9	46.9	65.3	43.2	30.3		54.2	35.8		
Effective Green, g (s)	54.1	42.1		65.6	49.6	69.8	47.0	32.2		56.4	37.6		
Actuated g/C Ratio	0.42	0.32		0.50	0.38	0.54	0.36	0.25		0.43	0.29		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	425	1093		375	1350	899	323	830		332	982		
v/s Ratio Prot	0.04	0.21		c0.13	0.14	0.03	0.07	c0.23		c0.12	0.18		
v/s Ratio Perm	0.16			c0.30		0.09	0.15			0.21			
v/c Ratio	0.48	0.66		0.84	0.38	0.22	0.59	0.93		0.77	0.61		
Uniform Delay, d1	25.1	37.8		24.6	29.1	15.8	30.4	47.8		33.6	39.9		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.9	3.1		15.7	0.8	0.1	2.9	16.9		10.6	1.1		
Delay (s)	26.0	40.9		40.2	29.9	16.0	33.3	64.8		44.1	41.1		
Level of Service	C	D		D	C	B	C	E		D	D		
Approach Delay (s)		37.7			29.6			58.9			42.0		
Approach LOS		D			C			E			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			41.9									HCM Level of Service	D
HCM Volume to Capacity ratio			0.85										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			84.8%									ICU Level of Service	E
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

PM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗		↕↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	557	207	0	601	569	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	605	225	0	653	618	0
RTOR Reduction (vph)	0	166	0	0	0	0
Lane Group Flow (vph)	605	59	0	653	618	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases		4				
Actuated Green, G (s)	22.7	22.7		60.2	60.2	
Effective Green, g (s)	24.7	24.7		62.2	62.2	
Actuated g/C Ratio	0.26	0.26		0.66	0.66	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	894	412		2320	2320	
v/s Ratio Prot	c0.18			c0.18	0.17	
v/s Ratio Perm		0.04				
v/c Ratio	0.68	0.14		0.28	0.27	
Uniform Delay, d1	31.5	27.0		6.9	6.8	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.2		0.3	0.3	
Delay (s)	33.6	27.1		7.2	7.1	
Level of Service	C	C		A	A	
Approach Delay (s)	31.8			7.2	7.1	
Approach LOS	C			A	A	

**Intersection Summary**

HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			





















HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

PM Existing

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.87			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1619			1776	1583	1770	3482		1770	3519		
Flt Permitted	0.56	1.00			0.68	1.00	0.20	1.00		0.25	1.00		
Satd. Flow (perm)	1042	1619			1264	1583	369	3482		468	3519		
Volume (vph)	63	8	57	135	3	24	33	837	100	18	1065	43	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	68	9	62	147	3	26	36	910	109	20	1158	47	
RTOR Reduction (vph)	0	50	0	0	0	21	0	5	0	0	2	0	
Lane Group Flow (vph)	68	21	0	0	150	5	36	1014	0	20	1203	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	16.1	16.1			16.1	16.1	64.8	64.8		64.8	64.8		
Effective Green, g (s)	18.1	18.1			18.1	18.1	66.8	66.8		66.8	66.8		
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.72	0.72		0.72	0.72		
Clearance Time (s)	6.0	6.0			6.0	6.0	6.0	6.0		6.0	6.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	203	315			246	308	265	2504		337	2530		
v/s Ratio Prot		0.01						0.29			0.34		
v/s Ratio Perm	0.07				0.12	0.00	0.10			0.04			
v/c Ratio	0.33	0.07			0.61	0.02	0.14	0.40		0.06	0.48		
Uniform Delay, d1	32.2	30.5			34.2	30.2	4.1	5.2		3.8	5.6		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	1.0	0.1			4.2	0.0	1.1	0.5		0.3	0.6		
Delay (s)	33.2	30.6			38.4	30.2	5.1	5.7		4.2	6.2		
Level of Service	C	C			D	C	A	A		A	A		
Approach Delay (s)		31.9			37.2			5.6			6.2		
Approach LOS		C			D			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			9.4									HCM Level of Service	A
HCM Volume to Capacity ratio			0.50										
Actuated Cycle Length (s)			92.9									Sum of lost time (s)	8.0
Intersection Capacity Utilization			51.8%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												













HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	537	815	0	0	238	450
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
Hourly flow rate (vph)	0	0	0	0	0	0	584	886	0	0	259	489
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)							631			209		
pX, platoon unblocked												
vC, conflicting volume	1869	2312	129	2183	2312	443	259				886	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1869	2312	129	2183	2312	443	259				886	
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2	
p0 queue free %	100	100	100	100	100	100	55				100	
cM capacity (veh/h)	29	21	896	17	21	562	1303				760	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	<b>SB 4</b>				
Volume Total	0	584	591	295	0	129	129	489				
Volume Left	0	584	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	0	489				
cSH	1700	1303	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.00	0.45	0.35	0.17	0.00	0.08	0.08	0.29				
Queue Length 95th (ft)	0	59	0	0	0	0	0	0				
Control Delay (s)	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	A										
Approach Delay (s)	0.0	4.0				0.0						
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			64.3%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
8: Sycamore Plaza 2 & Kenwood Rd

AM Existing

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Sign Control	Stop		Free		Free	Free
Grade	0%		0%		0%	0%
Volume (veh/h)	2	2	699	23	9	733
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	2	760	25	10	797
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			570
pX, platoon unblocked	0.88					
vC, conflicting volume	1190	392			785	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1084	392			785	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	185	607			830	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	4	507	278	10	398	398
Volume Left	2	0	0	10	0	0
Volume Right	2	0	25	0	0	0
cSH	283	1700	1700	830	1700	1700
Volume to Capacity	0.02	0.30	0.16	0.01	0.23	0.23
Queue Length 95th (ft)	1	0	0	1	0	0
Control Delay (s)	17.9	0.0	0.0	9.4	0.0	0.0
Lane LOS	C			A		
Approach Delay (s)	17.9	0.0		0.1		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			30.3%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Unsignalized Intersection Capacity Analysis

## 14: Sycamore Crossing & Kenwood Rd



















AM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	10	9	692	732	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	11	10	752	796	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				711	389	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1196	402	804			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075	163	625			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	184	742	828			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	12	10	376	376	530	274
Volume Left	1	10	0	0	0	0
Volume Right	11	0	0	0	0	9
cSH	582	828	1700	1700	1700	1700
Volume to Capacity	0.02	0.01	0.22	0.22	0.31	0.16
Queue Length 95th (ft)	2	1	0	0	0	0
Control Delay (s)	11.3	9.4	0.0	0.0	0.0	0.0
Lane LOS	B	A				
Approach Delay (s)	11.3	0.1			0.0	
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			30.5%		ICU Level of Service	A
Analysis Period (min)			15			













HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

Mldday Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	166	1025	15	19	398	436
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
Hourly flow rate (vph)	0	0	0	0	0	0	180	1114	16	21	433	474
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	1392	1965	216	1741	1957	565	433			1130		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1366	1964	216	1730	1955	504	433			1093		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	84			97		
cM capacity (veh/h)	87	49	788	46	49	492	1123			608		
Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4				
Volume Total	0	180	743	388	21	216	216	474				
Volume Left	0	180	0	0	21	0	0	0				
Volume Right	0	0	0	16	0	0	0	474				
cSH	1700	1123	1700	1700	608	1700	1700	1700				
Volume to Capacity	0.00	0.16	0.44	0.23	0.03	0.13	0.13	0.28				
Queue Length 95th (ft)	0	14	0	0	3	0	0	0				
Control Delay (s)	0.0	8.8	0.0	0.0	11.1	0.0	0.0	0.0				
Lane LOS	A	A			B							
Approach Delay (s)	0.0	1.2			0.2							
Approach LOS	A											
Intersection Summary												
Average Delay	0.8											
Intersection Capacity Utilization	42.9%			ICU Level of Service				A				
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

Mldday Existing

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	16	56	922	42	57	872
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	61	1002	46	62	948
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			568
pX, platoon unblocked	0.94	0.92			0.92	
vC, conflicting volume	1623	524			1048	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1415	388			960	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	84	89			91	
cM capacity (veh/h)	110	559			652	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	78	668	380	62	474	474
Volume Left	17	0	0	62	0	0
Volume Right	61	0	46	0	0	0
cSH	293	1700	1700	652	1700	1700
Volume to Capacity	0.27	0.39	0.22	0.09	0.28	0.28
Queue Length 95th (ft)	26	0	0	8	0	0
Control Delay (s)	21.7	0.0	0.0	11.1	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	21.7	0.0		0.7		
Approach LOS	C					
Intersection Summary						
Average Delay		1.1				
Intersection Capacity Utilization		44.5%		ICU Level of Service	A	
Analysis Period (min)		15				

# HCM Unsignalized Intersection Capacity Analysis

## 13: Sycamore Crossing & Kenwood Rd

Mldday Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	13	96	49	929	833	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	104	53	1010	905	57
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				671	427	
pX, platoon unblocked	0.90	0.88	0.88			
vC, conflicting volume	1545	481	962			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1352	273	820			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	84	92			
cM capacity (veh/h)	118	637	708			
Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	118	53	505	505	604	358
Volume Left	14	53	0	0	0	0
Volume Right	104	0	0	0	0	57
cSH	417	708	1700	1700	1700	1700
Volume to Capacity	0.28	0.08	0.30	0.30	0.36	0.21
Queue Length 95th (ft)	29	6	0	0	0	0
Control Delay (s)	17.0	10.5	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	17.0	0.5			0.0	
Approach LOS	C					
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			44.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

PM Existing




















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	232	930	14	16	559	640
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
Hourly flow rate (vph)	0	0	0	0	0	0	252	1011	15	17	608	696
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.97	0.97		0.97	0.97	0.97				0.97		
vC, conflicting volume	1652	2173	304	1861	2165	513	608			1026		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1642	2178	304	1857	2170	471	608			999		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	74			97		
cM capacity (veh/h)	50	32	692	35	32	524	967			670		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	<b>SB 4</b>				
Volume Total	0	252	674	352	17	304	304	696				
Volume Left	0	252	0	0	17	0	0	0				
Volume Right	0	0	0	15	0	0	0	696				
cSH	1700	967	1700	1700	670	1700	1700	1700				
Volume to Capacity	0.00	0.26	0.40	0.21	0.03	0.18	0.18	0.41				
Queue Length 95th (ft)	0	26	0	0	2	0	0	0				
Control Delay (s)	0.0	10.0	0.0	0.0	10.5	0.0	0.0	0.0				
Lane LOS	A	B			B							
Approach Delay (s)	0.0	2.0			0.1							
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay	1.0											
Intersection Capacity Utilization	59.1%			ICU Level of Service			B					
Analysis Period (min)	15											



# HCM Unsignalized Intersection Capacity Analysis

## 8: Sycamore Plaza 2 & Kenwood Rd

PM Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Sign Control		Stop			Stop			Free				Free	
Grade		0%			0%			0%				0%	
Volume (veh/h)	11	2	80	19	0	57	35	843	28	40	1006	48	
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	
Hourly flow rate (vph)	12	2	87	21	0	62	38	916	30	43	1093	52	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None			None									
Median storage veh													
Upstream signal (ft)								530					
pX, platoon unblocked	0.90	0.90		0.90	0.90	0.90					0.90		
vC, conflicting volume	1803	2229	573	1729	2240	473	1146				947		
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	1782	2254	573	1701	2266	312	1146				836		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1				4.1		
tC, 2 stage (s)													
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.2		
p0 queue free %	69	93	81	45	100	90	94				94		
cM capacity (veh/h)	38	33	463	38	32	618	606				718		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	101	21	62	496	489	43	729	417					
Volume Left	12	21	0	38	0	43	0	0					
Volume Right	87	0	62	0	30	0	0	52					
cSH	178	38	618	606	1700	718	1700	1700					
Volume to Capacity	0.57	0.55	0.10	0.06	0.29	0.06	0.43	0.25					
Queue Length 95th (ft)	75	48	8	5	0	5	0	0					
Control Delay (s)	48.8	182.5	11.5	1.8	0.0	10.3	0.0	0.0					
Lane LOS	E	F	B	A		B							
Approach Delay (s)	48.8	54.2		0.9		0.4							
Approach LOS	E	F											
<b>Intersection Summary</b>													
Average Delay			4.6										
Intersection Capacity Utilization			68.9%		ICU Level of Service				C				
Analysis Period (min)			15										

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

AM Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗		↖↗	↖↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	387	136	0	953	202	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	505	177	0	1243	263	0
RTOR Reduction (vph)	0	136	0	0	0	0
Lane Group Flow (vph)	505	41	0	1243	263	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	19.0	19.0		60.1	60.1	
Effective Green, g (s)	21.0	21.0		62.1	62.1	
Actuated g/C Ratio	0.23	0.23		0.68	0.68	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	791	365		2412	2412	
v/s Ratio Prot	c0.15			c0.35	0.07	
v/s Ratio Perm		0.03				
v/c Ratio	0.64	0.11		0.52	0.11	
Uniform Delay, d1	31.6	27.7		7.1	5.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1		0.8	0.1	
Delay (s)	33.3	27.8		7.9	5.1	
Level of Service	C	C		A	A	
Approach Delay (s)	31.9			7.9	5.1	
Approach LOS	C			A	A	






















**Intersection Summary**

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

AM Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583			1770	1583	1770	3522		1770	3534	
Flt Permitted	1.00	1.00			1.00	1.00	0.30	1.00		0.30	1.00	
Satd. Flow (perm)	1863	1583			1863	1583	552	3522		566	3534	
Volume (vph)	10	0	1	2	0	2	9	699	23	9	733	8
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	13	0	1	3	0	3	12	912	30	12	956	10
RTOR Reduction (vph)	0	1	0	0	0	3	0	0	0	0	0	0
Lane Group Flow (vph)	13	0	0	0	3	0	12	942	0	12	966	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	1.7	1.7			1.7	1.7	110.3	110.3		110.3	110.3	
Effective Green, g (s)	1.7	1.7			1.7	1.7	110.3	110.3		110.3	110.3	
Actuated g/C Ratio	0.01	0.01			0.01	0.01	0.92	0.92		0.92	0.92	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	26	22			26	22	507	3237		520	3248	
v/s Ratio Prot		0.00						0.27			c0.27	
v/s Ratio Perm	c0.01				0.00	0.00	0.02			0.02		
v/c Ratio	0.50	0.00			0.12	0.00	0.02	0.29		0.02	0.30	
Uniform Delay, d1	58.7	58.3			58.4	58.3	0.4	0.5		0.4	0.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.3	0.0			2.0	0.0	0.1	0.2		0.1	0.2	
Delay (s)	73.0	58.3			60.4	58.3	0.5	0.8		0.5	0.8	
Level of Service	E	E			E	E	A	A		A	A	
Approach Delay (s)		72.0			59.4			0.8			0.8	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			1.5				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			40.7%				ICU Level of Service				A	
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis

## 13: Kenwood Rd &

AM Existing 2030

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3441		1770	3539	1583	1770	3372		1770	3413		
Flt Permitted	0.44	1.00		0.31	1.00	1.00	0.21	1.00		0.10	1.00		
Satd. Flow (perm)	818	3441		578	3539	1583	398	3372		188	3413		
Volume (vph)	132	343	78	126	326	123	127	450	207	150	413	129	
Peak-hour factor, PHF	0.83	0.83	0.83	0.97	0.97	0.97	0.97	0.97	0.97	0.90	0.90	0.90	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	191	496	113	156	403	152	157	557	256	200	551	172	
RTOR Reduction (vph)	0	14	0	0	0	75	0	44	0	0	24	0	
Lane Group Flow (vph)	191	595	0	156	403	77	157	769	0	200	699	0	
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	57.8	47.3		56.0	46.4	61.0	43.7	33.8		53.1	38.5		
Effective Green, g (s)	62.4	49.6		61.4	49.1	65.5	47.5	35.7		56.1	40.3		
Actuated g/C Ratio	0.48	0.38		0.47	0.38	0.50	0.37	0.27		0.43	0.31		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	486	1313		386	1337	846	270	926		281	1058		
v/s Ratio Prot	c0.04	c0.17		0.04	0.11	0.01	0.05	c0.23		c0.09	0.20		
v/s Ratio Perm	0.15			0.15		0.04	0.16			0.22			
v/c Ratio	0.39	0.45		0.40	0.30	0.09	0.58	0.83		0.71	0.66		
Uniform Delay, d1	20.0	30.1		20.7	28.4	16.8	29.9	44.3		29.8	38.9		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.5	1.1		0.7	0.6	0.0	3.2	6.4		8.2	1.6		
Delay (s)	20.5	31.2		21.3	29.0	16.8	33.1	50.7		38.1	40.5		
Level of Service	C	C		C	C	B	C	D		D	D		
Approach Delay (s)		28.6			24.7			47.9			40.0		
Approach LOS		C			C			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			36.4									HCM Level of Service	D
HCM Volume to Capacity ratio			0.58										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			68.9%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

Mldday Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↗↘	↗		↕↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	588	171	0	595	362	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	767	223	0	776	472	0
RTOR Reduction (vph)	0	155	0	0	0	0
Lane Group Flow (vph)	767	68	0	776	472	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	29.1	29.1		60.2	60.2	
Effective Green, g (s)	31.1	31.1		62.2	62.2	
Actuated g/C Ratio	0.31	0.31		0.61	0.61	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1054	486		2173	2173	
v/s Ratio Prot	c0.22			c0.22	0.13	
v/s Ratio Perm		0.04				
v/c Ratio	0.73	0.14		0.36	0.22	
Uniform Delay, d1	31.3	25.4		9.7	8.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.1		0.5	0.2	
Delay (s)	33.9	25.6		10.1	8.9	
Level of Service	C	C		B	A	
Approach Delay (s)	32.0			10.1	8.9	
Approach LOS	C			B	A	























Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

Mldday Existing 2030

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.88			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1635			1777	1583	1770	3472		1770	3512		
Flt Permitted	0.67	1.00			0.71	1.00	0.26	1.00		0.18	1.00		
Satd. Flow (perm)	1242	1635			1316	1583	483	3472		337	3512		
Volume (vph)	38	5	24	92	4	15	24	869	125	17	739	41	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	50	7	31	120	5	20	31	1133	163	22	964	53	
RTOR Reduction (vph)	0	26	0	0	0	17	0	7	0	0	3	0	
Lane Group Flow (vph)	50	12	0	0	125	3	31	1289	0	22	1014	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	10.4	10.4			10.4	10.4	47.7	47.7		47.7	47.7		
Effective Green, g (s)	10.4	10.4			10.4	10.4	47.7	47.7		47.7	47.7		
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.72	0.72		0.72	0.72		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	195	257			207	249	349	2506		243	2534		
v/s Ratio Prot		0.01						c0.37			0.29		
v/s Ratio Perm	0.04				c0.09	0.00	0.06			0.07			
v/c Ratio	0.26	0.05			0.60	0.01	0.09	0.51		0.09	0.40		
Uniform Delay, d1	24.5	23.6			25.9	23.5	2.7	4.1		2.7	3.6		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.7	0.1			4.9	0.0	0.5	0.8		0.7	0.5		
Delay (s)	25.2	23.7			30.8	23.5	3.2	4.8		3.5	4.1		
Level of Service	C	C			C	C	A	A		A	A		
Approach Delay (s)		24.5			29.8			4.8			4.1		
Approach LOS		C			C			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			6.6									HCM Level of Service	A
HCM Volume to Capacity ratio			0.53										
Actuated Cycle Length (s)			66.1									Sum of lost time (s)	8.0
Intersection Capacity Utilization			53.3%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 15: Montgomery Road & Kenwood Rd

Mldday Existing 2030

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.95		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3374		1770	3539	1583	1770	3352		1770	3396		
Flt Permitted	0.36	1.00		0.09	1.00	1.00	0.17	1.00		0.11	1.00		
Satd. Flow (perm)	671	3374		166	3539	1583	322	3352		210	3396		
Volume (vph)	187	476	215	275	446	226	182	510	277	238	429	159	
Peak-hour factor, PHF	0.91	0.91	0.91	0.87	0.87	0.87	0.95	0.95	0.95	0.93	0.93	0.93	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	247	628	284	379	615	312	230	644	350	307	554	205	
RTOR Reduction (vph)	0	40	0	0	0	37	0	56	0	0	29	0	
Lane Group Flow (vph)	247	872	0	379	615	275	230	938	0	307	730	0	
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	48.4	38.7		62.3	46.3	66.0	43.3	29.6		55.2	35.6		
Effective Green, g (s)	53.0	41.0		65.0	49.0	70.5	47.1	31.5		57.0	37.4		
Actuated g/C Ratio	0.41	0.32		0.50	0.38	0.54	0.36	0.24		0.44	0.29		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	375	1064		330	1334	907	290	812		350	977		
v/s Ratio Prot	0.06	0.26		c0.18	0.17	0.05	0.10	c0.28		c0.15	0.21		
v/s Ratio Perm	0.21			c0.40		0.12	0.19			0.24			
v/c Ratio	0.66	0.82		1.15	0.46	0.30	0.79	1.16		0.88	0.75		
Uniform Delay, d1	26.9	41.1		40.9	30.5	16.3	32.0	49.2		54.8	42.0		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	4.1	7.1		96.1	1.1	0.2	13.8	83.6		21.1	3.2		
Delay (s)	31.0	48.1		137.0	31.7	16.5	45.8	132.8		75.8	45.2		
Level of Service	C	D		F	C	B	D	F		E	D		
Approach Delay (s)		44.5			58.6			116.5			54.0		
Approach LOS		D			E			F			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			69.0									HCM Level of Service	E
HCM Volume to Capacity ratio			1.09										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			99.0%									ICU Level of Service	F
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

PM Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗	↗		↖↗	↖↗	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	557	207	0	601	569	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	727	270	0	784	742	0
RTOR Reduction (vph)	0	132	0	0	0	0
Lane Group Flow (vph)	727	138	0	784	742	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	27.8	27.8		60.2	60.2	
Effective Green, g (s)	29.8	29.8		62.2	62.2	
Actuated g/C Ratio	0.30	0.30		0.62	0.62	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1023	472		2201	2201	
v/s Ratio Prot	c0.21			c0.22	0.21	
v/s Ratio Perm		0.09				
v/c Ratio	0.71	0.29		0.36	0.34	
Uniform Delay, d1	31.3	27.0		9.2	9.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.3		0.5	0.4	
Delay (s)	33.6	27.3		9.6	9.5	
Level of Service	C	C		A	A	
Approach Delay (s)	31.9			9.6	9.5	
Approach LOS	C			A	A	

Intersection Summary























HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

PM Existing 2030

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.87			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1617			1776	1583	1770	3483		1770	3519		
Flt Permitted	0.47	1.00			0.66	1.00	0.14	1.00		0.20	1.00		
Satd. Flow (perm)	871	1617			1234	1583	268	3483		363	3519		
Volume (vph)	63	8	57	135	3	24	33	837	100	18	1065	43	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	82	10	74	176	4	31	43	1092	130	23	1389	56	
RTOR Reduction (vph)	0	51	0	0	0	25	0	6	0	0	2	0	
Lane Group Flow (vph)	82	33	0	0	180	6	43	1216	0	23	1443	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	20.4	20.4			20.4	20.4	78.3	78.3		78.3	78.3		
Effective Green, g (s)	20.4	20.4			20.4	20.4	78.3	78.3		78.3	78.3		
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.73	0.73		0.73	0.73		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	167	309			236	303	197	2556		266	2582		
v/s Ratio Prot		0.02						0.35			c0.41		
v/s Ratio Perm	0.09				c0.15	0.00	0.16			0.06			
v/c Ratio	0.49	0.11			0.76	0.02	0.22	0.48		0.09	0.56		
Uniform Delay, d1	38.5	35.6			40.9	35.0	4.5	5.8		4.0	6.4		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.3	0.2			13.6	0.0	2.5	0.6		0.6	0.9		
Delay (s)	40.8	35.8			54.4	35.1	7.0	6.4		4.7	7.3		
Level of Service	D	D			D	D	A	A		A	A		
Approach Delay (s)		38.3			51.6			6.5			7.2		
Approach LOS		D			D			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.6									HCM Level of Service	B
HCM Volume to Capacity ratio			0.60										
Actuated Cycle Length (s)			106.7									Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.5%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
15: Montgomery Road & Kenwood Rd

PM Existing 2030

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3422		1770	3539	1583	1770	3383		1770	3432	
Flt Permitted	0.26	1.00		0.10	1.00	1.00	0.10	1.00		0.09	1.00	
Satd. Flow (perm)	480	3422		196	3539	1583	191	3383		173	3432	
Volume (vph)	248	522	147	256	427	145	148	581	243	173	670	170
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.84	0.84	0.84
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	359	755	213	338	563	191	191	750	314	247	957	243
RTOR Reduction (vph)	0	20	0	0	0	47	0	35	0	0	17	0
Lane Group Flow (vph)	359	948	0	338	563	144	191	1029	0	247	1183	0
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	58.3	38.7		51.7	35.4	48.6	46.2	37.1		54.4	41.2	
Effective Green, g (s)	62.9	41.0		57.1	38.1	53.1	50.0	39.0		58.0	43.0	
Actuated g/C Ratio	0.48	0.32		0.44	0.29	0.41	0.38	0.30		0.45	0.33	
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	450	1079		316	1037	695	207	1015		261	1135	
v/s Ratio Prot	c0.13	0.28		c0.16	0.16	0.02	0.08	0.30		c0.11	c0.34	
v/s Ratio Perm	0.25			c0.31		0.07	0.28			0.31		
v/c Ratio	0.80	0.88		1.07	0.54	0.21	0.92	1.01		0.95	1.04	
Uniform Delay, d1	23.7	42.1		39.7	38.6	24.8	61.1	45.5		38.4	43.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.5	10.2		70.3	2.0	0.1	41.4	31.7		40.9	38.3	
Delay (s)	33.2	52.3		110.0	40.7	25.0	102.4	77.2		79.3	81.8	
Level of Service	C	D		F	D	C	F	E		E	F	
Approach Delay (s)		47.2			59.4			81.0			81.4	
Approach LOS		D			E			F			F	



















Intersection Summary

HCM Average Control Delay	67.7	HCM Level of Service	E
HCM Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group











HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

AM Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	537	815	0	0	238	450
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
Hourly flow rate (vph)	0	0	0	0	0	0	700	1063	0	0	310	587
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	2243	2774	155	2619	2774	532	310			1063		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2252	2803	155	2642	2803	477	310			1028		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	44			100		
cM capacity (veh/h)	12	8	863	6	8	515	1247			647		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	<b>SB 4</b>				
Volume Total	0	700	709	354	0	155	155	587				
Volume Left	0	700	0	0	0	0	0	0				
Volume Right	0	0	0	0	0	0	0	587				
cSH	1700	1247	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.00	0.56	0.42	0.21	0.00	0.09	0.09	0.35				
Queue Length 95th (ft)	0	91	0	0	0	0	0	0				
Control Delay (s)	0.0	11.5	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	A	B										
Approach Delay (s)	0.0	4.6				0.0						
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay			3.0									
Intersection Capacity Utilization			75.8%			ICU Level of Service				D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

AM Existing 2030

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	Free
Grade	0%		0%		0%	0%
Volume (veh/h)	2	2	699	23	9	733
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	3	912	30	12	956
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			570
pX, platoon unblocked	0.85	1.00			1.00	
vC, conflicting volume	1428	471			942	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1326	468			940	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			98	
cM capacity (veh/h)	124	540			724	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	5	608	334	12	478	478
Volume Left	3	0	0	12	0	0
Volume Right	3	0	30	0	0	0
cSH	201	1700	1700	724	1700	1700
Volume to Capacity	0.03	0.36	0.20	0.02	0.28	0.28
Queue Length 95th (ft)	2	0	0	1	0	0
Control Delay (s)	23.4	0.0	0.0	10.1	0.0	0.0
Lane LOS	C			B		
Approach Delay (s)	23.4	0.0		0.1		
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			34.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 14: Sycamore Crossing & Kenwood Rd

AM Existing 2030





















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	1	10	9	692	732	8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	13	12	903	955	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				711	389	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1435	483	965			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1327	194	769			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	121	684	707			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	14	12	451	451	637	329
Volume Left	1	12	0	0	0	0
Volume Right	13	0	0	0	0	10
cSH	481	707	1700	1700	1700	1700
Volume to Capacity	0.03	0.02	0.27	0.27	0.37	0.19
Queue Length 95th (ft)	2	1	0	0	0	0
Control Delay (s)	12.7	10.2	0.0	0.0	0.0	0.0
Lane LOS	B	B				
Approach Delay (s)	12.7	0.1			0.0	
Approach LOS	B					

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization	34.6%	ICU Level of Service	A
Analysis Period (min)	15		











HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

Mldday Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	166	1025	15	19	398	436
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
Hourly flow rate (vph)	0	0	0	0	0	0	217	1337	20	25	519	569
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1670	2358	260	2089	2348	678	519			1357		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1641	2390	260	2097	2379	562	519			1300		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	79			95		
cM capacity (veh/h)	49	23	739	22	23	432	1043			486		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	<b>SB 4</b>				
Volume Total	0	217	891	465	25	260	260	569				
Volume Left	0	217	0	0	25	0	0	0				
Volume Right	0	0	0	20	0	0	0	569				
cSH	1700	1043	1700	1700	486	1700	1700	1700				
Volume to Capacity	0.00	0.21	0.52	0.27	0.05	0.15	0.15	0.33				
Queue Length 95th (ft)	0	19	0	0	4	0	0	0				
Control Delay (s)	0.0	9.4	0.0	0.0	12.8	0.0	0.0	0.0				
Lane LOS	A	A			B							
Approach Delay (s)	0.0	1.3			0.3							
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay			0.9									
Intersection Capacity Utilization			50.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

Mldday Existing 2030

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Free		Free	Free
Grade	0%		0%		0%	0%
Volume (veh/h)	16	56	922	42	57	872
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	73	1203	55	74	1137
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			568
pX, platoon unblocked	0.91	0.86			0.86	
vC, conflicting volume	1947	629			1257	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1608	401			1134	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	72	86			86	
cM capacity (veh/h)	75	514			525	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	94	802	456	74	569	569
Volume Left	21	0	0	74	0	0
Volume Right	73	0	55	0	0	0
cSH	222	1700	1700	525	1700	1700
Volume to Capacity	0.42	0.47	0.27	0.14	0.33	0.33
Queue Length 95th (ft)	49	0	0	12	0	0
Control Delay (s)	32.5	0.0	0.0	13.0	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	32.5	0.0		0.8		
Approach LOS	D					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			51.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 13: Sycamore Crossing & Kenwood Rd

Mldday Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	13	96	49	929	833	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	125	64	1212	1087	68
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				671	427	
pX, platoon unblocked	0.89	0.84	0.84			
vC, conflicting volume	1854	577	1154			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1496	300	990			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	79	89			
cM capacity (veh/h)	90	583	581			



















Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	142	64	606	606	724	430
Volume Left	17	64	0	0	0	0
Volume Right	125	0	0	0	0	68
cSH	352	581	1700	1700	1700	1700
Volume to Capacity	0.40	0.11	0.36	0.36	0.43	0.25
Queue Length 95th (ft)	47	9	0	0	0	0
Control Delay (s)	22.0	12.0	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	22.0	0.6	0.0			
Approach LOS	C					

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		















HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

PM Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	232	930	14	16	559	640
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
Hourly flow rate (vph)	0	0	0	0	0	0	303	1213	18	21	729	835
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.93	0.93		0.93	0.93	0.93				0.93		
vC, conflicting volume	1983	2607	365	2234	2598	616	729			1231		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1981	2651	365	2251	2642	515	729			1176		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	65			96		
cM capacity (veh/h)	24	13	632	15	13	470	871			550		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	<b>SB 4</b>				
Volume Total	0	303	809	423	21	365	365	835				
Volume Left	0	303	0	0	21	0	0	0				
Volume Right	0	0	0	18	0	0	0	835				
cSH	1700	871	1700	1700	550	1700	1700	1700				
Volume to Capacity	0.00	0.35	0.48	0.25	0.04	0.21	0.21	0.49				
Queue Length 95th (ft)	0	39	0	0	3	0	0	0				
Control Delay (s)	0.0	11.3	0.0	0.0	11.8	0.0	0.0	0.0				
Lane LOS	A	B			B							
Approach Delay (s)	0.0	2.2			0.2							
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay				1.2								
Intersection Capacity Utilization	69.6%			ICU Level of Service			C					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis  
8: Sycamore Plaza 2 & Kenwood Rd

PM Existing 2030

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	19	57	843	28	40	1006
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	74	1100	37	52	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			550
pX, platoon unblocked	0.79	0.87			0.87	
vC, conflicting volume	1878	568			1136	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1368	362			1012	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	75	87			91	
cM capacity (veh/h)	99	555			595	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	99	733	403	52	656	656
Volume Left	25	0	0	52	0	0
Volume Right	74	0	37	0	0	0
cSH	258	1700	1700	595	1700	1700
Volume to Capacity	0.38	0.43	0.24	0.09	0.39	0.39
Queue Length 95th (ft)	43	0	0	7	0	0
Control Delay (s)	27.4	0.0	0.0	11.6	0.0	0.0
Lane LOS	D			B		
Approach Delay (s)	27.4	0.0		0.4		
Approach LOS	D					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			47.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 13: Sycamore Crossing & Kenwood Rd

PM Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	11	80	35	865	966	48
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	104	46	1128	1260	63
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				656	424	
pX, platoon unblocked	0.75	0.70	0.70			
vC, conflicting volume	1947	661	1323			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1508	93	1035			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	84	90			
cM capacity (veh/h)	76	664	468			

Direction, Lane #	EB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	119	46	564	564	840	483
Volume Left	14	46	0	0	0	0
Volume Right	104	0	0	0	0	63
cSH	343	468	1700	1700	1700	1700
Volume to Capacity	0.35	0.10	0.33	0.33	0.49	0.28
Queue Length 95th (ft)	38	8	0	0	0	0
Control Delay (s)	21.0	13.5	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	21.0	0.5			0.0	
Approach LOS	C					

Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization		48.2%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

AM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↰	↱		↰↰	↰↰	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	387	136	0	953	202	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	505	177	0	1243	263	0
RTOR Reduction (vph)	0	136	0	0	0	0
Lane Group Flow (vph)	505	41	0	1243	263	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	19.0	19.0		60.1	60.1	
Effective Green, g (s)	21.0	21.0		62.1	62.1	
Actuated g/C Ratio	0.23	0.23		0.68	0.68	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	791	365		2412	2412	
v/s Ratio Prot	c0.15			c0.35	0.07	
v/s Ratio Perm		0.03				
v/c Ratio	0.64	0.11		0.52	0.11	
Uniform Delay, d1	31.6	27.7		7.1	5.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.1		0.8	0.1	
Delay (s)	33.3	27.8		7.9	5.1	
Level of Service	C	C		A	A	
Approach Delay (s)	31.9			7.9	5.1	
Approach LOS	C			A	A	























**Intersection Summary**

HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	91.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group


























HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.85			1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1583			1770	1583	1770	3522		1770	3534	
Flt Permitted	1.00	1.00			1.00	1.00	0.30	1.00		0.30	1.00	
Satd. Flow (perm)	1863	1583			1863	1583	552	3522		566	3534	
Volume (vph)	10	0	1	2	0	2	9	699	23	9	733	8
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	13	0	1	3	0	3	12	912	30	12	956	10
RTOR Reduction (vph)	0	1	0	0	0	3	0	0	0	0	0	0
Lane Group Flow (vph)	13	0	0	0	3	0	12	942	0	12	966	0
Turn Type	Perm			Perm		Perm	Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	1.7	1.7			1.7	1.7	110.3	110.3		110.3	110.3	
Effective Green, g (s)	1.7	1.7			1.7	1.7	110.3	110.3		110.3	110.3	
Actuated g/C Ratio	0.01	0.01			0.01	0.01	0.92	0.92		0.92	0.92	
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	26	22			26	22	507	3237		520	3248	
v/s Ratio Prot		0.00						0.27			0.27	
v/s Ratio Perm	0.01				0.00	0.00	0.02			0.02		
v/c Ratio	0.50	0.00			0.12	0.00	0.02	0.29		0.02	0.30	
Uniform Delay, d1	58.7	58.3			58.4	58.3	0.4	0.5		0.4	0.5	
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	14.3	0.0			2.0	0.0	0.1	0.2		0.1	0.2	
Delay (s)	73.0	58.3			60.4	58.3	0.5	0.8		0.5	0.8	
Level of Service	E	E			E	E	A	A		A	A	
Approach Delay (s)		72.0			59.4			0.8			0.8	
Approach LOS		E			E			A			A	
<b>Intersection Summary</b>												
HCM Average Control Delay			1.5				HCM Level of Service				A	
HCM Volume to Capacity ratio			0.30									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)				8.0	
Intersection Capacity Utilization			40.7%				ICU Level of Service				A	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 13: Montgomery Rd & Kenwood Rd

AM Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.95		1.00	0.96		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3441		1770	3539	1583	1770	3372		1770	3413		
Flt Permitted	0.44	1.00		0.31	1.00	1.00	0.21	1.00		0.10	1.00		
Satd. Flow (perm)	818	3441		578	3539	1583	398	3372		188	3413		
Volume (vph)	132	343	78	126	326	123	127	450	207	150	413	129	
Peak-hour factor, PHF	0.83	0.83	0.83	0.97	0.97	0.97	0.97	0.97	0.97	0.90	0.90	0.90	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	191	496	113	156	403	152	157	557	256	200	551	172	
RTOR Reduction (vph)	0	14	0	0	0	75	0	44	0	0	24	0	
Lane Group Flow (vph)	191	595	0	156	403	77	157	769	0	200	699	0	
Turn Type	pm+pt			pm+pt			pm+ov	pm+pt		pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	57.8	47.3		56.0	46.4	61.0	43.7	33.8		53.1	38.5		
Effective Green, g (s)	62.4	49.6		61.4	49.1	65.5	47.5	35.7		56.1	40.3		
Actuated g/C Ratio	0.48	0.38		0.47	0.38	0.50	0.37	0.27		0.43	0.31		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	486	1313		386	1337	846	270	926		281	1058		
v/s Ratio Prot	c0.04	c0.17		0.04	0.11	0.01	0.05	c0.23		c0.09	0.20		
v/s Ratio Perm	0.15			0.15		0.04	0.16			0.22			
v/c Ratio	0.39	0.45		0.40	0.30	0.09	0.58	0.83		0.71	0.66		
Uniform Delay, d1	20.0	30.1		20.7	28.4	16.8	29.9	44.3		29.8	38.9		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.5	1.1		0.7	0.6	0.0	3.2	6.4		8.2	1.6		
Delay (s)	20.5	31.2		21.3	29.0	16.8	33.1	50.7		38.1	40.5		
Level of Service	C	C		C	C	B	C	D		D	D		
Approach Delay (s)		28.6			24.7			47.9			40.0		
Approach LOS		C			C			D			D		
<b>Intersection Summary</b>													
HCM Average Control Delay			36.4									HCM Level of Service	D
HCM Volume to Capacity ratio			0.58										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			68.9%									ICU Level of Service	C
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

Mldday Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↗↘	↗		↕↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	588	171	0	595	362	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	767	223	0	776	472	0
RTOR Reduction (vph)	0	155	0	0	0	0
Lane Group Flow (vph)	767	68	0	776	472	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	29.1	29.1		60.2	60.2	
Effective Green, g (s)	31.1	31.1		62.2	62.2	
Actuated g/C Ratio	0.31	0.31		0.61	0.61	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1054	486		2173	2173	
v/s Ratio Prot	c0.22			c0.22	0.13	
v/s Ratio Perm		0.04				
v/c Ratio	0.73	0.14		0.36	0.22	
Uniform Delay, d1	31.3	25.4		9.7	8.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	0.1		0.5	0.2	
Delay (s)	33.9	25.6		10.1	8.9	
Level of Service	C	C		B	A	
Approach Delay (s)	32.0			10.1	8.9	
Approach LOS	C			B	A	























Intersection Summary

HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd

Mldday Existing 2030


























													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.88			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1635			1777	1583	1770	3472		1770	3512		
Flt Permitted	0.67	1.00			0.71	1.00	0.26	1.00		0.18	1.00		
Satd. Flow (perm)	1242	1635			1316	1583	483	3472		337	3512		
Volume (vph)	38	5	24	92	4	15	24	869	125	17	739	41	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	50	7	31	120	5	20	31	1133	163	22	964	53	
RTOR Reduction (vph)	0	26	0	0	0	17	0	7	0	0	3	0	
Lane Group Flow (vph)	50	12	0	0	125	3	31	1289	0	22	1014	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	10.4	10.4			10.4	10.4	47.7	47.7		47.7	47.7		
Effective Green, g (s)	10.4	10.4			10.4	10.4	47.7	47.7		47.7	47.7		
Actuated g/C Ratio	0.16	0.16			0.16	0.16	0.72	0.72		0.72	0.72		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	195	257			207	249	349	2506		243	2534		
v/s Ratio Prot		0.01						c0.37			0.29		
v/s Ratio Perm	0.04				c0.09	0.00	0.06			0.07			
v/c Ratio	0.26	0.05			0.60	0.01	0.09	0.51		0.09	0.40		
Uniform Delay, d1	24.5	23.6			25.9	23.5	2.7	4.1		2.7	3.6		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	0.7	0.1			4.9	0.0	0.5	0.8		0.7	0.5		
Delay (s)	25.2	23.7			30.8	23.5	3.2	4.8		3.5	4.1		
Level of Service	C	C			C	C	A	A		A	A		
Approach Delay (s)		24.5			29.8			4.8			4.1		
Approach LOS		C			C			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			6.6									HCM Level of Service	A
HCM Volume to Capacity ratio			0.53										
Actuated Cycle Length (s)			66.1									Sum of lost time (s)	8.0
Intersection Capacity Utilization			53.3%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
 15: Montgomery Road & Kenwood Rd

Mldday Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.95		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3374		1770	3539	1583	1770	3352		1770	3396	
Flt Permitted	0.36	1.00		0.09	1.00	1.00	0.17	1.00		0.11	1.00	
Satd. Flow (perm)	671	3374		166	3539	1583	322	3352		210	3396	
Volume (vph)	187	476	215	275	446	226	182	510	277	238	429	159
Peak-hour factor, PHF	0.91	0.91	0.91	0.87	0.87	0.87	0.95	0.95	0.95	0.93	0.93	0.93
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	247	628	284	379	615	312	230	644	350	307	554	205
RTOR Reduction (vph)	0	40	0	0	0	37	0	56	0	0	29	0
Lane Group Flow (vph)	247	872	0	379	615	275	230	938	0	307	730	0
Turn Type	pm+pt			pm+pt		pm+ov	pm+pt			pm+pt		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases	2			6		6	8			4		
Actuated Green, G (s)	48.4	38.7		62.3	46.3	66.0	43.3	29.6		55.2	35.6	
Effective Green, g (s)	53.0	41.0		65.0	49.0	70.5	47.1	31.5		57.0	37.4	
Actuated g/C Ratio	0.41	0.32		0.50	0.38	0.54	0.36	0.24		0.44	0.29	
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	375	1064		330	1334	907	290	812		350	977	
v/s Ratio Prot	0.06	0.26		c0.18	0.17	0.05	0.10	c0.28		c0.15	0.21	
v/s Ratio Perm	0.21			c0.40		0.12	0.19			0.24		
v/c Ratio	0.66	0.82		1.15	0.46	0.30	0.79	1.16		0.88	0.75	
Uniform Delay, d1	26.9	41.1		40.9	30.5	16.3	32.0	49.2		54.8	42.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.1	7.1		96.1	1.1	0.2	13.8	83.6		21.1	3.2	
Delay (s)	31.0	48.1		137.0	31.7	16.5	45.8	132.8		75.8	45.2	
Level of Service	C	D		F	C	B	D	F		E	D	
Approach Delay (s)		44.5			58.6			116.5			54.0	
Approach LOS		D			E			F			D	

Intersection Summary

HCM Average Control Delay	69.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	130.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	99.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 4: I 71 NB Off Ramp & Kenwood Rd

PM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↰↰	↱		↕↕	↕↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.97	1.00		0.95	0.95	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	3433	1583		3539	3539	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	3433	1583		3539	3539	
Volume (vph)	557	207	0	601	569	0
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor (vph)	120%	120%	120%	120%	120%	120%
Adj. Flow (vph)	727	270	0	784	742	0
RTOR Reduction (vph)	0	132	0	0	0	0
Lane Group Flow (vph)	727	138	0	784	742	0
Turn Type	Perm					
Protected Phases	4			2	6	
Permitted Phases	4					
Actuated Green, G (s)	27.8	27.8		60.2	60.2	
Effective Green, g (s)	29.8	29.8		62.2	62.2	
Actuated g/C Ratio	0.30	0.30		0.62	0.62	
Clearance Time (s)	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1023	472		2201	2201	
v/s Ratio Prot	c0.21			c0.22	0.21	
v/s Ratio Perm		0.09				
v/c Ratio	0.71	0.29		0.36	0.34	
Uniform Delay, d1	31.3	27.0		9.2	9.0	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.3		0.5	0.4	
Delay (s)	33.6	27.3		9.6	9.5	
Level of Service	C	C		A	A	
Approach Delay (s)	31.9			9.6	9.5	
Approach LOS	C			A	A	























Intersection Summary

HCM Average Control Delay	18.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Sycamore Plaza 1 & Kenwood Rd


























PM Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	1.00			1.00	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.87			1.00	0.85	1.00	0.98		1.00	0.99		
Flt Protected	0.95	1.00			0.95	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	1617			1776	1583	1770	3483		1770	3519		
Flt Permitted	0.47	1.00			0.66	1.00	0.14	1.00		0.20	1.00		
Satd. Flow (perm)	871	1617			1234	1583	268	3483		363	3519		
Volume (vph)	63	8	57	135	3	24	33	837	100	18	1065	43	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	82	10	74	176	4	31	43	1092	130	23	1389	56	
RTOR Reduction (vph)	0	51	0	0	0	25	0	6	0	0	2	0	
Lane Group Flow (vph)	82	33	0	0	180	6	43	1216	0	23	1443	0	
Turn Type	Perm			Perm		Perm	Perm			Perm			
Protected Phases		4			8			2			6		
Permitted Phases	4			8		8	2			6			
Actuated Green, G (s)	20.4	20.4			20.4	20.4	78.3	78.3		78.3	78.3		
Effective Green, g (s)	20.4	20.4			20.4	20.4	78.3	78.3		78.3	78.3		
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.73	0.73		0.73	0.73		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0		
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	167	309			236	303	197	2556		266	2582		
v/s Ratio Prot		0.02						0.35			c0.41		
v/s Ratio Perm	0.09				c0.15	0.00	0.16			0.06			
v/c Ratio	0.49	0.11			0.76	0.02	0.22	0.48		0.09	0.56		
Uniform Delay, d1	38.5	35.6			40.9	35.0	4.5	5.8		4.0	6.4		
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	2.3	0.2			13.6	0.0	2.5	0.6		0.6	0.9		
Delay (s)	40.8	35.8			54.4	35.1	7.0	6.4		4.7	7.3		
Level of Service	D	D			D	D	A	A		A	A		
Approach Delay (s)		38.3			51.6			6.5			7.2		
Approach LOS		D			D			A			A		
<b>Intersection Summary</b>													
HCM Average Control Delay			11.6									HCM Level of Service	B
HCM Volume to Capacity ratio			0.60										
Actuated Cycle Length (s)			106.7									Sum of lost time (s)	8.0
Intersection Capacity Utilization			59.5%									ICU Level of Service	B
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 15: Montgomery Road & Kenwood Rd

PM Existing

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0		
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95		
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.96		1.00	0.97		
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00		
Satd. Flow (prot)	1770	3422		1770	3539	1583	1770	3383		1770	3432		
Flt Permitted	0.26	1.00		0.10	1.00	1.00	0.10	1.00		0.09	1.00		
Satd. Flow (perm)	480	3422		196	3539	1583	191	3383		173	3432		
Volume (vph)	248	522	147	256	427	145	148	581	243	173	670	170	
Peak-hour factor, PHF	0.83	0.83	0.83	0.91	0.91	0.91	0.93	0.93	0.93	0.84	0.84	0.84	
Growth Factor (vph)	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	120%	
Adj. Flow (vph)	359	755	213	338	563	191	191	750	314	247	957	243	
RTOR Reduction (vph)	0	20	0	0	0	47	0	35	0	0	17	0	
Lane Group Flow (vph)	359	948	0	338	563	144	191	1029	0	247	1183	0	
Turn Type	pm+pt			pm+pt			pm+ov	pm+pt		pm+pt			
Protected Phases	5	2		1	6	7	3	8		7	4		
Permitted Phases	2			6		6	8			4			
Actuated Green, G (s)	58.3	38.7		51.7	35.4	48.6	46.2	37.1		54.4	41.2		
Effective Green, g (s)	62.9	41.0		57.1	38.1	53.1	50.0	39.0		58.0	43.0		
Actuated g/C Ratio	0.48	0.32		0.44	0.29	0.41	0.38	0.30		0.45	0.33		
Clearance Time (s)	6.3	6.3		6.7	6.7	5.8	5.9	5.9		5.8	5.8		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0		
Lane Grp Cap (vph)	450	1079		316	1037	695	207	1015		261	1135		
v/s Ratio Prot	c0.13	0.28		c0.16	0.16	0.02	0.08	0.30		c0.11	c0.34		
v/s Ratio Perm	0.25			c0.31		0.07	0.28			0.31			
v/c Ratio	0.80	0.88		1.07	0.54	0.21	0.92	1.01		0.95	1.04		
Uniform Delay, d1	23.7	42.1		39.7	38.6	24.8	61.1	45.5		38.4	43.5		
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00		
Incremental Delay, d2	9.5	10.2		70.3	2.0	0.1	41.4	31.7		40.9	38.3		
Delay (s)	33.2	52.3		110.0	40.7	25.0	102.4	77.2		79.3	81.8		
Level of Service	C	D		F	D	C	F	E		E	F		
Approach Delay (s)		47.2			59.4			81.0			81.4		
Approach LOS		D			E			F			F		
<b>Intersection Summary</b>													
HCM Average Control Delay			67.7									HCM Level of Service	E
HCM Volume to Capacity ratio			1.05										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	16.0
Intersection Capacity Utilization			93.4%									ICU Level of Service	F
Analysis Period (min)			15										

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

AM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↗	↕			↕	↗
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	0	0	0	537	815	0	0	238	450
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
Hourly flow rate (vph)	0	0	0	0	0	0	700	1063	0	0	310	587
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)								631			209	
pX, platoon unblocked	0.96	0.96		0.96	0.96	0.96				0.96		
vC, conflicting volume	2243	2774	155	2619	2774	532	310			1063		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2252	2803	155	2642	2803	477	310			1028		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	44			100		
cM capacity (veh/h)	12	8	863	6	8	515	1247			647		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	0	700	709	354	155	155	587					
Volume Left	0	700	0	0	0	0	0					
Volume Right	0	0	0	0	0	0	587					
cSH	1700	1247	1700	1700	1700	1700	1700					
Volume to Capacity	0.00	0.56	0.42	0.21	0.09	0.09	0.35					
Queue Length 95th (ft)	0	91	0	0	0	0	0					
Control Delay (s)	0.0	11.5	0.0	0.0	0.0	0.0	0.0					
Lane LOS	A	B										
Approach Delay (s)	0.0	4.6			0.0							
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay			3.0									
Intersection Capacity Utilization			82.5%		ICU Level of Service					E		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

AM Existing



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↗			↕↗
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	4	699	32	0	733
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	5	912	42	0	956
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			574
pX, platoon unblocked	0.86	1.00			1.00	
vC, conflicting volume	1411	477			953	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1307	474			952	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	130	536			716	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	5	608	346	478	478	
Volume Left	0	0	0	0	0	
Volume Right	5	0	42	0	0	
cSH	536	1700	1700	1700	1700	
Volume to Capacity	0.01	0.36	0.20	0.28	0.28	
Queue Length 95th (ft)	1	0	0	0	0	
Control Delay (s)	11.8	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.8	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			34.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 14: Sycamore Crossing & Kenwood Rd

AM Existing




















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔			↑↑	↑↑	
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	11	0	692	732	17
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	14	0	903	955	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				711	393	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1417	488	977			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1307	202	783			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	100			
cM capacity (veh/h)	127	677	698			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	14	451	451	637	340
Volume Left	0	0	0	0	0
Volume Right	14	0	0	0	22
cSH	677	1700	1700	1700	1700
Volume to Capacity	0.02	0.27	0.27	0.37	0.20
Queue Length 95th (ft)	2	0	0	0	0
Control Delay (s)	10.4	0.0	0.0	0.0	0.0
Lane LOS	B				
Approach Delay (s)	10.4	0.0		0.0	
Approach LOS	B				

Intersection Summary					
Average Delay			0.1		
Intersection Capacity Utilization	34.9%		ICU Level of Service	A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd












Mldday Existing 2030

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Volume (veh/h)	0	0	0	0	0	0	166	1025	34	0	398	436
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
Hourly flow rate (vph)	0	0	0	0	0	0	217	1337	44	0	519	569
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)							631			209		
pX, platoon unblocked	0.92	0.92		0.92	0.92	0.92				0.92		
vC, conflicting volume	1621	2333	260	2052	2311	691	519			1381		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1587	2363	260	2056	2339	575	519			1327		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	79			100		
cM capacity (veh/h)	56	25	739	25	26	424	1043			474		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	0	217	891	490	260	260	569					
Volume Left	0	217	0	0	0	0	0					
Volume Right	0	0	0	44	0	0	569					
cSH	1700	1043	1700	1700	1700	1700	1700					
Volume to Capacity	0.00	0.21	0.52	0.29	0.15	0.15	0.33					
Queue Length 95th (ft)	0	19	0	0	0	0	0					
Control Delay (s)	0.0	9.4	0.0	0.0	0.0	0.0	0.0					
Lane LOS	A	A										
Approach Delay (s)	0.0	1.3				0.0						
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay				0.8								
Intersection Capacity Utilization	50.1%			ICU Level of Service			A					
Analysis Period (min)	15											



HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

Mldday Existing 2030

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations			 			 
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	72	922	99	0	872
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	94	1203	129	0	1137
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			568
pX, platoon unblocked	0.90	0.86			0.86	
vC, conflicting volume	1836	666			1332	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1539	444			1221	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	80			100	
cM capacity (veh/h)	96	481			486	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	94	802	530	569	569	
Volume Left	0	0	0	0	0	
Volume Right	94	0	129	0	0	
cSH	481	1700	1700	1700	1700	
Volume to Capacity	0.20	0.47	0.31	0.33	0.33	
Queue Length 95th (ft)	18	0	0	0	0	
Control Delay (s)	14.3	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	14.3	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization			46.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 13: Sycamore Crossing & Kenwood Rd

Mldday Existing 2030



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	↘
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	109	0	929	833	101
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	142	0	1212	1087	132
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				671	427	
pX, platoon unblocked	0.87	0.83	0.83			
vC, conflicting volume	1758	609	1218			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1466	322	1057			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	75	100			
cM capacity (veh/h)	103	559	543			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	142	606	606	724	494	
Volume Left	0	0	0	0	0	
Volume Right	142	0	0	0	132	
cSH	559	1700	1700	1700	1700	
Volume to Capacity	0.25	0.36	0.36	0.43	0.29	
Queue Length 95th (ft)	25	0	0	0	0	
Control Delay (s)	13.6	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	13.6	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization		46.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
 5: I 71 SB On Ramp & Kenwood Rd

PM Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↕		↕	↕			↕	↕
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	0	0	0	0	232	930	30	0	559	640
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
Hourly flow rate (vph)	0	0	0	0	0	0	303	1213	39	0	729	835
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)								631			209	
pX, platoon unblocked	0.93	0.93		0.93	0.93	0.93				0.93		
vC, conflicting volume	1941	2587	365	2202	2567	626	729			1252		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1937	2629	365	2217	2608	525	729			1197		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	65			100		
cM capacity (veh/h)	27	14	632	16	15	463	871			539		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>NB 3</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	0	303	809	443	365	365	835					
Volume Left	0	303	0	0	0	0	0					
Volume Right	0	0	0	39	0	0	835					
cSH	1700	871	1700	1700	1700	1700	1700					
Volume to Capacity	0.00	0.35	0.48	0.26	0.21	0.21	0.49					
Queue Length 95th (ft)	0	39	0	0	0	0	0					
Control Delay (s)	0.0	11.3	0.0	0.0	0.0	0.0	0.0					
Lane LOS	A	B										
Approach Delay (s)	0.0	2.2			0.0							
Approach LOS	A											
<b>Intersection Summary</b>												
Average Delay			1.1									
Intersection Capacity Utilization			69.6%		ICU Level of Service					C		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 8: Sycamore Plaza 2 & Kenwood Rd

PM Existing



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗	↕↗			↕↗
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Volume (veh/h)	0	76	843	68	0	1006
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	99	1100	89	0	1312
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)			530			550
pX, platoon unblocked	0.79	0.87			0.87	
vC, conflicting volume	1800	594			1188	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1249	380			1064	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	82			100	
cM capacity (veh/h)	131	536			564	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	99	733	455	656	656	
Volume Left	0	0	0	0	0	
Volume Right	99	0	89	0	0	
cSH	536	1700	1700	1700	1700	
Volume to Capacity	0.18	0.43	0.27	0.39	0.39	
Queue Length 95th (ft)	17	0	0	0	0	
Control Delay (s)	13.2	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	13.2	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay		0.5				
Intersection Capacity Utilization		42.9%		ICU Level of Service	A	
Analysis Period (min)		15				

# HCM Unsignalized Intersection Capacity Analysis

## 13: Sycamore Crossing & Kenwood Rd

PM Existing



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↕	↕	↘
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	0	91	0	865	966	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	119	0	1128	1260	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)				656	424	
pX, platoon unblocked	0.75	0.70	0.70			
vC, conflicting volume	1878	684	1368			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1431	115	1095			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	81	100			
cM capacity (veh/h)	94	639	442			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	119	564	564	840	528	
Volume Left	0	0	0	0	0	
Volume Right	119	0	0	0	108	
cSH	639	1700	1700	1700	1700	
Volume to Capacity	0.19	0.33	0.33	0.49	0.31	
Queue Length 95th (ft)	17	0	0	0	0	
Control Delay (s)	11.9	0.0	0.0	0.0	0.0	
Lane LOS	B					
Approach Delay (s)	11.9	0.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			0.5			
Intersection Capacity Utilization		48.6%		ICU Level of Service		A
Analysis Period (min)		15				

# LANE SUMMARY

Site: AM Peak Hour

Kenwood Road and St. Vincent Ferrer Roundabout

Lane Use and Performance																
	Demand Flows			Total	HV	Cap.	Deg.	Lane	Average	Level of	95% Back of	Queue	Lane	SL	Cap.	Prob.
	L	T	R													
	veh/h	veh/h	veh/h	veh/h	%	veh/h	v/c	%	sec		veh	ft	ft		%	%
South: NB Kenwood Road																
Lane 1	11	369	0	380	2.0	1393	0.273	100	4.2	LOS A	1.6	39.8	800	-	0.0	0.0
Lane 2	0	382	25	407	2.0	1492	0.273	100	4.1	LOS A	1.6	39.9	800	-	0.0	0.0
Approach	11	752	25	787	2.0		0.273		4.2	LOS A	1.6	39.9				
East: WB Sycamore Plaza																
Lane 1	3	0	0	3	2.0	842	0.004	100	8.4	LOS A	0.0	0.3	185	-	0.0	0.0
Lane 2	0	1	2	3	2.0	846	0.004	100	3.4	LOS A	0.0	0.3	185	-	0.0	0.0
Approach	3	1	2	6	2.0		0.004		5.9	LOS A	0.0	0.3				
North: SB Kenwood Road																
Lane 1	10	381	0	391	2.0	1387	0.282	100	4.2	LOS A	1.6	41.4	1025	-	0.0	0.0
Lane 2	0	407	10	417	2.0	1480	0.282	100	4.1	LOS A	1.6	41.5	1025	-	0.0	0.0
Approach	10	788	10	808	2.0		0.282		4.1	LOS A	1.6	41.5				
West: EB St. Vincent Ferrer																
Lane 1	2	1	0	3	2.0	490	0.007	50 <sup>5</sup>	8.8	LOS A	0.0	0.5	210	-	0.0	0.0
Lane 2	0	0	11	11	2.0	810	0.013	100	4.1	LOS A	0.0	1.1	210	-	0.0	0.0
Approach	2	1	11	14	2.0		0.013		5.2	LOS A	0.0	1.1				
Intersection				1615	2.0		0.285		4.2	LOS A	1.6	41.5				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (HCM).

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (HCM).

Approach LOS values are based on the worst delay for any lane.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

<sup>5</sup> Lane underutilisation determined by program



# LANE SUMMARY

Site: Mid Day Peak Hour

Kenwood Road and St. Vincent Ferrer Roundabout

Lane Use and Performance																
	Demand Flows			Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
	L veh/h	T veh/h	R veh/h													
South: NB Kenwood Road																
Lane 1	27	515	0	542	2.0	1283	0.422	100	4.7	LOS A	3.2	82.2	800	-	0.0	0.0
Lane 2	0	419	134	554	2.0	1311	0.422	100	4.6	LOS A	3.2	82.5	800	-	0.0	0.0
Approach	27	934	134	1096	2.0		0.422		4.7	LOS A	3.2	82.5				
East: WB Sycamore Plaza																
Lane 1	100	0	0	100	2.0	715	0.140	100	9.2	LOS A	0.6	14.8	185	-	0.0	0.0
Lane 2	0	4	16	20	2.0	369	0.055	40 <sup>5</sup>	8.1	LOS A	0.2	5.0	185	-	0.0	0.0
Approach	100	4	16	120	2.0		0.140		9.0	LOS A	0.6	14.8				
North: SB Kenwood Road																
Lane 1	20	409	0	430	2.0	1170	0.367	100	5.0	LOS A	2.6	66.2	1025	-	0.0	0.0
Lane 2	0	385	44	430	2.0	1170	0.367	100	4.8	LOS A	2.6	66.2	1025	-	0.0	0.0
Approach	20	795	44	859	2.0		0.367		4.9	LOS A	2.6	66.2				
West: EB St. Vincent Ferrer																
Lane 1	42	0	0	42	2.0	728	0.058	100	8.8	LOS A	0.2	5.7	210	-	0.0	0.0
Lane 2	0	5	26	31	2.0	656	0.048	82 <sup>5</sup>	4.8	LOS A	0.2	4.6	210	-	0.0	0.0
Approach	42	5	26	73	2.0		0.058		7.1	LOS A	0.2	5.7				
Intersection				2148	2.0		0.423		5.1	LOS A	3.2	82.5				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (HCM).

Level of Service (Worst Lane): LOS A. LOS Method for individual lanes: Delay (HCM).

Approach LOS values are based on the worst delay for any lane.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

<sup>5</sup> Lane underutilisation determined by program

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SIDRA INTERSECTION 4.0.19.1104

Project: Y:\Projects\2011 Projects\11102 Sycamore Township\001 Kenwood Road Access Management

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# LANE SUMMARY

Site: PM Peak Hour

Kenwood Road and St. Vincent Ferrer Roundabout

Lane Use and Performance																
	Demand Flows			Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Lane Length ft	SL Type	Cap. Adj. %	Prob. Block. %
	L veh/h	T veh/h	R veh/h													
South: NB Kenwood Road																
Lane 1	35	459	0	494	2.0	1236	0.400	100	4.9	LOS A	3.1	77.9	800	-	0.0	0.0
Lane 2	0	395	102	497	2.0	1243	0.400	100	4.7	LOS A	3.1	77.9	800	-	0.0	0.0
Approach	35	854	102	991	2.0		0.400		4.8	LOS A	3.1	77.9				
East: WB Sycamore Plaza																
Lane 1	139	0	0	139	2.0	719	0.193	100	9.2	LOS A	0.8	21.2	185	-	0.0	0.0
Lane 2	0	3	24	28	2.0	371	0.074	39 <sup>5</sup>	8.2	LOS A	0.3	6.9	185	-	0.0	0.0
Approach	139	3	24	166	2.0		0.193		9.0	LOS A	0.8	21.2				
North: SB Kenwood Road																
Lane 1	19	556	0	575	2.0	1131	0.508	100	5.3	LOS A	4.2	107.1	1025	-	0.0	0.0
Lane 2	0	531	44	575	2.0	1131	0.508	100	5.2	LOS A	4.2	107.1	1025	-	0.0	0.0
Approach	19	1087	44	1150	2.0		0.508		5.2	LOS A	4.2	107.1				
West: EB St. Vincent Ferrer																
Lane 1	65	0	0	65	2.0	563	0.116	100	10.2	LOS B	0.5	12.5	210	-	0.0	0.0
Lane 2	0	8	58	66	2.0	600	0.111	95 <sup>5</sup>	5.7	LOS A	0.5	12.1	210	-	0.0	0.0
Approach	65	8	58	132	2.0		0.116		7.9	LOS B	0.5	12.5				
Intersection				2439	2.0		0.510		5.5	LOS A	4.2	107.1				

Level of Service (Aver. Int. Delay): LOS A. Based on average delay for all lanes. LOS Method: Delay (HCM).

Level of Service (Worst Lane): LOS B. LOS Method for individual lanes: Delay (HCM).

Approach LOS values are based on the worst delay for any lane.

Roundabout LOS Method: Same as Signalised Intersections.

Roundabout Capacity Model: SIDRA Standard.

<sup>5</sup> Lane underutilisation determined by program

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SIDRA INTERSECTION 4.0.19.1104

Project: Y:\Projects\2011 Projects\11102 Sycamore Township\001 Kenwood Road Access Management

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