

Appendix D – Cumulative Conditions Level of Service Worksheets

HCM Unsignalized Intersection Capacity Analysis
1: Project Entrance & Sherburne Hills Rd

A.M. Peak
12/13/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	26	0	0	39	16	11
Future Volume (vph)	26	0	0	39	16	11
Peak Hour Factor	0.86	0.86	0.92	0.92	0.69	0.69
Hourly flow rate (vph)	30	0	0	42	23	16
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	30	42	39			
Volume Left (vph)	30	0	23			
Volume Right (vph)	0	42	16			
Hadj (s)	0.23	-0.57	-0.09			
Departure Headway (s)	4.3	3.4	3.9			
Degree Utilization, x	0.04	0.04	0.04			
Capacity (veh/h)	832	1026	884			
Control Delay (s)	7.4	6.6	7.1			
Approach Delay (s)	7.4	6.6	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.0			
Level of Service			A			
Intersection Capacity Utilization			18.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 2: Sherburne Hills Rd & Camino Tassajara

A.M. Peak
12/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	645	20	5	1121	66	46	0	18	43	2	66
Future Volume (vph)	38	645	20	5	1121	66	46	0	18	43	2	66
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3521		1770	3505		1768	1583			1668	
Flt Permitted	0.95	1.00		0.95	1.00		0.66	1.00			0.87	
Satd. Flow (perm)	1770	3521		1770	3505		1226	1583			1473	
Peak-hour factor, PHF	0.82	0.82	0.82	0.98	0.98	0.98	0.82	0.82	0.82	0.72	0.72	0.72
Adj. Flow (vph)	46	787	24	5	1144	67	56	0	22	60	3	92
RTOR Reduction (vph)	0	2	0	0	3	0	0	18	0	0	76	0
Lane Group Flow (vph)	46	809	0	5	1208	0	56	4	0	0	79	0
Confl. Peds. (#/hr)			3			3	2					2
Confl. Bikes (#/hr)						3						
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	2.5	31.4		0.8	29.7		9.3	9.3			9.3	
Effective Green, g (s)	2.5	31.4		0.8	29.7		9.3	9.3			9.3	
Actuated g/C Ratio	0.05	0.59		0.01	0.56		0.17	0.17			0.17	
Clearance Time (s)	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	
Lane Grp Cap (vph)	82	2066		26	1945		213	275			256	
v/s Ratio Prot	c0.03	0.23		0.00	c0.34			0.00				
v/s Ratio Perm							0.05				c0.05	
v/c Ratio	0.56	0.39		0.19	0.62		0.26	0.01			0.31	
Uniform Delay, d1	25.0	5.9		26.0	8.1		19.1	18.3			19.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	8.5	0.1		3.6	0.6		0.7	0.0			0.7	
Delay (s)	33.5	6.1		29.6	8.7		19.8	18.3			20.0	
Level of Service	C	A		C	A		B	B			B	
Approach Delay (s)		7.5			8.8			19.4			20.0	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		9.4				HCM 2000 Level of Service		A				
HCM 2000 Volume to Capacity ratio		0.54										
Actuated Cycle Length (s)		53.5				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		54.1%				ICU Level of Service		A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: Creekside Ave./Holbrook Dr & Camino Tassajara

A.M. Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	592	12	8	1110	75	33	6	26	40	1	62
Future Volume (vph)	76	592	12	8	1110	75	33	6	26	40	1	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.95		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (prot)	1770	3527		1770	3500			1711		1770	1588	
Flt Permitted	0.95	1.00		0.95	1.00			0.98		0.95	1.00	
Satd. Flow (perm)	1770	3527		1770	3500			1711		1770	1588	
Peak-hour factor, PHF	0.81	0.81	0.81	0.95	0.95	0.95	0.90	0.90	0.90	0.52	0.52	0.52
Adj. Flow (vph)	94	731	15	8	1168	79	37	7	29	77	2	119
RTOR Reduction (vph)	0	1	0	0	4	0	0	26	0	0	108	0
Lane Group Flow (vph)	94	745	0	8	1243	0	0	47	0	77	13	0
Confl. Peds. (#/hr)			1			1			1			
Confl. Bikes (#/hr)						4						
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	7.7	51.3		1.2	44.8			7.4		8.1	8.1	
Effective Green, g (s)	7.7	51.3		1.2	44.8			7.4		8.1	8.1	
Actuated g/C Ratio	0.09	0.60		0.01	0.53			0.09		0.10	0.10	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Vehicle Extension (s)	1.8	4.0		1.8	4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)	160	2128		24	1844			148		168	151	
v/s Ratio Prot	c0.05	0.21		0.00	c0.36			c0.03		c0.04	0.01	
v/s Ratio Perm												
v/c Ratio	0.59	0.35		0.33	0.67			0.31		0.46	0.09	
Uniform Delay, d1	37.1	8.5		41.5	14.7			36.4		36.4	35.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.5		3.0	2.0			0.4		0.7	0.1	
Delay (s)	40.6	8.9		44.5	16.7			36.9		37.1	35.2	
Level of Service	D	A		D	B			D		D	D	
Approach Delay (s)		12.5			16.9			36.9			35.9	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			17.5			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			85.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			59.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 4: Crow Canyon Rd/Blackhawk Rd & Camino Tassajara

A.M. Peak
12/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	354	223	645	598	163	315	283	227	113	362	155
Future Volume (vph)	162	354	223	645	598	163	315	283	227	113	362	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95		0.97	0.91	0.91	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.99	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	0.97	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1563	4990	3415		3433	3280	1421	3433	3539	1563
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1563	4990	3415		3433	3280	1421	3433	3539	1563
Peak-hour factor, PHF	0.90	0.90	0.90	0.86	0.86	0.86	0.95	0.95	0.95	0.83	0.83	0.83
Adj. Flow (vph)	180	393	248	750	695	190	332	298	239	136	436	187
RTOR Reduction (vph)	0	0	199	0	15	0	0	12	120	0	0	148
Lane Group Flow (vph)	180	393	49	750	870	0	332	360	45	136	436	39
Confl. Peds. (#/hr)			1						1			
Confl. Bikes (#/hr)						3			1			1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	10.3	20.1	20.1	26.5	36.3		15.0	27.3	27.3	8.9	21.2	21.2
Effective Green, g (s)	10.3	20.1	20.1	26.5	36.3		15.0	27.3	27.3	8.9	21.2	21.2
Actuated g/C Ratio	0.10	0.20	0.20	0.26	0.36		0.15	0.27	0.27	0.09	0.21	0.21
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	350	705	311	1311	1229		510	888	384	303	744	328
v/s Ratio Prot	0.05	c0.11		0.15	c0.25		c0.10	0.11		0.04	c0.12	
v/s Ratio Perm			0.03						0.03			0.03
v/c Ratio	0.51	0.56	0.16	0.57	0.71		0.65	0.40	0.12	0.45	0.59	0.12
Uniform Delay, d1	42.9	36.3	33.4	32.2	27.7		40.4	30.1	27.7	43.6	35.8	32.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	1.2	0.3	0.4	2.0		2.3	0.4	0.2	0.4	1.4	0.2
Delay (s)	43.4	37.5	33.7	32.6	29.7		42.7	30.5	27.9	44.0	37.2	32.5
Level of Service	D	D	C	C	C		D	C	C	D	D	C
Approach Delay (s)		37.7			31.0			34.7			37.3	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			34.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			100.8			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			60.3%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
5: Camino Ramon/Driveway & Sycamore Valley Rd

A.M. Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	703	329	107	1401	14	490	9	77	8	11	27
Future Volume (vph)	25	703	329	107	1401	14	490	9	77	8	11	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.93		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	6395		3433	1492		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	6395		3433	1492		1770	1863	1583
Peak-hour factor, PHF	0.90	0.90	0.90	0.92	0.92	0.92	0.88	0.88	0.88	0.55	0.55	0.55
Adj. Flow (vph)	28	781	366	116	1523	15	557	10	88	15	20	49
RTOR Reduction (vph)	0	0	134	0	1	0	0	68	0	0	0	46
Lane Group Flow (vph)	28	781	232	116	1537	0	557	30	0	15	20	3
Confl. Peds. (#/hr)						16			58			
Confl. Bikes (#/hr)									1			
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2									7
Actuated Green, G (s)	5.5	66.0	66.0	14.0	74.5		31.4	31.4		8.0	8.0	8.0
Effective Green, g (s)	5.5	66.0	66.0	14.0	74.5		31.4	31.4		8.0	8.0	8.0
Actuated g/C Ratio	0.04	0.47	0.47	0.10	0.53		0.22	0.22		0.06	0.06	0.06
Clearance Time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	69	2397	746	177	3403		769	334		101	106	90
v/s Ratio Prot	0.02	0.15		c0.07	c0.24		c0.16	0.02		0.01	c0.01	
v/s Ratio Perm			0.15									0.00
v/c Ratio	0.41	0.33	0.31	0.66	0.45		0.72	0.09		0.15	0.19	0.03
Uniform Delay, d1	65.7	23.1	22.9	60.7	20.2		50.3	43.0		62.8	62.9	62.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.4	0.4	1.1	6.5	0.4		2.9	0.0		0.2	0.3	0.1
Delay (s)	67.1	23.5	24.0	67.2	20.6		53.2	43.0		63.0	63.2	62.4
Level of Service	E	C	C	E	C		D	D		E	E	E
Approach Delay (s)		24.7			23.9			51.7			62.7	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			30.2			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)				20.6		
Intersection Capacity Utilization			78.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
1: Project Entrance & Sherburne Hills Rd

Midday Peak
12/13/2018



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	14	0	0	19	33	21
Future Volume (vph)	14	0	0	19	33	21
Peak Hour Factor	0.54	0.54	0.92	0.92	0.82	0.82
Hourly flow rate (vph)	26	0	0	21	40	26
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	26	21	66			
Volume Left (vph)	26	0	40			
Volume Right (vph)	0	21	26			
Hadj (s)	0.23	-0.57	-0.08			
Departure Headway (s)	4.3	3.5	3.9			
Degree Utilization, x	0.03	0.02	0.07			
Capacity (veh/h)	820	1003	897			
Control Delay (s)	7.4	6.6	7.2			
Approach Delay (s)	7.4	6.6	7.2			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.1			
Level of Service			A			
Intersection Capacity Utilization			17.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 2: Sherburne Hills Rd & Camino Tassajara

Midday Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	54	879	32	22	805	72	26	0	12	70	1	69
Future Volume (vph)	54	879	32	22	805	72	26	0	12	70	1	69
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.85			0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1770	3518		1770	3488		1770	1583			1696	
Flt Permitted	0.95	1.00		0.95	1.00		0.69	1.00			0.83	
Satd. Flow (perm)	1770	3518		1770	3488		1287	1583			1449	
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.75	0.75	0.75	0.79	0.79	0.79
Adj. Flow (vph)	59	955	35	25	915	82	35	0	16	89	1	87
RTOR Reduction (vph)	0	2	0	0	6	0	0	13	0	0	72	0
Lane Group Flow (vph)	59	988	0	25	991	0	35	3	0	0	105	0
Confl. Peds. (#/hr)			1			6						
Confl. Bikes (#/hr)			3			2						
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	2.3	23.4		0.7	21.8		6.7	6.7			6.7	
Effective Green, g (s)	2.3	23.4		0.7	21.8		6.7	6.7			6.7	
Actuated g/C Ratio	0.05	0.55		0.02	0.51		0.16	0.16			0.16	
Clearance Time (s)	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	
Lane Grp Cap (vph)	95	1923		28	1776		201	247			226	
v/s Ratio Prot	c0.03	0.28		0.01	c0.28			0.00				
v/s Ratio Perm							0.03				c0.07	
v/c Ratio	0.62	0.51		0.89	0.56		0.17	0.01			0.47	
Uniform Delay, d1	19.8	6.1		21.0	7.2		15.7	15.2			16.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	12.0	0.2		123.8	0.4		0.4	0.0			1.5	
Delay (s)	31.8	6.3		144.8	7.6		16.1	15.3			17.9	
Level of Service	C	A		F	A		B	B			B	
Approach Delay (s)		7.8			10.9			15.8			17.9	
Approach LOS		A			B			B			B	
Intersection Summary												
HCM 2000 Control Delay			10.1			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			42.8			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			54.3%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis 3: Creekside Ave./Holbrook Dr & Camino Tassajara

Midday Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	844	25	16	802	47	17	3	9	61	2	83
Future Volume (vph)	71	844	25	16	802	47	17	3	9	61	2	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.96		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1770	3522		1770	3502			1728		1770	1590	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (perm)	1770	3522		1770	3502			1728		1770	1590	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.96	0.96	0.96	0.49	0.49	0.49
Adj. Flow (vph)	76	908	27	17	862	51	18	3	9	124	4	169
RTOR Reduction (vph)	0	1	0	0	3	0	0	8	0	0	150	0
Lane Group Flow (vph)	76	934	0	17	910	0	0	22	0	124	23	0
Confl. Peds. (#/hr)							7		2			
Confl. Bikes (#/hr)			4			2						
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	7.2	53.4		2.5	48.7			7.2		9.9	9.9	
Effective Green, g (s)	7.2	53.4		2.5	48.7			7.2		9.9	9.9	
Actuated g/C Ratio	0.08	0.59		0.03	0.54			0.08		0.11	0.11	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Vehicle Extension (s)	1.8	4.0		1.8	4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)	141	2089		49	1894			138		194	174	
v/s Ratio Prot	c0.04	0.27		0.01	c0.26			c0.01		c0.07	0.01	
v/s Ratio Perm												
v/c Ratio	0.54	0.45		0.35	0.48			0.16		0.64	0.13	
Uniform Delay, d1	39.8	10.1		42.9	12.8			38.6		38.3	36.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.0	0.7		1.6	0.9			0.2		5.0	0.1	
Delay (s)	41.8	10.8		44.5	13.7			38.8		43.3	36.3	
Level of Service	D	B		D	B			D		D	D	
Approach Delay (s)		13.2			14.2			38.8			39.2	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			17.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)				17.0		
Intersection Capacity Utilization			47.9%			ICU Level of Service				A		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis 4: Crow Canyon Rd/Blackhawk Rd & Camino Tassajara

Midday Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 		  	 		 	 		 	 	
Traffic Volume (vph)	178	499	190	366	403	201	337	407	318	161	297	180
Future Volume (vph)	178	499	190	366	403	201	337	407	318	161	297	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95		0.97	0.91	0.91	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1558	4990	3338		3433	3283	1414	3433	3539	1561
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1558	4990	3338		3433	3283	1414	3433	3539	1561
Peak-hour factor, PHF	0.96	0.96	0.96	0.89	0.89	0.89	0.94	0.94	0.94	0.91	0.91	0.91
Adj. Flow (vph)	185	520	198	411	453	226	359	433	338	177	326	198
RTOR Reduction (vph)	0	0	148	0	41	0	0	12	172	0	0	155
Lane Group Flow (vph)	185	520	50	411	638	0	359	522	65	177	326	43
Confl. Peds. (#/hr)			5			10			5			1
Confl. Bikes (#/hr)									2			1
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	10.0	22.3	22.3	13.7	26.0		14.9	24.1	24.1	9.8	19.0	19.0
Effective Green, g (s)	10.0	22.3	22.3	13.7	26.0		14.9	24.1	24.1	9.8	19.0	19.0
Actuated g/C Ratio	0.11	0.25	0.25	0.16	0.30		0.17	0.27	0.27	0.11	0.22	0.22
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	390	897	395	777	987		581	900	387	382	764	337
v/s Ratio Prot	0.05	c0.15		0.08	c0.19		c0.10	c0.16		0.05	0.09	
v/s Ratio Perm			0.03						0.05			0.03
v/c Ratio	0.47	0.58	0.13	0.53	0.65		0.62	0.58	0.17	0.46	0.43	0.13
Uniform Delay, d1	36.5	28.7	25.3	34.1	26.9		33.9	27.5	24.3	36.6	29.7	27.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	1.1	0.2	0.3	1.6		1.4	1.1	0.3	0.3	0.5	0.2
Delay (s)	36.8	29.8	25.5	34.4	28.6		35.2	28.7	24.6	36.9	30.3	28.0
Level of Service	D	C	C	C	C		D	C	C	D	C	C
Approach Delay (s)		30.3			30.8			29.9			31.3	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			30.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			87.9			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			59.8%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
5: Camino Ramon/Driveway & Sycamore Valley Rd

Midday Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1043	388	62	954	9	445	3	98	2	1	20
Future Volume (vph)	23	1043	388	62	954	9	445	3	98	2	1	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.96		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.85		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	6398		3433	1526		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	6398		3433	1526		1770	1863	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.89	0.89	0.89	0.88	0.88	0.88	0.79	0.79	0.79
Adj. Flow (vph)	24	1075	400	70	1072	10	506	3	111	3	1	25
RTOR Reduction (vph)	0	0	92	0	0	0	0	88	0	0	0	24
Lane Group Flow (vph)	24	1075	308	70	1082	0	506	26	0	3	1	1
Confl. Peds. (#/hr)						1			24			
Confl. Bikes (#/hr)									1			
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2									7
Actuated Green, G (s)	5.4	75.7	75.7	8.9	79.2		28.8	28.8		6.0	6.0	6.0
Effective Green, g (s)	5.4	75.7	75.7	8.9	79.2		28.8	28.8		6.0	6.0	6.0
Actuated g/C Ratio	0.04	0.54	0.54	0.06	0.57		0.21	0.21		0.04	0.04	0.04
Clearance Time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	68	2749	855	112	3619		706	313		75	79	67
v/s Ratio Prot	0.01	c0.21		c0.04	c0.17		c0.15	0.02		c0.00	0.00	
v/s Ratio Perm			0.19									0.00
v/c Ratio	0.35	0.39	0.36	0.62	0.30		0.72	0.08		0.04	0.01	0.02
Uniform Delay, d1	65.6	18.7	18.3	63.9	15.9		51.8	44.9		64.2	64.2	64.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.4	1.2	7.6	0.2		2.9	0.0		0.1	0.0	0.0
Delay (s)	66.7	19.1	19.5	71.5	16.1		54.7	45.0		64.3	64.2	64.2
Level of Service	E	B	B	E	B		D	D		E	E	E
Approach Delay (s)		20.0			19.5			52.9			64.2	
Approach LOS		C			B			D			E	
Intersection Summary												
HCM 2000 Control Delay			26.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)				20.6		
Intersection Capacity Utilization			75.1%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 1: Sherburne Hills Rd

P.M. Peak
12/13/2018

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	19	0	0	14	27	21
Future Volume (vph)	19	0	0	14	27	21
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	0	0	15	29	23
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total (vph)	21	15	52			
Volume Left (vph)	21	0	29			
Volume Right (vph)	0	15	23			
Hadj (s)	0.23	-0.57	-0.12			
Departure Headway (s)	4.3	3.5	3.9			
Degree Utilization, x	0.02	0.01	0.06			
Capacity (veh/h)	830	1017	913			
Control Delay (s)	7.4	6.5	7.1			
Approach Delay (s)	7.4	6.5	7.1			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.1			
Level of Service			A			
Intersection Capacity Utilization			17.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

2: Sherburne Hills Rd & Camino Tassajara

P.M. Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	1172	35	12	696	46	23	2	10	48	0	45
Future Volume (vph)	46	1172	35	12	696	46	23	2	10	48	0	45
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	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87			0.93	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1770	3521		1770	3500		1770	1625			1697	
Flt Permitted	0.95	1.00		0.95	1.00		0.78	1.00			0.83	
Satd. Flow (perm)	1770	3521		1770	3500		1462	1625			1440	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.59	0.59	0.59	0.73	0.73	0.73
Adj. Flow (vph)	49	1260	38	13	757	50	39	3	17	66	0	62
RTOR Reduction (vph)	0	2	0	0	4	0	0	15	0	0	63	0
Lane Group Flow (vph)	49	1296	0	13	803	0	39	5	0	0	65	0
Confl. Peds. (#/hr)			2			4						
Confl. Bikes (#/hr)			6			10						
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	1.7	25.4		0.8	24.5		6.0	6.0			6.0	
Effective Green, g (s)	1.7	25.4		0.8	24.5		6.0	6.0			6.0	
Actuated g/C Ratio	0.04	0.57		0.02	0.55		0.14	0.14			0.14	
Clearance Time (s)	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	
Lane Grp Cap (vph)	68	2023		32	1940		198	220			195	
v/s Ratio Prot	c0.03	c0.37		0.01	0.23			0.00				
v/s Ratio Perm							0.03				c0.05	
v/c Ratio	0.72	0.64		0.41	0.41		0.20	0.02			0.33	
Uniform Delay, d1	21.0	6.3		21.5	5.7		17.0	16.6			17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	31.1	0.7		8.2	0.1		0.5	0.0			1.0	
Delay (s)	52.1	7.0		29.7	5.8		17.5	16.6			18.3	
Level of Service	D	A		C	A		B	B			B	
Approach Delay (s)		8.7			6.2			17.2			18.3	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay	8.6			HCM 2000 Level of Service			A					
HCM 2000 Volume to Capacity ratio	0.61											
Actuated Cycle Length (s)	44.2			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	57.0%			ICU Level of Service			B					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
3: Creekside Ave./Holbrook Dr & Camino Tassajara

P.M. Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	1131	34	28	679	72	19	2	11	53	1	47
Future Volume (vph)	56	1131	34	28	679	72	19	2	11	53	1	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99			0.95		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (prot)	1770	3521		1770	3477			1716		1770	1588	
Flt Permitted	0.95	1.00		0.95	1.00			0.97		0.95	1.00	
Satd. Flow (perm)	1770	3521		1770	3477			1716		1770	1588	
Peak-hour factor, PHF	0.91	0.91	0.91	0.92	0.92	0.92	0.63	0.63	0.63	0.76	0.76	0.76
Adj. Flow (vph)	62	1243	37	30	738	78	30	3	17	70	1	62
RTOR Reduction (vph)	0	1	0	0	5	0	0	16	0	0	57	0
Lane Group Flow (vph)	62	1279	0	30	811	0	0	34	0	70	6	0
Confl. Peds. (#/hr)			3			4			5			
Confl. Bikes (#/hr)			6			8						
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases												
Actuated Green, G (s)	6.5	54.3		4.0	51.8			7.7		7.0	7.0	
Effective Green, g (s)	6.5	54.3		4.0	51.8			7.7		7.0	7.0	
Actuated g/C Ratio	0.07	0.60		0.04	0.58			0.09		0.08	0.08	
Clearance Time (s)	4.0	5.0		4.0	5.0			4.0		4.0	4.0	
Vehicle Extension (s)	1.8	4.0		1.8	4.0			2.0		2.0	2.0	
Lane Grp Cap (vph)	127	2124		78	2001			146		137	123	
v/s Ratio Prot	c0.04	c0.36		0.02	0.23			c0.02		c0.04	0.00	
v/s Ratio Perm												
v/c Ratio	0.49	0.60		0.38	0.41			0.24		0.51	0.05	
Uniform Delay, d1	40.2	11.1		41.8	10.6			38.4		39.9	38.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.1	1.3		1.1	0.6			0.3		1.3	0.1	
Delay (s)	41.2	12.4		43.0	11.2			38.7		41.2	38.5	
Level of Service	D	B		D	B			D		D	D	
Approach Delay (s)		13.7			12.3			38.7			39.9	
Approach LOS		B			B			D			D	
Intersection Summary												
HCM 2000 Control Delay			15.2			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			57.7%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Crow Canyon Rd/Blackhawk Rd & Camino Tassajara

P.M. Peak
12/13/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	186	674	215	330	436	217	434	488	450	218	326	162
Future Volume (vph)	186	674	215	330	436	217	434	488	450	218	326	162
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Lane Util. Factor	0.97	0.95	1.00	0.94	0.95		0.97	0.91	0.91	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1551	4990	3323		3433	3251	1418	3433	3539	1550
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1551	4990	3323		3433	3251	1418	3433	3539	1550
Peak-hour factor, PHF	0.90	0.90	0.90	0.93	0.93	0.93	0.98	0.98	0.98	0.93	0.93	0.93
Adj. Flow (vph)	207	749	239	355	469	233	443	498	459	234	351	174
RTOR Reduction (vph)	0	0	145	0	39	0	0	18	209	0	0	134
Lane Group Flow (vph)	207	749	94	355	663	0	443	645	85	234	351	40
Confl. Peds. (#/hr)			8			19			2			8
Confl. Bikes (#/hr)						3			2			
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			6
Actuated Green, G (s)	11.1	30.4	30.4	14.0	33.3		18.2	30.4	30.4	11.9	24.1	24.1
Effective Green, g (s)	11.1	30.4	30.4	14.0	33.3		18.2	30.4	30.4	11.9	24.1	24.1
Actuated g/C Ratio	0.11	0.29	0.29	0.13	0.32		0.17	0.29	0.29	0.11	0.23	0.23
Clearance Time (s)	4.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0
Vehicle Extension (s)	2.0	4.0	4.0	2.0	4.0		2.0	4.0	4.0	2.0	4.0	4.0
Lane Grp Cap (vph)	363	1027	450	667	1056		596	943	411	390	814	356
v/s Ratio Prot	0.06	c0.21		0.07	c0.20		c0.13	c0.20		0.07	0.10	
v/s Ratio Perm			0.06						0.06			0.03
v/c Ratio	0.57	0.73	0.21	0.53	0.63		0.74	0.68	0.21	0.60	0.43	0.11
Uniform Delay, d1	44.5	33.4	28.1	42.3	30.4		41.0	32.9	28.1	44.1	34.4	31.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	2.8	0.3	0.4	1.3		4.4	2.2	0.3	1.7	0.5	0.2
Delay (s)	45.9	36.3	28.4	42.7	31.8		45.4	35.1	28.4	45.8	34.9	32.0
Level of Service	D	D	C	D	C		D	D	C	D	C	C
Approach Delay (s)		36.3			35.4			37.0			37.6	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM 2000 Control Delay			36.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			104.7			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			66.2%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis 5: Camino Ramon/Driveway & Sycamore Valley Rd

P.M. Peak
12/13/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1306	552	86	652	6	469	6	136	34	24	100
Future Volume (vph)	32	1306	552	86	652	6	469	6	136	34	24	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86		0.97	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	0.89		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	1770	6398		3433	1424		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	1770	6398		3433	1424		1770	1863	1583
Peak-hour factor, PHF	0.98	0.98	0.98	0.96	0.96	0.96	0.90	0.90	0.90	0.72	0.72	0.72
Adj. Flow (vph)	33	1333	563	90	679	6	521	7	151	47	33	139
RTOR Reduction (vph)	0	0	129	0	1	0	0	114	0	0	0	129
Lane Group Flow (vph)	33	1333	434	90	684	0	521	44	0	47	33	10
Confl. Peds. (#/hr)						5			83			
Confl. Bikes (#/hr)						1						
Turn Type	Prot	NA	Perm	Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		8	8		7	7	
Permitted Phases			2									7
Actuated Green, G (s)	5.6	60.9	60.9	14.2	69.5		34.0	34.0		10.3	10.3	10.3
Effective Green, g (s)	5.6	60.9	60.9	14.2	69.5		34.0	34.0		10.3	10.3	10.3
Actuated g/C Ratio	0.04	0.43	0.43	0.10	0.50		0.24	0.24		0.07	0.07	0.07
Clearance Time (s)	4.7	5.8	5.8	4.7	5.8		5.4	5.4		4.7	4.7	4.7
Vehicle Extension (s)	2.0	3.0	3.0	2.0	3.0		2.0	2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	70	2211	688	179	3176		833	345		130	137	116
v/s Ratio Prot	0.02	0.26		c0.05	0.11		c0.15	0.03		c0.03	0.02	
v/s Ratio Perm			c0.27									0.01
v/c Ratio	0.47	0.60	0.63	0.50	0.22		0.63	0.13		0.36	0.24	0.09
Uniform Delay, d1	65.8	30.3	30.8	59.6	19.9		47.3	41.4		61.7	61.2	60.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.8	1.2	4.4	0.8	0.2		1.1	0.1		0.6	0.3	0.1
Delay (s)	67.6	31.5	35.2	60.4	20.0		48.4	41.5		62.3	61.5	60.6
Level of Service	E	C	D	E	C		D	D		E	E	E
Approach Delay (s)		33.2			24.7			46.8			61.1	
Approach LOS		C			C			D			E	
Intersection Summary												
HCM 2000 Control Delay			35.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			140.0			Sum of lost time (s)				20.6		
Intersection Capacity Utilization			78.6%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												