

# Level of Service (LOS) Summary

## Overall Intersection and by Approach

Redwood Boulevard/San Marin Drive Intersection										
ALTERNATIVE	Overall Intersection		Individual Street Approaches							
	AM	PM	Eastbound San Marin		Westbound San Marin		Northbound Redwood		Southbound Redwood	
			AM	PM	AM	PM	AM	PM	AM	PM
Existing (2013)	B	C	C	C	B	B	C	C	C	D
1996 General Plan Buildout	C	D	C	D	C	B	D	E	C	E
Alternative 1	C	D	C	D	C	C	D	D	D	D
Alternative 2	C	D	C	C	C	C	D	D	D	E
Alternative 3	C	D	D	D	C	B	D	E	D	F
Alternative 4	C	D	D	D	C	C	D	E	D	E
Alternative 5A	B	C	A	B	B	C	D	D	n/a	n/a
Alternative 5B*	B	C	B	B	B	C	C	D	n/a	n/a
Alternative 6A	C	D	C	D	B	C	D	D	D	E
Alternative 6B*	C	D	C	D	B	C	D	D	D	E

\*with home improvement

## US 101 Southbound Ramps/San Marin Drive Intersection

ALTERNATIVE	Overall Intersection		Individual Street Approaches					
	AM	PM	Eastbound San Marin		Westbound San Marin		Southbound Off-Ramp	
			AM	PM	AM	PM	AM	PM
<b>Existing (2013)</b>	B	A	B	A	A	A	B	B
<b>1996 General Plan Buildout</b>	B	B	B	A	B	A	C	D
<b>Alternative 1</b>	B	B	A	B	A	B	D	D
<b>Alternative 2</b>	D	C	C	B	D	C	D	D
<b>Alternative 3</b>	C	C	D	B	C	B	D	E
<b>Alternative 4</b>	C	C	D	B	C	B	D	E
<b>Alternative 5A</b>	C	C	C	B	B	A	D	E
<b>Alternative 5B*</b>	D	C	D	C	B	A	D	E
<b>Alternative 6A</b>	C	C	D	B	B	B	D	E
<b>Alternative 6B*</b>	C	C	D	B	B	B	D	E

\*with home improvement

## US 101 Northbound Ramps/San Marin Dr-Atherton Ave Intersection

ALTERNATIVE	Overall		Individual Street Approaches					
	Intersection		Eastbound San Marin		Westbound Atherton		Northbound Off-Ramp	
	AM	PM	AM	PM	AM	PM	AM	PM
<b>Existing (2013)</b>	B	B	B	B	B	B	B	B
<b>1996 General Plan Buildout</b>	C	C	B	C	C	C	C	D
<b>Alternative 1</b>	C	C	B	B	B	C	C	C
<b>Alternative 2</b>	C	C	D	B	B	C	D	D
<b>Alternative 3</b>	C	D	B	D	B	C	D	D
<b>Alternative 4</b>	C	D	B	D	B	D	D	D
<b>Alternative 5A</b>	C	C	B	C	B	C	D	D
<b>Alternative 5B*</b>	C	C	B	C	B	C	D	D
<b>Alternative 6A</b>	C	D	C	D	B	C	D	D
<b>Alternative 6B*</b>	C	D	C	D	B	D	D	D

*\*with home improvement*

DETAILED LOS CALCULATIONS  
(Synchro v.8)

Existing

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Volume (vph)	18	894	1	1	610	67	1	0	3	3	0	4
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.92		1.00	1.00	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1548		1770	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	19	941	1	1	642	71	1	0	3	3	0	4
RTOR Reduction (vph)	0	0	0	0	0	43	0	4	0	0	0	4
Lane Group Flow (vph)	19	942	0	1	642	28	0	0	0	1	2	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	8.5	18.7		5.1	15.3	15.3		4.7		4.7	4.7	4.7
Effective Green, g (s)	7.5	18.7		4.1	15.3	15.3		3.7		3.7	3.7	3.7
Actuated g/C Ratio	0.19	0.49		0.11	0.40	0.40		0.10		0.10	0.10	0.10
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	344	1718		188	1406	629		148		170	170	152
v/s Ratio Prot	0.01	c0.27		0.00	c0.18							
v/s Ratio Perm						0.02		0.00		0.00	c0.00	0.00
v/c Ratio	0.06	0.55		0.01	0.46	0.04		0.00		0.01	0.01	0.00
Uniform Delay, d1	12.6	6.9		15.4	8.5	7.1		15.7		15.7	15.7	15.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5		0.0	0.3	0.0		0.0		0.0	0.0	0.0
Delay (s)	12.7	7.4		15.4	8.9	7.2		15.7		15.7	15.8	15.7
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		7.5			8.7			15.7			15.7	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.1		HCM 2000 Level of Service				A				
HCM 2000 Volume to Capacity ratio		0.48										
Actuated Cycle Length (s)		38.5		Sum of lost time (s)				12.0				
Intersection Capacity Utilization		34.7%		ICU Level of Service				A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	25	901	683	266	9	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1545	3433	1544
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1545	3433	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	948	719	280	9	2
RTOR Reduction (vph)	0	0	0	164	0	2
Lane Group Flow (vph)	26	948	719	116	9	0
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	6.2	26.9	16.7	16.7	5.7	5.7
Effective Green, g (s)	5.2	27.2	17.0	17.0	4.7	4.7
Actuated g/C Ratio	0.13	0.67	0.42	0.42	0.11	0.11
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	225	2353	1470	642	394	177
v/s Ratio Prot	0.01	c0.27	c0.20		c0.00	
v/s Ratio Perm				0.08		0.00
v/c Ratio	0.12	0.40	0.49	0.18	0.02	0.00
Uniform Delay, d1	15.8	3.1	8.8	7.6	16.1	16.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.2	0.3	0.2	0.0	0.0
Delay (s)	16.0	3.3	9.1	7.7	16.1	16.0
Level of Service	B	A	A	A	B	B
Approach Delay (s)		3.6	8.7		16.1	
Approach LOS		A	A		B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		6.2	HCM 2000 Level of Service			A
HCM 2000 Volume to Capacity ratio		0.43				
Actuated Cycle Length (s)		40.9	Sum of lost time (s)			14.0
Intersection Capacity Utilization		35.7%	ICU Level of Service			A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔	↔↔		↔	↔	↔	↔	↔	↔
Volume (vph)	42	709	159	295	813	230	114	69	246	53	37	17
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	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		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	0.98	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	
Fr1	1.00	0.97		1.00	0.97		1.00	1.00	0.85	1.00	0.95	
Fl1 Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4931		1770	4917		3433	1863	1545	1770	1775	
Fl1 Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4931		1770	4917		3433	1863	1545	1770	1775	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	44	746	167	311	856	242	120	73	259	56	39	18
RTOR Reduction (vph)	0	36	0	0	50	0	0	0	228	0	17	0
Lane Group Flow (vph)	44	877	0	311	1048	0	120	73	31	56	40	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	4.9	21.5		16.6	33.2		9.0	9.0	9.0	6.1	6.1	
Effective Green, g (s)	3.9	20.5		15.6	33.2		8.0	8.0	8.0	5.1	5.1	
Actuated g/C Ratio	0.06	0.31		0.24	0.50		0.12	0.12	0.12	0.08	0.08	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
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)	104	1526		417	2465		414	225	186	136	136	
v/s Ratio Prot	0.02	c0.18		c0.18	0.21		0.03	c0.04		c0.03	0.02	
v/s Ratio Perm								0.02				
v/c Ratio	0.42	0.57		0.75	0.43		0.29	0.32	0.17	0.41	0.30	
Uniform Delay, d1	30.1	19.2		23.5	10.5		26.5	26.6	26.1	29.1	28.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.8	0.5		7.1	0.1		0.4	0.8	0.4	2.0	1.2	
Delay (s)	32.8	19.7		30.6	10.6		26.9	27.5	26.5	31.1	30.1	
Level of Service	C	B		C	B		C	C	C	C	C	
Approach Delay (s)		20.3			15.0			26.8			30.6	
Approach LOS		C			B			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		19.2			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		66.2			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		54.4%			ICU Level of Service			A				
Analysis Period (min)		15										
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔
Volume (vph)	0	497	504	107	778	0	0	0	0	62	0	558
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1558	1770	3539						1770	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1558	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	523	531	113	819	0	0	0	0	65	0	587
RTOR Reduction (vph)	0	0	341	0	0	0	0	0	0	0	0	271
Lane Group Flow (vph)	0	523	190	113	819	0	0	0	0	0	65	316
Confl. Peds. (#/hr)			6									
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		16.6	16.6	7.0	26.6						11.9	11.9
Effective Green, g (s)		16.6	16.6	6.0	26.6						11.9	11.9
Actuated g/C Ratio		0.36	0.36	0.13	0.57						0.26	0.26
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1263	556	228	2024						452	713
v/s Ratio Prot		0.15		0.06	c0.23						0.04	
v/s Ratio Perm			0.12									c0.11
v/c Ratio		0.41	0.34	0.50	0.40						0.14	0.44
Uniform Delay, d1		11.3	10.9	18.8	5.5						13.4	14.5
Progression Factor		1.00	1.00	1.00	1.00						1.00	1.00
Incremental Delay, d2		0.2	0.4	1.7	0.1						0.1	0.4
Delay (s)		11.5	11.3	20.5	5.7						13.5	15.0
Level of Service		B	B	C	A						B	B
Approach Delay (s)		11.4			7.5			0.0			14.8	
Approach LOS		B			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		10.9			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		46.5			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		51.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c	Critical Lane Group											



HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	306	246	0	0	386	78	497	3	95	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.95	0.95				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.99				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.95				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97				
Satd. Flow (prot)	3433	1863			3539	1563	1681	1614				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97				
Satd. Flow (perm)	3433	1863			3539	1563	1681	1614				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	322	259	0	0	406	82	523	3	100	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	60	0	23	0	0	0	0
Lane Group Flow (vph)	322	259	0	0	406	22	319	284	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	10.1	26.9			13.3	13.3	15.2	15.2				
Effective Green, g (s)	9.6	26.9			13.3	13.3	14.7	14.7				
Actuated g/C Ratio	0.19	0.54			0.27	0.27	0.30	0.30				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	664	1010			948	419	498	478				
v/s Ratio Prot	c0.09	0.14			c0.11		c0.19	0.18				
v/s Ratio Perm						0.01						
v/c Ratio	0.48	0.26			0.43	0.05	0.64	0.60				
Uniform Delay, d1	17.8	6.0			15.0	13.5	15.2	14.9				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Incremental Delay, d2	0.2	0.2			0.4	0.1	2.5	1.7				
Delay (s)	18.0	6.2			15.4	13.5	17.6	16.6				
Level of Service	B	A			B	B	B	B				
Approach Delay (s)		12.7				15.1		17.1			0.0	
Approach LOS		B				B		B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.0			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		49.6			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		51.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	63	154	140	13	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	66	162	147	14	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	486	14	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	486	14	15			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	94	90			
cM capacity (veh/h)	486	1066	1603			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	67	162	147	15		
Volume Left	1	162	0	0		
Volume Right	66	0	0	1		
cSH	1046	1603	1700	1700		
Volume to Capacity	0.06	0.10	0.09	0.01		
Queue Length 95th (ft)	5	8	0	0		
Control Delay (s)	8.7	7.5	0.0	0.0		
Lane LOS	A	A				
Approach Delay (s)	8.7	3.9		0.0		
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			4.6			
Intersection Capacity Utilization			25.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↑	↔	↔
Volume (veh/h)	11	1	290	91	1	78
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1	305	96	1	82
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked						
vC, conflicting volume	389	305			401	
vC1, stage 1 conf vol	305					
vC2, stage 2 conf vol	84					
vCu, unblocked vol	389	305			401	
IC, single (s)	6.4	6.2			4.1	
IC, 2 stage (s)	5.4					
IF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	716	735			1158	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	13	305	96	1	82	
Volume Left	12	0	0	1	0	
Volume Right	1	0	96	0	0	
cSH	717	1700	1700	1158	1700	
Volume to Capacity	0.02	0.18	0.06	0.00	0.05	
Queue Length 95th (ft)	1	0	0	0	0	
Control Delay (s)	10.1	0.0	0.0	8.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.1	0.0		0.1		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay						0.3
Intersection Capacity Utilization						25.3%
Analysis Period (min)						15
						ICU Level of Service
						A

HCM Unsignalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Volume (veh/h)	37	220	79	20	338	8	102	1	12	2	1	24	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	39	232	83	21	356	8	107	1	13	2	1	25	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None			None								
Median storage (veh)													
Upstream signal (ft)		456											
pX, platoon unblocked				0.96			0.96	0.96	0.96	0.96	0.96	0.96	
vC, conflicting volume	364			315			775	757	273	725	795	360	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	364			263			743	725	219	691	764	360	
IC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
IC, 2 stage (s)													
IF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	97			98			63	100	98	99	100	96	
cM capacity (veh/h)	1194			1247			293	320	786	325	304	684	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>							
Volume Total	39	315	21	364	121	28							
Volume Left	39	0	21	0	107	2							
Volume Right	0	83	0	8	13	25							
cSH	1194	1700	1247	1700	314	607							
Volume to Capacity	0.03	0.19	0.02	0.21	0.39	0.05							
Queue Length 95th (ft)	3	0	1	0	44	4							
Control Delay (s)	8.1	0.0	7.9	0.0	23.5	11.2							
Lane LOS	A		A		C	B							
Approach Delay (s)	0.9		0.4		23.5	11.2							
Approach LOS					C	B							
<b>Intersection Summary</b>													
Average Delay							4.1						
Intersection Capacity Utilization							44.7%						
Analysis Period (min)							15						
							ICU Level of Service						
							A						

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	1	581	2	3	988	6	3	0	1	68	1	14
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3537		1770	3539	1583		1735		1681	1688	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		1.00		1.00	1.00	1.00
Satd. Flow (perm)	1770	3537		1770	3539	1583		1800		1770	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	612	2	3	1040	6	3	0	1	72	1	15
RTOR Reduction (vph)	0	0	0	0	0	3	0	4	0	0	0	14
Lane Group Flow (vph)	1	614	0	3	1040	3	0	0	0	37	36	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	5.5	21.5		5.5	21.5	21.5		3.4		3.4	3.4	3.4
Effective Green, g (s)	4.5	21.5		4.5	21.5	21.5		2.4		2.4	2.4	2.4
Actuated g/C Ratio	0.11	0.53		0.11	0.53	0.53		0.06		0.06	0.06	0.06
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	197	1882		197	1883	842		106		105	105	94
v/s Ratio Prot	0.00	c0.17		0.00	c0.29							
v/s Ratio Perm						0.00		0.00		c0.02	0.02	0.00
v/c Ratio	0.01	0.33		0.02	0.55	0.00		0.00		0.35	0.34	0.01
Uniform Delay, d1	16.0	5.3		16.0	6.3	4.4		17.9		18.3	18.2	17.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1		0.0	0.4	0.0		0.0		0.7	0.7	0.0
Delay (s)	16.0	5.5		16.0	6.7	4.4		17.9		19.0	19.0	17.9
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		5.5			6.7			17.9			18.8	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		6.9			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		40.4			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		44.0%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	1	657	984	6	196	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1544	3433	1549
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1544	3433	1549
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	692	1036	6	206	26
RTOR Reduction (vph)	0	0	0	3	0	22
Lane Group Flow (vph)	1	692	1036	3	206	4
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	5.1	30.2	21.1	21.1	8.3	8.3
Effective Green, g (s)	4.1	30.5	21.4	21.4	7.3	7.3
Actuated g/C Ratio	0.09	0.65	0.46	0.46	0.16	0.16
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	155	2306	1618	706	535	241
v/s Ratio Prot	0.00	c0.20	c0.29		c0.06	
v/s Ratio Perm				0.00		0.00
v/c Ratio	0.01	0.30	0.64	0.00	0.39	0.02
Uniform Delay, d1	19.5	3.5	9.7	6.9	17.7	16.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.0	0.1	0.9	0.0	0.5	0.0
Delay (s)	19.5	3.6	10.7	6.9	18.2	16.7
Level of Service	B	A	B	A	B	B
Approach Delay (s)		3.7	10.6		18.0	
Approach LOS		A	B		B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		9.0			HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0.56				
Actuated Cycle Length (s)		46.8			Sum of lost time (s)	14.0
Intersection Capacity Utilization		40.3%			ICU Level of Service	A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔	↔↔		↔	↔	↔	↔	↔	
Volume (vph)	19	684	150	229	754	45	197	40	433	253	65	45
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	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		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	0.98	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	
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	4932		1770	5043		3433	1863	1548	1770	1749	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	4932		1770	5043		3433	1863	1548	1770	1749	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	20	720	158	241	794	47	207	42	456	266	68	47
RTOR Reduction (vph)	0	37	0	0	6	0	0	0	376	0	28	0
Lane Group Flow (vph)	20	841	0	241	835	0	207	42	80	266	87	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		8	8		4	4	
Permitted Phases									8			
Actuated Green, G (s)	1.9	21.6		14.9	34.6		11.7	11.7	11.7	16.0	16.0	
Effective Green, g (s)	0.9	20.6		13.9	34.6		10.7	10.7	10.7	15.0	15.0	
Actuated g/C Ratio	0.01	0.27		0.18	0.45		0.14	0.14	0.14	0.19	0.19	
Clearance Time (s)	3.0	4.0		3.0	4.0		3.0	3.0	3.0	3.0	3.0	
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)	20	1316		318	2260		475	258	214	343	339	
v/s Ratio Prot	c0.01	c0.17		c0.14	0.17		c0.06	0.02		c0.15	0.05	
v/s Ratio Perm								0.05				
v/c Ratio	1.00	0.64		0.76	0.37		0.44	0.16	0.37	0.78	0.26	
Uniform Delay, d1	38.1	25.0		30.1	14.1		30.5	29.3	30.2	29.5	26.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	201.2	1.0		9.9	0.1		0.6	0.3	1.1	10.5	0.4	
Delay (s)	239.4	26.0		40.0	14.2		31.1	29.6	31.3	40.0	26.8	
Level of Service	F	C		D	B		C	C	C	D	C	
Approach Delay (s)		30.8			19.9			31.1			36.0	
Approach LOS		C			B			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		27.7										
HCM 2000 Volume to Capacity ratio		0.65										
Actuated Cycle Length (s)		77.2						17.0				
Intersection Capacity Utilization		68.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔
Volume (vph)	0	774	580	107	771	0	0	0	0	61	2	262
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1558	1770	3539						1777	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1558	1770	3539						1777	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	815	611	113	812	0	0	0	0	64	2	276
RTOR Reduction (vph)	0	0	326	0	0	0	0	0	0	0	0	230
Lane Group Flow (vph)	0	815	285	113	812	0	0	0	0	0	66	46
Confl. Peds. (#/hr)			6									
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		22.8	22.8	7.0	32.8					8.1	8.1	
Effective Green, g (s)		22.8	22.8	6.0	32.8					8.1	8.1	
Actuated g/C Ratio		0.47	0.47	0.12	0.67					0.17	0.17	
Clearance Time (s)		4.0	4.0	3.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		1650	726	217	2373					294	461	
v/s Ratio Prot		c0.23		c0.06	0.23					c0.04		
v/s Ratio Perm			0.18									0.02
v/c Ratio		0.49	0.39	0.52	0.34					0.22	0.10	
Uniform Delay, d1		9.0	8.5	20.1	3.4					17.7	17.3	
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	
Incremental Delay, d2		0.2	0.4	2.2	0.1					0.4	0.1	
Delay (s)		9.3	8.9	22.4	3.5					18.1	17.4	
Level of Service		A	A	C	A					B	B	
Approach Delay (s)		9.1			5.8			0.0			17.5	
Approach LOS		A			A			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.1								A		
HCM 2000 Volume to Capacity ratio		0.44										
Actuated Cycle Length (s)		48.9						12.0				
Intersection Capacity Utilization		56.0%								B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↕	↕	↔	↔				
Volume (vph)	499	320	0	0	289	86	591	15	149	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.95	0.95				
Frbp, ped/bikes	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				
Frt	1.00	1.00			1.00	0.85	1.00	0.94				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97				
Satd. Flow (prot)	3433	1863			3539	1583	1681	1600				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97				
Satd. Flow (perm)	3433	1863			3539	1583	1681	1600				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	525	337	0	0	304	91	622	16	157	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	71	0	30	0	0	0	0
Lane Group Flow (vph)	525	337	0	0	304	20	404	361	0	0	0	0
Confl. Peds. (#/hr)									5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	13.9	29.9			12.5	12.5	20.1	20.1				
Effective Green, g (s)	13.4	29.9			12.5	12.5	19.6	19.6				
Actuated g/C Ratio	0.23	0.52			0.22	0.22	0.34	0.34				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	800	968			769	344	573	545				
v/s Ratio Prot	c0.15	c0.18			0.09		c0.24	0.23				
v/s Ratio Perm						0.01						
v/c Ratio	0.66	0.35			0.40	0.06	0.71	0.66				
Uniform Delay, d1	20.0	8.1			19.3	17.8	16.4	16.1				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00				
Incremental Delay, d2	1.5	0.3			0.5	0.1	3.7	2.7				
Delay (s)	21.5	8.4			19.7	17.9	20.1	18.8				
Level of Service	C	A			B	B	C	B				
Approach Delay (s)		16.3			19.3		19.5			0.0		
Approach LOS		B			B		B			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		18.1			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		57.5			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		56.0%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	153	79	23	109	1
Sign Control	Stop		Free	Free		
Grade	0%		0%	0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	161	83	24	115	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None	None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	306	115	116			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	306	115	116			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	100	83	94			
cM capacity (veh/h)	647	937	1473			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	162	83	24	116		
Volume Left	1	83	0	0		
Volume Right	161	0	0	1		
cSH	934	1473	1700	1700		
Volume to Capacity	0.17	0.06	0.01	0.07		
Queue Length 95th (ft)	16	4	0	0		
Control Delay (s)	9.7	7.6	0.0	0.0		
Lane LOS	A	A				
Approach Delay (s)	9.7	5.9		0.0		
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay		5.7				
Intersection Capacity Utilization		27.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↑	↑	↔	↔
Volume (veh/h)	57	1	101	17	1	260
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	1	106	18	1	274
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked						
vC, conflicting volume	382	106			124	
vC1, stage 1 conf vol	106					
vC2, stage 2 conf vol	276					
vCu, unblocked vol	382	106			124	
IC, single (s)	6.4	6.2			4.1	
IC, 2 stage (s)	5.4					
IF (s)	3.5	3.3			2.2	
p0 queue free %	92	100			100	
cM capacity (veh/h)	731	948			1463	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	
Volume Total	61	106	18	1	274	
Volume Left	60	0	0	1	0	
Volume Right	1	0	18	0	0	
cSH	734	1700	1700	1463	1700	
Volume to Capacity	0.08	0.06	0.01	0.00	0.16	
Queue Length 95th (ft)	7	0	0	0	0	
Control Delay (s)	10.4	0.0	0.0	7.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	10.4	0.0		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	1.4					
Intersection Capacity Utilization	23.7%					ICU Level of Service
Analysis Period (min)	15					A

HCM Unsignalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Volume (veh/h)	36	342	90	7	267	0	62	2	22	6	1	46	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	38	360	95	7	281	0	65	2	23	6	1	48	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None			None								
Median storage (veh)													
Upstream signal (ft)		456											
pX, platoon unblocked				0.91			0.91	0.91	0.91	0.91	0.91	0.91	
vC, conflicting volume	281			455			828	779	407	756	826	281	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	281			345			758	704	293	678	756	281	
IC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
IC, 2 stage (s)													
IF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	97			99			75	99	97	98	100	94	
cM capacity (veh/h)	1281			1099			266	316	676	310	294	758	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>							
Volume Total	38	455	7	281	91	56							
Volume Left	38	0	7	0	65	6							
Volume Right	0	95	0	0	23	48							
cSH	1281	1700	1099	1700	316	635							
Volume to Capacity	0.03	0.27	0.01	0.17	0.29	0.09							
Queue Length 95th (ft)	2	0	1	0	29	7							
Control Delay (s)	7.9	0.0	8.3	0.0	20.9	11.2							
Lane LOS	A		A		C	B							
Approach Delay (s)	0.6		0.2		20.9	11.2							
Approach LOS					C	B							
<b>Intersection Summary</b>													
Average Delay							3.1						
Intersection Capacity Utilization							48.1%	ICU Level of Service					
Analysis Period (min)							15	A					

# 1996 General Plan Build-Out

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	33	1036	1	1	673	131	1	0	3	12	0	6
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.93		1.00	1.00	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1551		1770	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1091	1	1	708	138	1	0	3	13	0	6
RTOR Reduction (vph)	0	0	0	0	79	0	4	0	0	0	0	5
Lane Group Flow (vph)	35	1092	0	1	708	59	0	0	0	6	7	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	9.8	22.9		5.1	18.2	18.2		4.9		4.9	4.9	4.9
Effective Green, g (s)	8.8	22.9		4.1	18.2	18.2		3.9		3.9	3.9	3.9
Actuated g/C Ratio	0.21	0.53		0.10	0.42	0.42		0.09		0.09	0.09	0.09
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	363	1889		169	1501	671		141		160	160	143
v/s Ratio Prot	0.02	c0.31		0.00	c0.20							
v/s Ratio Perm						0.04		0.00		0.00	c0.00	0.00
v/c Ratio	0.10	0.58		0.01	0.47	0.09		0.00		0.04	0.04	0.00
Uniform Delay, d1	13.8	6.7		17.6	8.9	7.4		17.7		17.8	17.8	17.7
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5		0.0	0.3	0.1		0.0		0.0	0.0	0.0
Delay (s)	13.9	7.3		17.6	9.2	7.5		17.7		17.8	17.8	17.7
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		7.5			8.9			17.7			17.8	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.2			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		42.9		Sum of lost time (s)			12.0					
Intersection Capacity Utilization		38.7%		ICU Level of Service			A					
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

2/14/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	35	1042	809	423	31	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1537	3433	1526
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1537	3433	1526
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	37	1097	852	445	33	3
RTOR Reduction (vph)	0	0	0	128	0	3
Lane Group Flow (vph)	37	1097	852	317	33	0
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2		6		4
Permitted Phases				6		4
Actuated Green, G (s)	7.4	75.3	63.9	63.9	6.4	6.4
Effective Green, g (s)	6.4	75.6	64.2	64.2	5.4	5.4
Actuated g/C Ratio	0.07	0.84	0.71	0.71	0.06	0.06
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	125	2972	2524	1096	205	91
v/s Ratio Prot	0.02	c0.31	0.24		c0.01	
v/s Ratio Perm				0.21		0.00
v/c Ratio	0.30	0.37	0.34	0.29	0.16	0.00
Uniform Delay, d1	39.7	1.7	4.9	4.7	40.1	39.8
Progression Factor	1.00	1.00	0.13	0.16	1.00	1.00
Incremental Delay, d2	1.3	0.4	0.2	0.4	0.4	0.0
Delay (s)	41.0	2.0	0.9	1.2	40.5	39.8
Level of Service	D	A	A	A	D	D
Approach Delay (s)		3.3	1.0		40.5	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		2.6		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.38				
Actuated Cycle Length (s)		90.0	Sum of lost time (s)			14.0
Intersection Capacity Utilization		39.9%	ICU Level of Service			A
Analysis Period (min)		15				
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔	↔	↔	↔	↔	↔↔	↔	↔	
Volume (vph)	114	782	176	467	1031	854	157	209	343	205	79	39	
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (prot)	1770	5085	1556	3433	3539	1583	3433	1863	1572	3433	1770	1770	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	
Satd. Flow (perm)	1770	5085	1556	3433	3539	1583	3433	1863	1572	3433	1770	1770	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	120	823	185	492	1085	899	165	220	361	216	83	41	
RTOR Reduction (vph)	0	0	121	0	0	42	0	0	124	0	19	0	
Lane Group Flow (vph)	120	823	64	492	1085	857	165	220	237	216	105	0	
Confl. Peds. (#/hr)	5			5									
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		
Protected Phases	5	2		1	6	7	3	8	1	7	4		
Permitted Phases	2			6									
Actuated Green, G (s)	8.7	26.2	26.2	16.3	33.8	55.7	8.4	12.6	28.9	21.9	26.1		
Effective Green, g (s)	7.7	25.2	25.2	15.3	33.8	55.7	7.4	11.6	26.9	20.9	25.1		
Actuated g/C Ratio	0.09	0.28	0.28	0.17	0.38	0.62	0.08	0.13	0.30	0.23	0.28		
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	151	1423	435	583	1329	979	282	240	539	797	493		
v/s Ratio Prot	c0.07	0.16		0.14	0.31	c0.21	0.05	c0.12	0.07	0.06	0.06		
v/s Ratio Perm			0.04			0.33			0.08				
v/c Ratio	0.79	0.58	0.15	0.84	0.82	0.88	0.59	0.92	0.44	0.27	0.21		
Uniform Delay, d1	40.4	27.8	24.3	36.2	25.3	14.3	39.8	38.7	25.5	28.3	24.9		
Progression Factor	0.96	0.94	0.86	1.04	0.89	0.90	1.00	1.00	1.00	1.00	1.00		
Incremental Delay, d2	23.3	1.6	0.7	5.9	3.0	4.9	3.1	36.0	0.6	0.2	0.2		
Delay (s)	62.1	27.8	21.6	43.7	25.6	17.7	42.9	74.7	26.0	28.5	25.1		
Level of Service	E	C	C	D	C	B	D	E	C	C	C		
Approach Delay (s)	30.5			26.3				44.1				27.3	
Approach LOS	C			C				D				C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay	30.2			HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.90												
Actuated Cycle Length (s)	90.0				Sum of lost time (s)				17.0				
Intersection Capacity Utilization	80.2%			ICU Level of Service				D					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔↔	↔	↔	↔↔	↔↔					↔	↔↔	
Volume (vph)	0	733	590	192	1287	0	0	0	0	151	0	1063	
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	
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88	
Frpb, ped/bikes		1.00	0.99	1.00	1.00						1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00	
Flt		1.00	0.85	1.00	1.00						1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00	
Satd. Flow (prot)		3539	1562	1770	3539						1770	2787	
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00	
Satd. Flow (perm)		3539	1562	1770	3539						1770	2787	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	772	621	202	1355	0	0	0	0	159	0	1119	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	28	
Lane Group Flow (vph)	0	772	621	202	1355	0	0	0	0	0	159	1091	
Confl. Peds. (#/hr)	6												
Turn Type		NA	Free	Prot	NA					Split	NA	Perm	
Protected Phases		2		1	6					4	4		
Permitted Phases		Free											
Actuated Green, G (s)		26.9	90.0	13.8	43.7						38.3	38.3	
Effective Green, g (s)		26.9	90.0	12.8	43.7						38.3	38.3	
Actuated g/C Ratio		0.30	1.00	0.14	0.49						0.43	0.43	
Clearance Time (s)		4.0		3.0	4.0						4.0	4.0	
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0	
Lane Grp Cap (vph)		1057	1562	251	1718						753	1186	
v/s Ratio Prot		0.22		0.11	c0.38						0.09		
v/s Ratio Perm			0.40									c0.39	
v/c Ratio		0.73	0.40	0.80	0.79						0.21	0.92	
Uniform Delay, d1		28.3	0.0	37.4	19.3						16.3	24.4	
Progression Factor		0.58	1.00	0.50	0.43						1.00	1.00	
Incremental Delay, d2		3.8	0.6	15.0	3.0						0.1	11.6	
Delay (s)		20.3	0.6	33.8	11.3						16.5	36.0	
Level of Service		C	A	C	B						B	D	
Approach Delay (s)		11.6		14.3				0.0				33.5	
Approach LOS		B		B				A				C	
<b>Intersection Summary</b>													
HCM 2000 Control Delay	19.2			HCM 2000 Level of Service				B					
HCM 2000 Volume to Capacity ratio	0.89												
Actuated Cycle Length (s)	90.0				Sum of lost time (s)				12.0				
Intersection Capacity Utilization	100.9%			ICU Level of Service				G					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	418	459	0	0	715	132	761	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	440	483	0	0	753	139	801	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	67	0	120	0	0	0	0
Lane Group Flow (vph)	440	483	0	0	753	72	801	51	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	15.5	56.4			37.4	37.4	26.1	26.1				
Effective Green, g (s)	15.0	56.4			37.4	37.4	25.6	25.6				
Actuated g/C Ratio	0.17	0.63			0.42	0.42	0.28	0.28				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	572	1167			1470	649	976	439				
v/s Ratio Prot	c0.13	0.26			c0.21		c0.23	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.77	0.41			0.51	0.11	0.82	0.12				
Uniform Delay, d1	35.8	8.5			19.5	16.1	30.1	23.8				
Progression Factor	0.28	0.95			1.00	1.00	1.00	1.00				
Incremental Delay, d2	3.8	0.9			1.3	0.3	5.5	0.1				
Delay (s)	14.0	9.0			20.8	16.5	35.6	23.9				
Level of Service	B	A			C	B	D	C				
Approach Delay (s)		11.4				20.1		33.5			0.0	
Approach LOS		B				C		C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		21.9										
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		90.0						12.0				
Intersection Capacity Utilization		100.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
1001: Redwood Boulevard & Wood Hollow Drive

2/14/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↔	↔	
Volume (veh/h)	1	123	433	697	170	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	129	456	734	179	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1826	181	182			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1826	181	182			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	85	67			
cM capacity (veh/h)	57	862	1393			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>		
Volume Total	131	456	734	182		
Volume Left	1	456	0	0		
Volume Right	129	0	0	3		
cSH	774	1393	1700	1700		
Volume to Capacity	0.17	0.33	0.43	0.11		
Queue Length 95th (ft)	15	36	0	0		
Control Delay (s)	10.6	8.8	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.6	3.4		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay				3.6		
Intersection Capacity Utilization			51.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

2/14/2013

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↕	↕
Volume (veh/h)	11	1	1126	91	1	295
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1	1185	96	1	311
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TW/TL		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1391	1233			1281	
vC1, stage 1 conf vol	1233					
vC2, stage 2 conf vol	157					
vCu, unblocked vol	1380	1207			1259	
IC, single (s)	6.8	6.9			4.1	
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3			2.2	
p0 queue free %	95	99			100	
cM capacity (veh/h)	217	160			498	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	13	1281	1	155	155	
Volume Left	12	0	1	0	0	
Volume Right	1	96	0	0	0	
cSH	211	1700	498	1700	1700	
Volume to Capacity	0.06	0.75	0.00	0.09	0.09	
Queue Length 95th (ft)	5	0	0	0	0	
Control Delay (s)	23.2	0.0	12.2	0.0	0.0	
Lane LOS	C		B			
Approach Delay (s)	23.2	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay						0.2
Intersection Capacity Utilization						74.8%
Analysis Period (min)						15
ICU Level of Service						D

HCM Unsignalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Volume (veh/h)	206	329	79	20	675	41	102	1	12	11	1	70	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	217	346	83	21	711	43	107	1	13	12	1	74	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type		None			None								
Median storage (veh)													
Upstream signal (ft)		456											
pX, platoon unblocked				0.92			0.92	0.92	0.92	0.92	0.92	0.92	
vC, conflicting volume	754			429			1648	1617	388	1567	1637	732	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	754			331			1662	1628	285	1574	1650	732	
IC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2	
IC, 2 stage (s)													
IF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	75			98			0	98	98	82	98	83	
cM capacity (veh/h)	856			1125			46	68	690	63	66	421	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	<b>SB 1</b>							
Volume Total	217	429	21	754	121	86							
Volume Left	217	0	21	0	107	12							
Volume Right	0	83	0	43	13	74							
cSH	856	1700	1125	1700	51	230							
Volume to Capacity	0.25	0.25	0.02	0.44	2.38	0.37							
Queue Length 95th (ft)	25	0	1	0	311	41							
Control Delay (s)	10.6	0.0	8.3	0.0	799.9	29.7							
Lane LOS	B		A		F	D							
Approach Delay (s)	3.6	0.2			799.9	29.7							
Approach LOS					F	D							
<b>Intersection Summary</b>													
Average Delay													62.6
Intersection Capacity Utilization													72.5%
Analysis Period (min)													15
ICU Level of Service													C

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔↗		↔	↔↗	↔↗		↔↖		↔↖	↔↖	↔↖	
Volume (vph)	4	671	2	3	1151	22	3	0	1	138	1	31	
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	0.95	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00	
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.85		0.76	0.73	1.00	
Satd. Flow (perm)	1770	3538		1770	3539	1583		1525		1336	1286	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	4	706	2	3	1212	23	3	0	1	145	1	33	
RTOR Reduction (vph)	0	0	0	0	0	10	0	3	0	0	0	29	
Lane Group Flow (vph)	4	708	0	3	1212	13	0	1	0	72	74	4	
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm	
Protected Phases	5	2		1	6			8				4	
Permitted Phases						6	8			4		4	
Actuated Green, G (s)	5.9	29.8		5.2	29.1	29.1		7.9		7.9	7.9	7.9	
Effective Green, g (s)	4.9	29.8		4.2	29.1	29.1		6.9		6.9	6.9	6.9	
Actuated g/C Ratio	0.09	0.56		0.08	0.55	0.55		0.13		0.13	0.13	0.13	
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	163	1993		140	1946	870		198		174	167	206	
v/s Ratio Prot	0.00	c0.20		0.00	c0.34								
v/s Ratio Perm						0.01		0.00		0.05	c0.06	0.00	
v/c Ratio	0.02	0.36		0.02	0.62	0.01		0.00		0.41	0.44	0.02	
Uniform Delay, d1	21.8	6.3		22.5	8.1	5.4		20.0		21.1	21.2	20.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.1		0.1	0.7	0.0		0.0		0.6	0.7	0.0	
Delay (s)	21.9	6.5		22.5	8.9	5.4		20.0		21.7	21.9	20.1	
Level of Service	C	A		C	A	A		C		C	C	C	
Approach Delay (s)		6.5			8.8			20.0			21.5		
Approach LOS		A			A			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		9.1			HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio		0.58											
Actuated Cycle Length (s)		52.9			Sum of lost time (s)					12.0			
Intersection Capacity Utilization		48.5%			ICU Level of Service					A			
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

2/14/2013

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔↗	↔↗	↔↗	↔↖	↔↖
Volume (vph)	5	813	1143	41	372	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1533	3433	1549
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1533	3433	1549
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	5	856	1203	43	392	47
RTOR Reduction (vph)	0	0	0	14	0	40
Lane Group Flow (vph)	5	856	1203	29	392	7
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	NA	Perm
Protected Phases	5	2		6		4
Permitted Phases				6		4
Actuated Green, G (s)	6.0	89.2	79.2	79.2	18.5	18.5
Effective Green, g (s)	5.0	89.5	79.5	79.5	17.5	17.5
Actuated g/C Ratio	0.04	0.77	0.69	0.69	0.15	0.15
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	76	2730	2425	1050	517	233
v/s Ratio Prot	0.00	c0.24	c0.34		c0.11	
v/s Ratio Perm				0.02		0.00
v/c Ratio	0.07	0.31	0.50	0.03	0.76	0.03
Uniform Delay, d1	53.3	4.0	8.7	5.9	47.2	42.0
Progression Factor	1.00	1.00	1.03	0.85	1.00	1.00
Incremental Delay, d2	0.4	0.3	0.6	0.0	6.3	0.1
Delay (s)	53.6	4.3	9.5	5.0	53.5	42.1
Level of Service	D	A	A	A	D	D
Approach Delay (s)		4.6	9.4		52.3	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		15.2			HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio		0.54				B
Actuated Cycle Length (s)		116.0			Sum of lost time (s)	
Intersection Capacity Utilization		49.7%			ICU Level of Service	
Analysis Period (min)		15				A
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↘	↗↘	↗↘	↗	↗↘	↗	↗↘	↗↘	↘	↗↘
Volume (vph)	55	908	222	432	848	210	224	102	681	739	220	118
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1553	3433	3539	1583	3433	1863	1580	3433	1765	1765
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1553	3433	3539	1583	3433	1863	1580	3433	1765	1765
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	58	956	234	455	893	221	236	107	717	778	232	124
RTOR Reduction (vph)	0	0	104	0	0	82	0	0	61	0	16	0
Lane Group Flow (vph)	58	956	130	455	893	139	236	107	656	778	340	0
Confl. Peds. (#/hr)	5											
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases	2											
Actuated Green, G (s)	21.5	25.6	25.6	41.0	45.1	73.2	10.1	8.3	49.3	28.1	26.3	
Effective Green, g (s)	20.5	24.6	24.6	40.0	45.1	73.2	9.1	7.3	47.3	27.1	25.3	
Actuated g/C Ratio	0.18	0.21	0.21	0.34	0.39	0.63	0.08	0.06	0.41	0.23	0.22	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	312	1078	329	1183	1375	998	269	117	698	802	384	
v/s Ratio Prot	0.03	c0.19		0.13	c0.25	0.03	0.07	0.06	c0.32	c0.23	c0.19	
v/s Ratio Perm			0.08			0.05			0.09			
v/c Ratio	0.19	0.89	0.40	0.38	0.65	0.14	0.88	0.91	0.94	0.97	0.88	
Uniform Delay, d1	40.6	44.3	39.3	28.7	29.0	8.7	52.9	54.0	33.0	44.0	43.9	
Progression Factor	0.91	0.97	0.92	0.60	0.60	1.33	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	10.3	3.3	0.2	2.1	0.1	25.8	56.9	20.4	24.5	20.7	
Delay (s)	37.1	53.2	39.7	17.3	19.4	11.6	78.7	110.9	53.4	68.6	64.6	
Level of Service	D	D	D	B	B	B	E	F	D	E	E	
Approach Delay (s)	49.9			17.7			64.8			67.4		
Approach LOS	D			B			E			E		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	46.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.98											
Actuated Cycle Length (s)	116.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	92.2%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗↘	↘	↗↘	↗↘	↗					↘	↗↘
Volume (vph)	0	1348	964	202	1119	0	0	0	0	107	2	375
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.99	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1562	1770	3539						1776	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1562	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1419	1015	213	1178	0	0	0	0	113	2	395
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	265
Lane Group Flow (vph)	0	1419	1015	213	1178	0	0	0	0	0	115	130
Confl. Peds. (#/hr)	6											
Turn Type		NA	Free	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases		Free										
Actuated Green, G (s)		73.4	116.0	19.4	95.8						12.2	12.2
Effective Green, g (s)		73.4	116.0	18.4	95.8						12.2	12.2
Actuated g/C Ratio		0.63	1.00	0.16	0.83						0.11	0.11
Clearance Time (s)		4.0		3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		2239	1562	280	2922						186	293
v/s Ratio Prot		0.40		0.12	0.33						0.06	
v/s Ratio Perm			c0.65									0.05
v/c Ratio		0.63	0.65	0.76	0.40						0.62	0.44
Uniform Delay, d1		13.1	0.0	46.7	2.6						49.7	48.7
Progression Factor		0.86	1.00	0.41	1.34						1.00	1.00
Incremental Delay, d2		0.5	0.7	10.3	0.3						6.0	1.1
Delay (s)		11.7	0.7	29.5	3.9						55.7	49.8
Level of Service		B	A	C	A						E	D
Approach Delay (s)		7.1		7.8		0.0				51.1		
Approach LOS		A		A		A					D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	12.5			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.72											
Actuated Cycle Length (s)	116.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	89.6%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

2/14/2013

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	786	653	0	0	574	146	749	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1556				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1556				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	827	687	0	0	604	154	788	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	70	0	184	0	0	0	0
Lane Group Flow (vph)	827	687	0	0	604	84	788	85	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	32.4	76.4			40.5	40.5	32.1	32.1				
Effective Green, g (s)	31.9	76.4			40.5	40.5	31.6	31.6				
Actuated g/C Ratio	0.27	0.66			0.35	0.35	0.27	0.27				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	944	1227			1235	545	935	423				
v/s Ratio Prot	c0.24	c0.37			0.17		c0.23	0.05				
v/s Ratio Perm						0.05						
v/c Ratio	0.88	0.56			0.49	0.15	0.84	0.20				
Uniform Delay, d1	40.2	10.7			29.6	26.0	39.9	32.5				
Progression Factor	0.66	0.78			1.00	1.00	1.00	1.00				
Incremental Delay, d2	7.1	1.4			1.4	0.6	6.9	0.2				
Delay (s)	33.5	9.8			31.0	26.6	46.7	32.7				
Level of Service	C	A			C	C	D	C				
Approach Delay (s)		22.7			30.1		43.2			0.0		
Approach LOS		C			C		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		30.9			HCM 2000 Level of Service		C					
HCM 2000 Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		116.0			Sum of lost time (s)		12.0					
Intersection Capacity Utilization		89.6%			ICU Level of Service		E					
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis

1001: Redwood Boulevard & Wood Hollow Drive

2/14/2013

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	4	385	150	215	591	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	405	158	226	622	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1165	623	624			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1165	623	624			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	17	84			
cM capacity (veh/h)	179	486	957			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	409	158	226	624		
Volume Left	4	158	0	0		
Volume Right	405	0	0	2		
cSH	478	957	1700	1700		
Volume to Capacity	0.86	0.16	0.13	0.37		
Queue Length 95th (ft)	221	15	0	0		
Control Delay (s)	43.2	9.5	0.0	0.0		
Lane LOS	E	A				
Approach Delay (s)	43.2	3.9		0.0		
Approach LOS	E					
<b>Intersection Summary</b>						
Average Delay		13.5				
Intersection Capacity Utilization		73.6%		ICU Level of Service		D
Analysis Period (min)		15				



Alternative 1



HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↑		↔	↔↑	↔		↔		↔	↔	↔
Volume (vph)	34	1046	1	1	677	156	1	0	3	46	0	12
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.93		0.87	0.87	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1562		1539	1539	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	36	1101	1	1	713	164	1	0	3	48	0	13
RTOR Reduction (vph)	0	0	0	0	93	0	4	0	0	0	0	12
Lane Group Flow (vph)	36	1102	0	1	713	71	0	0	0	24	24	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	8.6	23.2		4.1	18.7	18.7		5.6		5.6	5.6	5.6
Effective Green, g (s)	7.6	23.2		3.1	18.7	18.7		4.6		4.6	4.6	4.6
Actuated g/C Ratio	0.18	0.54		0.07	0.44	0.44		0.11		0.11	0.11	0.11
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	313	1913		127	1542	690		167		165	165	169
v/s Ratio Prot	0.02	c0.31		0.00	c0.20							
v/s Ratio Perm					0.05			0.00		c0.02	0.02	0.00
v/c Ratio	0.12	0.58		0.01	0.46	0.10		0.00		0.15	0.15	0.01
Uniform Delay, d1	14.8	6.6		18.5	8.5	7.1		17.1		17.4	17.4	17.1
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5		0.0	0.3	0.1		0.0		0.1	0.1	0.0
Delay (s)	15.0	7.1		18.5	8.8	7.2		17.1		17.5	17.5	17.1
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		7.3			8.6			17.1			17.4	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.2			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		42.9			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		39.6%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔↑	↔↑	↔	↔	↔
Volume (vph)	37	1084	766	525	130	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1537
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1537
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	1141	806	553	137	79
RTOR Reduction (vph)	0	0	0	169	0	72
Lane Group Flow (vph)	39	1141	806	384	137	7
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	7.6	76.6	65.0	65.0	9.1	9.1
Effective Green, g (s)	6.6	76.9	65.3	65.3	8.1	8.1
Actuated g/C Ratio	0.07	0.82	0.69	0.69	0.09	0.09
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	124	2895	2458	1067	295	132
v/s Ratio Prot	0.02	c0.32	0.23		c0.04	
v/s Ratio Perm				0.25		0.00
v/c Ratio	0.31	0.39	0.33	0.36	0.46	0.05
Uniform Delay, d1	41.5	2.3	5.7	5.8	40.9	39.4
Progression Factor	1.00	1.00	0.43	1.41	1.00	1.00
Incremental Delay, d2	1.5	0.4	0.3	0.7	1.2	0.2
Delay (s)	43.0	2.7	2.7	8.9	42.0	39.6
Level of Service	D	A	A	A	D	D
Approach Delay (s)		4.0	5.2		41.1	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		7.5			HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio		0.43				
Actuated Cycle Length (s)		94.0			Sum of lost time (s)	
Intersection Capacity Utilization		43.9%			ICU Level of Service	
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑		↔	↑↑	↔	↔	↑	↔	↔	↔	↔
Volume (vph)	124	890	200	474	1063	459	187	252	346	123	97	36
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.86		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	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	1.00	1.00	1.00	
Fr1	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Fl1 Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6213		3433	3539	1583	1770	1863	2765	3433	1787	
Fl1 Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6213		3433	3539	1583	1770	1863	2765	3433	1787	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	131	937	211	499	1119	483	197	265	364	129	102	38
RTOR Reduction (vph)	0	38	0	0	0	78	0	0	208	0	15	0
Lane Group Flow (vph)	131	1110	0	499	1119	405	197	265	156	129	125	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6						8
Actuated Green, G (s)	11.4	33.7		18.6	40.9	51.6	15.0	18.0	36.6	10.7	13.7	
Effective Green, g (s)	10.4	32.7		17.6	40.9	51.6	14.0	17.0	34.6	9.7	12.7	
Actuated g/C Ratio	0.11	0.35		0.19	0.44	0.55	0.15	0.18	0.37	0.10	0.14	
Clearance Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	195	2161		642	1539	868	263	336	1135	354	241	
v/s Ratio Prot	c0.07	0.18		0.15	c0.32	0.05	c0.11	c0.14	0.03	0.04	0.07	
v/s Ratio Perm						0.20						
v/c Ratio	0.67	0.51		0.78	0.73	0.47	0.75	0.79	0.14	0.36	0.52	
Uniform Delay, d1	40.2	24.3		36.3	21.9	12.9	38.3	36.8	19.8	39.3	37.8	
Progression Factor	0.96	0.92		0.94	0.61	0.66	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.3	0.8		5.2	2.7	0.4	11.1	11.6	0.1	0.6	1.9	
Delay (s)	46.7	23.1		39.5	16.2	8.8	49.4	48.4	19.8	39.9	39.7	
Level of Service	D	C		D	B	A	D	D	B	D	D	
Approach Delay (s)		25.5			20.0			36.0			39.8	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		25.7										
HCM 2000 Volume to Capacity ratio		0.77										
Actuated Cycle Length (s)		94.0			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		67.2%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↔	↑↑↑						↔	↑↑
Volume (vph)	0	666	685	191	1512	0	0	0	0	147	0	481
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
Lane Util. Factor		0.95	0.88	1.00	0.91						1.00	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2696	1770	5085						1770	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2696	1770	5085						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	701	721	201	1592	0	0	0	0	155	0	506
RTOR Reduction (vph)	0	0	371	0	0	0	0	0	0	0	0	49
Lane Group Flow (vph)	0	701	350	201	1592	0	0	0	0	0	155	457
Confl. Peds. (#/hr)												6
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		45.6	45.6	15.9	64.5						21.5	21.5
Effective Green, g (s)		45.6	45.6	14.9	64.5						21.5	21.5
Actuated g/C Ratio		0.49	0.49	0.16	0.69						0.23	0.23
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1716	1307	280	3489						404	637
v/s Ratio Prot		0.20		c0.11	c0.31						0.09	
v/s Ratio Perm			0.13									c0.16
v/c Ratio		0.41	0.27	0.72	0.46						0.38	0.72
Uniform Delay, d1		15.5	14.3	37.6	6.7						30.6	33.5
Progression Factor		0.58	0.31	0.52	0.68						1.00	1.00
Incremental Delay, d2		0.7	0.5	7.6	0.3						0.6	3.9
Delay (s)		9.7	5.0	27.3	4.9						31.3	37.3
Level of Service		A	A	C	A						C	D
Approach Delay (s)		7.3			7.4			0.0			35.9	
Approach LOS		A			A			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.2									B	
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		94.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		63.5%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔		↔	↔				
Volume (vph)	324	482	0	0	756	121	946	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.91		0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00		1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.98		1.00	0.85				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	1863			4972		3433	1546				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	1863			4972		3433	1546				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	341	507	0	0	796	127	996	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	20	0	0	109	0	0	0	0
Lane Group Flow (vph)	341	507	0	0	903	0	996	62	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	13.4	52.9			36.0		33.6	33.6				
Effective Green, g (s)	12.9	52.9			36.0		33.1	33.1				
Actuated g/C Ratio	0.14	0.56			0.38		0.35	0.35				
Clearance Time (s)	3.5	4.0			4.0		3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0		2.5	2.5				
Lane Grp Cap (vph)	471	1048			1904		1208	544				
v/s Ratio Prot	c0.10	c0.27			0.18		c0.29	0.04				
v/s Ratio Perm												
v/c Ratio	0.72	0.48			0.47		0.82	0.11				
Uniform Delay, d1	38.8	12.3			21.9		27.8	20.6				
Progression Factor	0.49	0.62			0.62		1.00	1.00				
Incremental Delay, d2	4.3	1.5			0.8		4.6	0.1				
Delay (s)	23.2	9.1			14.4		32.4	20.6				
Level of Service	C	A			B		C	C				
Approach Delay (s)		14.8			14.4		30.7			0.0		
Approach LOS		B			B		C			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		21.0			HCM 2000 Level of Service		C					
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		94.0			Sum of lost time (s)		12.0					
Intersection Capacity Utilization		63.5%			ICU Level of Service		B					
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis

1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	82	165	571	487	84
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	86	174	601	513	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				415		
pX, platoon unblocked	0.68					
vC, conflicting volume	1505	557	601			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1508	557	601			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	84	82			
cM capacity (veh/h)	74	530	976			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	87	174	601	601		
Volume Left	1	174	0	0		
Volume Right	86	0	0	88		
cSH	493	976	1700	1700		
Volume to Capacity	0.18	0.18	0.35	0.35		
Queue Length 95th (ft)	16	16	0	0		
Control Delay (s)	13.9	9.5	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	13.9	2.1		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay		2.0				
Intersection Capacity Utilization		55.0%		ICU Level of Service		B
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔			↔	↔		↔	↔		
Volume (vph)	1	97	28	11	0	1	53	732	91	109	198	265	
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		
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	0.95		
Flt		0.97			0.99		1.00	0.98		1.00	0.91		
Flt Protected		1.00			0.96		0.95	1.00		0.95	1.00		
Satd. Flow (prot)		1807			1762		1770	1832		1770	3235		
Flt Permitted		1.00			0.79		0.95	1.00		0.95	1.00		
Satd. Flow (perm)		1805			1454		1770	1832		1770	3235		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	1	102	29	12	0	1	56	771	96	115	208	279	
RTOR Reduction (vph)	0	15	0	0	11	0	0	5	0	0	100	0	
Lane Group Flow (vph)	0	117	0	0	2	0	56	862	0	115	387	0	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA		
Protected Phases		4			8		5	2		1	6		
Permitted Phases	4			8									
Actuated Green, G (s)		8.3			8.3		3.2	39.2		6.2	42.2		
Effective Green, g (s)		8.3			8.3		3.2	39.2		6.2	42.2		
Actuated g/C Ratio		0.13			0.13		0.05	0.60		0.09	0.64		
Clearance Time (s)		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		
Lane Grp Cap (vph)		228			183		86	1093		167	2077		
v/s Ratio Prot							0.03	c0.47		c0.06	c0.12		
v/s Ratio Perm		c0.06			0.00								
v/c Ratio		0.51			0.01		0.65	0.79		0.69	0.19		
Uniform Delay, d1		26.8			25.1		30.7	10.1		28.8	4.8		
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00		
Incremental Delay, d2		2.0			0.0		16.3	3.9		11.2	0.0		
Delay (s)		28.8			25.1		47.0	13.9		40.0	4.8		
Level of Service		C			C		D	B		D	A		
Approach Delay (s)		28.8			25.1		16.0			11.5			
Approach LOS		C			C		B			B			
<b>Intersection Summary</b>													
HCM 2000 Control Delay		15.4			HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio		0.72											
Actuated Cycle Length (s)		65.7			Sum of lost time (s)					12.0			
Intersection Capacity Utilization		68.5%			ICU Level of Service					C			
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔		↔			↔	↔		↔	↔		
Volume (vph)	206	352	79	20	705	41	102	1	12	11	1	70	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12	
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0		
Lane Util. Factor		1.00			1.00		0.95			1.00	1.00		
Flt		1.00			0.97		1.00	0.99		0.99	1.00	0.85	
Flt Protected		0.95			1.00		0.95	1.00		0.96	1.00		
Satd. Flow (prot)		1770			2053		1770	3510		1758	1781	1583	
Flt Permitted		0.95			1.00		0.95	1.00		0.74	0.83	1.00	
Satd. Flow (perm)		1770			2053		1770	3510		1361	1545	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	217	371	83	21	742	43	107	1	13	12	1	74	
RTOR Reduction (vph)	0	6	0	0	3	0	0	5	0	0	0	50	
Lane Group Flow (vph)	217	448	0	21	782	0	0	116	0	0	13	24	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov	
Protected Phases	5	2		1	6		8			4	5		
Permitted Phases							8			4		4	
Actuated Green, G (s)	16.7	65.8		3.0	52.1		13.2			13.2	29.9		
Effective Green, g (s)	16.7	65.8		3.0	52.1		13.2			13.2	29.9		
Actuated g/C Ratio	0.18	0.70		0.03	0.55		0.14			0.14	0.32		
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)	314	1437		56	1945		191			216	570		
v/s Ratio Prot	c0.12	0.22		0.01	c0.22						0.01		
v/s Ratio Perm							c0.09				0.01		
v/c Ratio	0.69	0.31		0.38	0.40		0.61			0.06	0.04		
Uniform Delay, d1	36.2	5.4		44.6	12.0		38.0			35.0	22.1		
Progression Factor	1.49	0.27		1.00	1.00		1.00			1.00	1.00		
Incremental Delay, d2	6.0	0.5		4.2	0.6		5.4			0.1	0.0		
Delay (s)	60.1	2.0		48.8	12.6		43.3			35.1	22.2		
Level of Service	E	A		D	B		D			D	C		
Approach Delay (s)	20.8			13.6			43.3			24.1			
Approach LOS	C			B			D			C			
<b>Intersection Summary</b>													
HCM 2000 Control Delay		19.1			HCM 2000 Level of Service					B			
HCM 2000 Volume to Capacity ratio		0.49											
Actuated Cycle Length (s)		94.0			Sum of lost time (s)					12.0			
Intersection Capacity Utilization		55.3%			ICU Level of Service					B			
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	12	673	2	3	1152	73	3	0	1	184	1	34
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1543		1336	1285	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	13	708	2	3	1213	77	3	0	1	194	1	36
RTOR Reduction (vph)	0	0	0	0	34	0	3	0	0	0	0	31
Lane Group Flow (vph)	13	710	0	3	1213	43	0	1	0	97	98	5
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.3	31.3		3.2	30.2	30.2		9.1		9.1	9.1	9.1
Effective Green, g (s)	3.3	31.3		2.2	30.2	30.2		8.1		8.1	8.1	8.1
Actuated g/C Ratio	0.06	0.58		0.04	0.56	0.56		0.15		0.15	0.15	0.15
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	108	2066		72	1993	891		233		201	194	239
v/s Ratio Prot	0.01	c0.20		0.00	c0.34							
v/s Ratio Perm						0.03		0.00		0.07	c0.08	0.00
v/c Ratio	0.12	0.34		0.04	0.61	0.05		0.00		0.48	0.51	0.02
Uniform Delay, d1	23.8	5.8		24.7	7.8	5.3		19.3		20.8	20.9	19.4
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	0.1		0.2	0.6	0.0		0.0		0.7	0.8	0.0
Delay (s)	24.3	5.9		24.9	8.4	5.3		19.3		21.5	21.7	19.4
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.3			8.2			19.3			21.2	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.0										
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		53.6			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		48.5%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	37	829	1202	204	528	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1553
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	39	873	1265	215	556	40
RTOR Reduction (vph)	0	0	0	88	0	32
Lane Group Flow (vph)	39	873	1265	127	556	8
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases				6		4
Actuated Green, G (s)	7.0	68.7	57.7	57.7	21.0	21.0
Effective Green, g (s)	6.0	69.0	58.0	58.0	20.0	20.0
Actuated g/C Ratio	0.06	0.70	0.59	0.59	0.20	0.20
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	108	2491	2094	909	700	316
v/s Ratio Prot	0.02	c0.25	c0.36		c0.16	
v/s Ratio Perm				0.08		0.01
v/c Ratio	0.36	0.35	0.60	0.14	0.79	0.03
Uniform Delay, d1	44.2	5.7	12.7	8.9	37.0	31.2
Progression Factor	1.00	1.00	0.52	0.19	1.00	1.00
Incremental Delay, d2	2.1	0.4	0.7	0.2	6.2	0.0
Delay (s)	46.2	6.1	7.2	1.8	43.2	31.2
Level of Service	D	A	A	A	D	C
Approach Delay (s)		7.8	6.4		42.4	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		14.0				
HCM 2000 Volume to Capacity ratio		0.65				
Actuated Cycle Length (s)		98.0			Sum of lost time (s)	14.0
Intersection Capacity Utilization		55.8%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑	↔	↔	↑↑	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	46	1064	248	437	1019	173	267	127	694	614	287	126
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.86	0.97	0.95	1.00	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frbp, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00
Frt	1.00	0.97	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00	1.00
Flt Protected	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (prot)	1770	6205	3433	3539	1583	1770	1863	2761	3433	1777	1777	1777
Flt Permitted	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00
Satd. Flow (perm)	1770	6205	3433	3539	1583	1770	1863	2761	3433	1777	1777	1777
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	48	1120	261	460	1073	182	281	134	731	646	302	133
RTOR Reduction (vph)	0	42	0	0	0	73	0	0	80	0	17	0
Lane Group Flow (vph)	48	1339	0	460	1073	109	281	134	651	646	418	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6						8
Actuated Green, G (s)	5.9	26.1		15.3	35.5	58.9	18.3	20.2	35.5	23.4	25.3	
Effective Green, g (s)	4.9	25.1		14.3	35.5	58.9	17.3	19.2	33.5	22.4	24.3	
Actuated g/C Ratio	0.05	0.26		0.15	0.36	0.60	0.18	0.20	0.34	0.23	0.25	
Clearance Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	88	1589		500	1281	951	312	364	1056	784	440	
v/s Ratio Prot	0.03	c0.22		0.13	c0.30	0.03	c0.16	0.07	0.09	c0.19	c0.24	
v/s Ratio Perm						0.04			0.15			
v/c Ratio	0.55	0.84		0.92	0.84	0.12	0.90	0.37	0.62	0.82	0.95	
Uniform Delay, d1	45.5	34.6		41.3	28.6	8.4	39.5	34.1	26.9	35.9	36.3	
Progression Factor	0.90	0.91		0.76	0.52	2.05	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.1	5.1		21.3	6.3	0.1	27.3	0.6	1.1	7.0	30.6	
Delay (s)	47.1	36.7		52.8	21.0	17.2	66.8	34.8	28.0	43.0	66.9	
Level of Service	D	D		D	C	B	E	C	C	D	E	
Approach Delay (s)		37.1			29.2			38.3			52.6	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		37.9										D
HCM 2000 Volume to Capacity ratio		0.92										
Actuated Cycle Length (s)		98.0				Sum of lost time (s)		17.0				
Intersection Capacity Utilization		83.9%				ICU Level of Service		E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↔	↑↑↑						↔	↑↑
Volume (vph)	0	1137	1218	202	1317	0	0	0	0	95	2	317
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
Lane Util. Factor		0.95	0.88	1.00	0.91						1.00	0.88
Frbp, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2694	1770	5085						1776	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2694	1770	5085						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1197	1282	213	1386	0	0	0	0	100	2	334
RTOR Reduction (vph)	0	0	428	0	0	0	0	0	0	0	0	160
Lane Group Flow (vph)	0	1197	854	213	1386	0	0	0	0	0	102	174
Confl. Peds. (#/hr)										6		
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		59.0	59.0	17.0	79.0						11.0	11.0
Effective Green, g (s)		59.0	59.0	16.0	79.0						11.0	11.0
Actuated g/C Ratio		0.60	0.60	0.16	0.81						0.11	0.11
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		2130	1621	288	4099						199	312
v/s Ratio Prot		c0.34		c0.12	0.27						0.06	
v/s Ratio Perm			0.32									c0.06
v/c Ratio		0.56	0.53	0.74	0.34						0.51	0.56
Uniform Delay, d1		11.7	11.4	39.0	2.5						41.0	41.2
Progression Factor		0.78	1.01	1.09	2.73						1.00	1.00
Incremental Delay, d2		0.7	0.8	8.4	0.2						2.2	2.2
Delay (s)		9.8	12.2	50.9	7.1						43.2	43.4
Level of Service		A	B	D	A						D	D
Approach Delay (s)		11.0			12.9			0.0			43.3	
Approach LOS		B			B			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		14.8									B	
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		98.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		69.8%				ICU Level of Service		C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔		↔	↔				
Volume (vph)	527	689	0	0	611	139	910	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.91		0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00		1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00				
Frt	1.00	1.00			0.97		1.00	0.86				
Flt Protected	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (prot)	3433	1863			4932		3433	1559				
Flt Permitted	0.95	1.00			1.00		0.95	1.00				
Satd. Flow (perm)	3433	1863			4932		3433	1559				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	555	725	0	0	643	146	958	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	35	0	0	126	0	0	0	0
Lane Group Flow (vph)	555	725	0	0	754	0	958	143	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA		Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases												
Actuated Green, G (s)	23.9	57.4			30.0		33.1	33.1				
Effective Green, g (s)	23.4	57.4			30.0		32.6	32.6				
Actuated g/C Ratio	0.24	0.59			0.31		0.33	0.33				
Clearance Time (s)	3.5	4.0			4.0		3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0		2.5	2.5				
Lane Grp Cap (vph)	819	1091			1509		1141	518				
v/s Ratio Prot	0.16	c0.39			0.15		c0.28	0.09				
v/s Ratio Perm												
v/c Ratio	0.68	0.66			0.50		0.84	0.28				
Uniform Delay, d1	33.9	13.8			27.8		30.3	24.0				
Progression Factor	0.59	0.46			0.83		1.00	1.00				
Incremental Delay, d2	1.5	2.7			1.2		5.5	0.2				
Delay (s)	21.3	9.1			24.3		35.8	24.2				
Level of Service	C	A			C		D	C				
Approach Delay (s)		14.4			24.3		33.2			0.0		
Approach LOS		B			C		C			A		

Intersection Summary			
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	98.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	4	229	89	212	935	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	241	94	223	984	15
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				415		
pX, platoon unblocked	0.91					
vC, conflicting volume	1402	992	999			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1393	992	999			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	97	19	86			
cM capacity (veh/h)	123	298	693			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	245	94	223	999
Volume Left	4	94	0	0
Volume Right	241	0	0	15
cSH	291	693	1700	1700
Volume to Capacity	0.84	0.14	0.13	0.59
Queue Length 95th (ft)	178	12	0	0
Control Delay (s)	58.9	11.0	0.0	0.0
Lane LOS	F	B		
Approach Delay (s)	58.9	3.3		0.0
Approach LOS	F			

Intersection Summary			
Average Delay	9.9		
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔			↔	↔		↔	↔	
Volume (vph)	0	191	86	57	0	1	43	300	17	231	837	94
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	
Lane Util. Factor		1.00		1.00			1.00	1.00		1.00	0.95	
Fr <sub>t</sub>	0.96			1.00			1.00	0.99		1.00	0.98	
Fr <sub>t</sub> Protected	1.00			0.95			0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1784			1771			1770	1848		1770	3486	
Fr <sub>t</sub> Permitted	1.00			0.52			0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1784			968			1770	1848		1770	3486	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	201	91	60	0	1	45	316	18	243	881	99
RTOR Reduction (vph)	0	21	0	0	46	0	0	3	0	0	11	0
Lane Group Flow (vph)	0	271	0	0	15	0	45	331	0	243	969	0
Turn Type	NA	NA	Perm	NA	Prot	NA	Prot	NA	Prot	NA	NA	NA
Protected Phases	4			8			5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	14.2			14.2			3.1	18.2		13.4	28.5	
Effective Green, g (s)	14.2			14.2			3.1	18.2		13.4	28.5	
Actuated g/C Ratio	0.25			0.25			0.05	0.31		0.23	0.49	
Clearance Time (s)	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	
Lane Grp Cap (vph)	438			237			94	581		410	1718	
v/s Ratio Prot	c0.15						0.03	0.18		c0.14	c0.28	
v/s Ratio Perm				0.02								
v/c Ratio	0.62			0.06			0.48	0.57		0.59	0.56	
Uniform Delay, d1	19.4			16.7			26.6	16.5		19.8	10.3	
Progression Factor	1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6			0.1			3.8	1.4		2.3	0.4	
Delay (s)	22.0			16.8			30.4	17.9		22.1	10.7	
Level of Service	C			B			C	B		C	B	
Approach Delay (s)	22.0			16.8			19.4			13.0		
Approach LOS	C			B			B			B		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.7					HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		57.8					Sum of lost time (s)			12.0		
Intersection Capacity Utilization		61.6%					ICU Level of Service			B		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	81	756	90	7	507	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fr <sub>t</sub> Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2077		1770	3528			1736			1776	1583
Fr <sub>t</sub> Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2077		1770	3528			1369			1331	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	796	95	7	534	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	3	0	0	1	0	0	14	0	0	0	154
Lane Group Flow (vph)	85	888	0	7	545	0	0	76	0	0	39	37
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8				4	4
Actuated Green, G (s)	9.7	75.4		1.1	66.8			9.5			9.5	19.2
Effective Green, g (s)	9.7	75.4		1.1	66.8			9.5			9.5	19.2
Actuated g/C Ratio	0.10	0.77		0.01	0.68			0.10			0.10	0.20
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)	175	1598		19	2404			132			129	374
v/s Ratio Prot	c0.05	c0.43		0.00	0.15							0.01
v/s Ratio Perm								c0.06				0.03
v/c Ratio	0.49	0.56		0.37	0.23			0.58			0.30	0.10
Uniform Delay, d1	41.8	4.6		48.1	5.9			42.3			41.2	32.3
Progression Factor	1.19	0.36		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.7	1.1		11.7	0.2			6.0			1.3	0.1
Delay (s)	51.4	2.8		59.8	6.1			48.4			42.5	32.4
Level of Service	D	A		E	A			D			D	C
Approach Delay (s)	7.0			6.8				48.4			34.1	
Approach LOS	A			A				D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		12.3					HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		98.0					Sum of lost time (s)			12.0		
Intersection Capacity Utilization		70.1%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												



Alternative 2

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕	
Volume (vph)	37	1017	1	1	681	223	1	0	3	78	0	13	
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	0.95	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94		0.77	0.77	1.00	
Satd. Flow (perm)	1770	3539		1770	3539	1583		1568		1361	1361	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	39	1071	1	1	717	235	1	0	3	82	0	14	
RTOR Reduction (vph)	0	0	0	0	132	0	4	0	0	0	0	12	
Lane Group Flow (vph)	39	1072	0	1	717	103	0	0	0	41	41	2	
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm	
Protected Phases	5	2		1	6			8			4		
Permitted Phases						6	8			4		4	
Actuated Green, G (s)	8.9	23.3		5.1	19.5	19.5		6.2		6.2	6.2	6.2	
Effective Green, g (s)	7.9	23.3		4.1	19.5	19.5		5.2		5.2	5.2	5.2	
Actuated g/C Ratio	0.18	0.52		0.09	0.44	0.44		0.12		0.12	0.12	0.12	
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	313	1848		162	1547	692		182		158	158	184	
v/s Ratio Prot	0.02	c0.30		0.00	c0.20								
v/s Ratio Perm					0.06			0.00		c0.03	0.03	0.00	
v/c Ratio	0.12	0.58		0.01	0.46	0.15		0.00		0.26	0.26	0.01	
Uniform Delay, d1	15.4	7.3		18.4	8.9	7.6		17.4		17.9	17.9	17.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.6		0.0	0.3	0.1		0.0		0.3	0.3	0.0	
Delay (s)	15.6	7.9		18.4	9.2	7.7		17.4		18.3	18.3	17.4	
Level of Service	B	A		B	A	A		B		B	B	B	
Approach Delay (s)		8.1			8.8			17.4			18.1		
Approach LOS		A			A			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		8.9			HCM 2000 Level of Service						A		
HCM 2000 Volume to Capacity ratio		0.54											
Actuated Cycle Length (s)		44.6			Sum of lost time (s)						12.0		
Intersection Capacity Utilization		44.2%			ICU Level of Service						A		
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	38	1086	904	702	219	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1543
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1543
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	40	1143	952	739	231	8
RTOR Reduction (vph)	0	0	0	238	0	7
Lane Group Flow (vph)	40	1143	952	501	231	1
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	7.7	77.8	66.1	66.1	11.9	11.9
Effective Green, g (s)	6.7	78.1	66.4	66.4	10.9	10.9
Actuated g/C Ratio	0.07	0.80	0.68	0.68	0.11	0.11
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	121	2820	2397	1040	381	171
v/s Ratio Prot	0.02	c0.32	0.27		c0.07	
v/s Ratio Perm				c0.33		0.00
v/c Ratio	0.33	0.41	0.40	0.48	0.61	0.01
Uniform Delay, d1	43.5	3.0	7.0	7.6	41.5	38.7
Progression Factor	1.00	1.00	0.47	2.51	1.00	1.00
Incremental Delay, d2	1.6	0.4	0.3	0.9	2.7	0.0
Delay (s)	45.1	3.4	3.6	19.9	44.2	38.7
Level of Service	D	A	A	B	D	D
Approach Delay (s)		4.8	10.7		44.0	
Approach LOS		A	B		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		11.0			HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio		0.50				B
Actuated Cycle Length (s)		98.0			Sum of lost time (s)	
Intersection Capacity Utilization		54.8%			ICU Level of Service	
Analysis Period (min)		15				A
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑		↔	↑↑	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	93	999	213	474	1354	664	209	167	346	250	89	39
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.86		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	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	1.00	1.00	1.00	
Flt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6222		3433	3539	1583	1770	1863	2768	3433	1778	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6222		3433	3539	1583	1770	1863	2768	3433	1778	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	98	1052	224	499	1425	699	220	176	364	263	94	41
RTOR Reduction (vph)	0	35	0	0	0	76	0	0	66	0	17	0
Lane Group Flow (vph)	98	1241	0	499	1425	623	220	176	298	263	118	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6						8
Actuated Green, G (s)	8.6	38.0		19.2	48.6	62.7	15.2	13.7	32.9	14.1	12.6	
Effective Green, g (s)	7.6	37.0		18.2	48.6	62.7	14.2	12.7	30.9	13.1	11.6	
Actuated g/C Ratio	0.08	0.38		0.19	0.50	0.64	0.14	0.13	0.32	0.13	0.12	
Clearance Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	137	2349		637	1755	1012	256	241	985	458	210	
v/s Ratio Prot	c0.06	0.20		0.15	c0.40	0.09	c0.12	c0.09	0.06	0.08	0.07	
v/s Ratio Perm						0.31			0.05			
v/c Ratio	0.72	0.53		0.78	0.81	0.62	0.86	0.73	0.30	0.57	0.56	
Uniform Delay, d1	44.1	23.7		38.0	20.8	10.5	40.9	41.0	25.4	39.8	40.8	
Progression Factor	0.98	0.95		1.07	0.91	1.12	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	15.1	0.8		2.8	1.9	0.5	23.7	10.8	0.2	1.7	3.4	
Delay (s)	58.3	23.2		43.6	20.8	12.3	64.7	51.8	25.6	41.6	44.2	
Level of Service	E	C		D	C	B	E	D	C	D	D	
Approach Delay (s)		25.7			22.9			43.0			42.5	
Approach LOS		C			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		28.1										
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		98.0				Sum of lost time (s)		17.0				
Intersection Capacity Utilization		74.6%				ICU Level of Service		D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↔	↑↑						↔	↑↑
Volume (vph)	0	894	694	191	1389	0	0	0	0	147	0	1101
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
Lane Util. Factor		0.95	0.88	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2694	1770	3539						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2694	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	941	731	201	1462	0	0	0	0	155	0	1159
RTOR Reduction (vph)	0	0	492	0	0	0	0	0	0	0	0	26
Lane Group Flow (vph)	0	941	239	201	1462	0	0	0	0	0	155	1133
Confl. Peds. (#/hr)												6
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		32.1	32.1	13.1	48.2						41.8	41.8
Effective Green, g (s)		32.1	32.1	12.1	48.2						41.8	41.8
Actuated g/C Ratio		0.33	0.33	0.12	0.49						0.43	0.43
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1159	882	218	1740						754	1188
v/s Ratio Prot		0.27		0.11	c0.41						0.09	
v/s Ratio Perm			0.09									c0.41
v/c Ratio		0.81	0.27	0.92	0.84						0.21	0.95
Uniform Delay, d1		30.2	24.3	42.5	21.6						17.7	27.2
Progression Factor		0.77	1.07	1.69	1.32						1.00	1.00
Incremental Delay, d2		5.6	0.7	35.0	3.7						0.1	16.2
Delay (s)		29.0	26.6	106.9	32.0						17.8	43.4
Level of Service		C	C	F	C						B	D
Approach Delay (s)		27.9			41.1			0.0			40.3	
Approach LOS		C			D			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		36.1									D	
HCM 2000 Volume to Capacity ratio		0.93										
Actuated Cycle Length (s)		98.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		109.8%				ICU Level of Service		H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↕	↕	↔	↔				
Volume (vph)	546	487	0	0	711	121	867	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1545				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1545				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	575	513	0	0	748	127	913	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	58	0	116	0	0	0	0
Lane Group Flow (vph)	575	513	0	0	748	69	913	55	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	20.2	59.6			35.9	35.9	30.9	30.9				
Effective Green, g (s)	19.7	59.6			35.9	35.9	30.4	30.4				
Actuated g/C Ratio	0.20	0.61			0.37	0.37	0.31	0.31				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	690	1133			1296	572	1064	479				
v/s Ratio Prot	c0.17	0.28			c0.21		c0.27	0.04				
v/s Ratio Perm						0.04						
v/c Ratio	0.83	0.45			0.58	0.12	0.86	0.12				
Uniform Delay, d1	37.6	10.4			25.0	20.6	31.8	24.2				
Progression Factor	1.53	1.07			0.68	0.41	1.00	1.00				
Incremental Delay, d2	4.7	1.0			1.8	0.4	6.9	0.1				
Delay (s)	62.1	12.2			18.8	8.8	38.7	24.3				
Level of Service	E	B			B	A	D	C				
Approach Delay (s)		38.6			17.3		36.4			0.0		
Approach LOS		D			B		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		31.7			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.73										
Actuated Cycle Length (s)		98.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		109.8%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	86	209	668	260	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	91	220	703	274	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1418	275	276			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1418	275	276			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	88	83			
cM capacity (veh/h)	125	764	1287			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	92	220	703	276		
Volume Left	1	220	0	0		
Volume Right	91	0	0	2		
cSH	722	1287	1700	1700		
Volume to Capacity	0.13	0.17	0.41	0.16		
Queue Length 95th (ft)	11	15	0	0		
Control Delay (s)	10.7	8.4	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.7	2.0		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay				2.2		
Intersection Capacity Utilization			47.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Volume (veh/h)	11	1	873	91	1	348
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1	919	96	1	366
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TW	LTL		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1152	967			1015	
vC1, stage 1 conf vol	967					
vC2, stage 2 conf vol	185					
vCu, unblocked vol	1129	931			982	
IC, single (s)	6.8	6.9			4.1	
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3			2.2	
p0 queue free %	96	100			100	
cM capacity (veh/h)	310	252			655	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	13	1015	1	183	183	
Volume Left	12	0	1	0	0	
Volume Right	1	96	0	0	0	
cSH	304	1700	655	1700	1700	
Volume to Capacity	0.04	0.60	0.00	0.11	0.11	
Queue Length 95th (ft)	3	0	0	0	0	
Control Delay (s)	17.4	0.0	10.5	0.0	0.0	
Lane LOS	C		B			
Approach Delay (s)	17.4	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	61.5%		ICU Level of Service			B
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	206	357	79	20	660	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96			0.96	1.00
Satd. Flow (prot)	1770	2054		1770	3508			1758			1781	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.74			0.83	1.00
Satd. Flow (perm)	1770	2054		1770	3508			1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	376	83	21	695	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	6	0	0	3	0	0	5	0	0	0	51
Lane Group Flow (vph)	217	453	0	21	735	0	0	116	0	0	13	23
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	17.2	69.4		3.0	55.2			13.6			13.6	30.8
Effective Green, g (s)	17.2	69.4		3.0	55.2			13.6			13.6	30.8
Actuated g/C Ratio	0.18	0.71		0.03	0.56			0.14			0.14	0.31
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)	310	1454		54	1975			188			214	562
v/s Ratio Prot	c0.12	0.22		0.01	c0.21							0.01
v/s Ratio Perm								c0.09			0.01	0.01
v/c Ratio	0.70	0.31		0.39	0.37			0.62			0.06	0.04
Uniform Delay, d1	38.0	5.4		46.6	11.8			39.7			36.7	23.3
Progression Factor	0.91	0.29		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	6.3	0.5		4.6	0.5			5.9			0.1	0.0
Delay (s)	41.0	2.1		51.2	12.4			45.6			36.8	23.4
Level of Service	D	A		D	B			D			D	C
Approach Delay (s)		14.6			13.4			45.6				25.4
Approach LOS		B			B			D				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.9		HCM 2000 Level of Service					B				
HCM 2000 Volume to Capacity ratio	0.48											
Actuated Cycle Length (s)	98.0		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  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔↕		↔	↔↕	↔		↔↕		↔	↔	↔	
Volume (vph)	14	676	2	3	1128	110	3	0	1	248	1	37	
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	0.95	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00	
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.87		0.76	0.73	1.00	
Satd. Flow (perm)	1770	3538		1770	3539	1583		1563		1336	1284	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	15	712	2	3	1187	116	3	0	1	261	1	39	
RTOR Reduction (vph)	0	0	0	0	0	52	0	3	0	0	0	32	
Lane Group Flow (vph)	15	714	0	3	1187	64	0	1	0	130	132	7	
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm	
Protected Phases	5	2		1	6			8				4	
Permitted Phases						6	8			4		4	
Actuated Green, G (s)	4.3	32.2		3.2	31.1	31.1		11.1		11.1	11.1	11.1	
Effective Green, g (s)	3.3	32.2		2.2	31.1	31.1		10.1		10.1	10.1	10.1	
Actuated g/C Ratio	0.06	0.57		0.04	0.55	0.55		0.18		0.18	0.18	0.18	
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	103	2016		68	1948	871		279		238	229	282	
v/s Ratio Prot	0.01	c0.20		0.00	c0.34					0.10	c0.10	0.00	
v/s Ratio Perm						0.04		0.00		0.10	c0.10	0.00	
v/c Ratio	0.15	0.35		0.04	0.61	0.07		0.00		0.55	0.58	0.02	
Uniform Delay, d1	25.3	6.5		26.1	8.6	5.9		19.1		21.1	21.2	19.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.7	0.1		0.3	0.6	0.0		0.0		1.4	2.2	0.0	
Delay (s)	25.9	6.7		26.4	9.2	6.0		19.1		22.5	23.4	19.2	
Level of Service	C	A		C	A	A		B		C	C	B	
Approach Delay (s)		7.1			9.0			19.1			22.5		
Approach LOS		A			A			B			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		10.1			HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio		0.60											
Actuated Cycle Length (s)		56.5			Sum of lost time (s)						12.0		
Intersection Capacity Utilization		47.8%			ICU Level of Service						A		
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔↕	↔↕	↔	↔↕	↔
Volume (vph)	10	923	1213	300	706	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1555
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1555
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	972	1277	316	743	42
RTOR Reduction (vph)	0	0	0	143	0	31
Lane Group Flow (vph)	11	972	1277	173	743	11
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	5.5	63.0	53.5	53.5	26.7	26.7
Effective Green, g (s)	4.5	63.3	53.8	53.8	25.7	25.7
Actuated g/C Ratio	0.05	0.65	0.55	0.55	0.26	0.26
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	81	2285	1942	843	900	407
v/s Ratio Prot	0.01	c0.27	c0.36		c0.22	
v/s Ratio Perm				0.11		0.01
v/c Ratio	0.14	0.43	0.66	0.21	0.83	0.03
Uniform Delay, d1	44.9	8.5	15.6	11.2	34.0	26.9
Progression Factor	1.00	1.00	0.58	0.25	1.00	1.00
Incremental Delay, d2	0.8	0.6	1.1	0.3	6.2	0.0
Delay (s)	45.6	9.1	10.1	3.1	40.3	26.9
Level of Service	D	A	B	A	D	C
Approach Delay (s)		9.5	8.8		39.6	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		16.2			HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio		0.71				B
Actuated Cycle Length (s)		98.0			Sum of lost time (s)	
Intersection Capacity Utilization		61.2%			ICU Level of Service	
Analysis Period (min)		15				B
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑↑↑		↔	↑↑	↔	↔	↑	↔	↔	↔	↔
Volume (vph)	47	1292	290	437	1134	237	285	110	694	621	184	99
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.86		0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	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	1.00	1.00	1.00	
Fr1	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Fl1 Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	6213		3433	3539	1583	1770	1863	2764	3433	1765	
Fl1 Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	6213		3433	3539	1583	1770	1863	2764	3433	1765	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	1360	305	460	1194	249	300	116	731	654	194	104
RTOR Reduction (vph)	0	41	0	0	0	82	0	0	88	0	20	0
Lane Group Flow (vph)	49	1624	0	460	1194	167	300	116	643	654	278	0
Confl. Peds. (#/hr)			5						5			
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases						6						
Actuated Green, G (s)	4.9	32.8		15.3	43.2	65.8	19.3	14.3	29.6	22.6	17.6	
Effective Green, g (s)	3.9	31.8		14.3	43.2	65.8	18.3	13.3	27.6	21.6	16.6	
Actuated g/C Ratio	0.04	0.32		0.15	0.44	0.67	0.19	0.14	0.28	0.22	0.17	
Clearance Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	70	2016		500	1560	1062	330	252	891	756	298	
v/s Ratio Prot	0.03	c0.26		c0.13	0.34	0.04	0.17	0.06	0.11	c0.19	c0.16	
v/s Ratio Perm						0.07			0.13			
v/c Ratio	0.70	0.81		0.92	0.77	0.16	0.91	0.46	0.72	0.87	0.93	
Uniform Delay, d1	46.5	30.3		41.3	23.1	5.9	39.0	39.0	31.7	36.8	40.2	
Progression Factor	0.88	0.88		1.00	0.60	1.20	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	22.9	3.1		18.9	2.9	0.1	27.4	1.3	2.9	10.1	34.7	
Delay (s)	63.9	29.7		60.4	16.8	7.2	66.5	40.4	34.7	46.9	74.9	
Level of Service	E	C		E	B	A	E	D	C	D	E	
Approach Delay (s)		30.7			26.1			43.6			55.7	
Approach LOS		C			C			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		35.9										D
HCM 2000 Volume to Capacity ratio		0.88										
Actuated Cycle Length (s)		98.0				Sum of lost time (s)		17.0				
Intersection Capacity Utilization		81.8%				ICU Level of Service		D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↔	↑↑						↔	↑↑
Volume (vph)	0	1464	1127	202	1326	0	0	0	0	95	2	488
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
Lane Util. Factor		0.95	0.88	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2694	1770	3539						1776	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2694	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1541	1186	213	1396	0	0	0	0	100	2	514
RTOR Reduction (vph)	0	0	515	0	0	0	0	0	0	0	0	128
Lane Group Flow (vph)	0	1541	671	213	1396	0	0	0	0	0	102	386
Confl. Peds. (#/hr)										6		
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		54.7	54.7	15.5	73.2						16.8	16.8
Effective Green, g (s)		54.7	54.7	14.5	73.2						16.8	16.8
Actuated g/C Ratio		0.56	0.56	0.15	0.75						0.17	0.17
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1975	1503	261	2643						304	477
v/s Ratio Prot		c0.44		c0.12	0.39						0.06	
v/s Ratio Perm			0.25									c0.14
v/c Ratio		0.78	0.45	0.82	0.53						0.34	0.81
Uniform Delay, d1		16.9	12.7	40.5	5.2						35.7	39.1
Progression Factor		0.72	1.05	1.44	2.50						1.00	1.00
Incremental Delay, d2		1.7	0.5	12.4	0.4						0.7	10.0
Delay (s)		14.0	13.9	70.6	13.4						36.3	49.1
Level of Service		B	B	E	B						D	D
Approach Delay (s)		14.0			20.9			0.0			47.0	
Approach LOS		B			C			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		20.3									C	
HCM 2000 Volume to Capacity ratio		0.79										
Actuated Cycle Length (s)		98.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		102.6%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↕	↕	↔	↔				
Volume (vph)	887	656	0	0	613	139	916	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1562	3433	1558				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1562	3433	1558				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	934	691	0	0	645	146	964	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	84	0	164	0	0	0	0
Lane Group Flow (vph)	934	691	0	0	645	62	964	105	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	31.5	59.4			24.4	24.4	31.1	31.1				
Effective Green, g (s)	31.0	59.4			24.4	24.4	30.6	30.6				
Actuated g/C Ratio	0.32	0.61			0.25	0.25	0.31	0.31				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	1085	1129			881	388	1071	486				
v/s Ratio Prot	c0.27	0.37			c0.18		c0.28	0.07				
v/s Ratio Perm						0.04						
v/c Ratio	0.86	0.61			0.73	0.16	0.90	0.22				
Uniform Delay, d1	31.5	12.1			33.8	28.8	32.2	24.9				
Progression Factor	0.49	0.47			0.85	0.66	1.00	1.00				
Incremental Delay, d2	4.3	1.7			5.2	0.9	10.3	0.2				
Delay (s)	19.9	7.4			34.1	19.8	42.6	25.0				
Level of Service	B	A			C	B	D	C				
Approach Delay (s)		14.6			31.5		38.7			0.0		
Approach LOS		B			C		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		26.4			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.84										
Actuated Cycle Length (s)		98.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		102.6%			ICU Level of Service			G				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	↔
Volume (veh/h)	3	202	103	289	601	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	213	108	304	633	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1155	634	635			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1155	634	635			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	56	89			
cM capacity (veh/h)	193	479	948			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	216	108	304	635		
Volume Left	3	108	0	0		
Volume Right	213	0	0	2		
cSH	469	948	1700	1700		
Volume to Capacity	0.46	0.11	0.18	0.37		
Queue Length 95th (ft)	59	10	0	0		
Control Delay (s)	19.0	9.3	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	19.0	2.4		0.0		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			4.1			
Intersection Capacity Utilization		60.1%		ICU Level of Service	B	
Analysis Period (min)		15				



HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (veh/h)	57	1	391	17	1	801
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	1	412	18	1	843
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TW	LT		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked						
vC, conflicting volume	844	421			429	
vC1, stage 1 conf vol	421					
vC2, stage 2 conf vol	424					
vCu, unblocked vol	844	421			429	
IC, single (s)	6.8	6.9			4.1	
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3			2.2	
p0 queue free %	88	100			100	
cM capacity (veh/h)	508	582			1126	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	61	429	1	422	422	
Volume Left	60	0	1	0	0	
Volume Right	1	18	0	0	0	
cSH	509	1700	1126	1700	1700	
Volume to Capacity	0.12	0.25	0.00	0.25	0.25	
Queue Length 95th (ft)	10	0	0	0	0	
Control Delay (s)	13.0	0.0	8.2	0.0	0.0	
Lane LOS	B		A			
Approach Delay (s)	13.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.6					
Intersection Capacity Utilization	32.1%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	81	723	90	7	509	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2076		1770	3528			1736			1776	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2076		1770	3528			1369			1331	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	761	95	7	536	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	3	0	0	1	0	0	14	0	0	0	153
Lane Group Flow (vph)	85	853	0	7	547	0	0	76	0	0	39	38
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	10.0	75.2		1.3	66.5			9.5			9.5	19.5
Effective Green, g (s)	10.0	75.2		1.3	66.5			9.5			9.5	19.5
Actuated g/C Ratio	0.10	0.77		0.01	0.68			0.10			0.10	0.20
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)	180	1593		23	2394			132			129	379
v/s Ratio Prot	c0.05	c0.41		0.00	0.15							0.01
v/s Ratio Perm								c0.06			0.03	0.01
v/c Ratio	0.47	0.54		0.30	0.23			0.58			0.30	0.10
Uniform Delay, d1	41.5	4.5		47.9	6.0			42.3			41.2	32.1
Progression Factor	1.14	0.47		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.6	1.1		7.4	0.2			6.0			1.3	0.1
Delay (s)	49.0	3.2		55.3	6.2			48.4			42.5	32.2
Level of Service	D	A		E	A			D			D	C
Approach Delay (s)		7.3			6.8			48.4				33.9
Approach LOS		A			A			D				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	12.6		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.55											
Actuated Cycle Length (s)	98.0		Sum of lost time (s)		12.0							
Intersection Capacity Utilization	68.4%		ICU Level of Service		C							
Analysis Period (min)	15											

c Critical Lane Group

## Alternative 3

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	25	1026	1	1	672	128	1	0	3	11	0	5
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.93		1.00	1.00	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1552		1770	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1080	1	1	707	135	1	0	3	12	0	5
RTOR Reduction (vph)	0	0	0	0	0	78	0	4	0	0	0	5
Lane Group Flow (vph)	26	1081	0	1	707	57	0	0	0	6	6	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	9.5	22.5		5.1	18.1	18.1		4.9		4.9	4.9	4.9
Effective Green, g (s)	8.5	22.5		4.1	18.1	18.1		3.9		3.9	3.9	3.9
Actuated g/C Ratio	0.20	0.53		0.10	0.43	0.43		0.09		0.09	0.09	0.09
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	354	1873		170	1507	674		142		162	162	145
v/s Ratio Prot	0.01	c0.31		0.00	c0.20							
v/s Ratio Perm						0.04		0.00		c0.00	0.00	0.00
v/c Ratio	0.07	0.58		0.01	0.47	0.09		0.00		0.04	0.04	0.00
Uniform Delay, d1	13.8	6.8		17.4	8.8	7.3		17.5		17.6	17.6	17.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5		0.0	0.3	0.1		0.0		0.0	0.0	0.0
Delay (s)	13.9	7.3		17.4	9.1	7.3		17.5		17.6	17.6	17.5
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		7.5			8.8			17.5			17.6	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		42.5		Sum of lost time (s)			12.0					
Intersection Capacity Utilization		38.4%		ICU Level of Service			A					
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	30	1037	805	436	33	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1492
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1492
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1092	847	459	35	3
RTOR Reduction (vph)	0	0	0	97	0	3
Lane Group Flow (vph)	32	1092	847	362	35	0
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	5.0	87.5	78.5	78.5	4.2	4.2
Effective Green, g (s)	4.0	87.8	78.8	78.8	3.2	3.2
Actuated g/C Ratio	0.04	0.88	0.79	0.79	0.03	0.03
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	70	3107	2788	1210	109	47
v/s Ratio Prot	0.02	c0.31	0.24		c0.01	
v/s Ratio Perm				0.24		0.00
v/c Ratio	0.46	0.35	0.30	0.30	0.32	0.00
Uniform Delay, d1	46.9	1.1	3.0	2.9	47.3	46.9
Progression Factor	1.00	1.00	0.09	0.01	1.00	1.00
Incremental Delay, d2	4.7	0.3	0.2	0.4	1.7	0.0
Delay (s)	51.6	1.4	0.5	0.4	49.0	46.9
Level of Service	D	A	A	A	D	D
Approach Delay (s)		2.8	0.5		48.9	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		2.3		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.37				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		39.5%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔	↔	↔	↔	↔	↔↔	↔	↔
Volume (vph)	114	784	172	417	1046	856	156	210	361	206	76	34
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1553	3433	3539	1583	3433	1863	1574	3433	1776	1776
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1553	3433	3539	1583	3433	1863	1574	3433	1776	1776
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	825	181	439	1101	901	164	221	380	217	80	36
RTOR Reduction (vph)	0	0	109	0	0	49	0	0	120	0	21	0
Lane Group Flow (vph)	120	825	72	439	1101	852	164	221	260	217	95	0
Confl. Peds. (#/hr)	5			5								
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	9.0	21.9	21.9	25.0	37.9	63.4	29.4	14.6	39.6	25.5	10.7	
Effective Green, g (s)	8.0	20.9	20.9	24.0	37.9	63.4	28.4	13.6	37.6	24.5	9.7	
Actuated g/C Ratio	0.08	0.21	0.21	0.24	0.38	0.63	0.28	0.14	0.38	0.24	0.10	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	141	1062	324	823	1341	1003	974	253	591	841	172	
v/s Ratio Prot	c0.07	0.16		0.13	0.31	c0.22	c0.05	c0.12	0.11	0.06	0.05	
v/s Ratio Perm			0.05			0.32			0.06			
v/c Ratio	0.85	0.78	0.22	0.53	0.82	0.85	0.17	0.87	0.44	0.26	0.55	
Uniform Delay, d1	45.4	37.3	32.8	33.1	28.0	14.5	26.9	42.4	23.3	30.4	43.1	
Progression Factor	0.99	0.96	0.88	1.00	0.81	0.52	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	35.0	3.5	0.3	1.4	3.3	3.9	0.1	26.5	0.5	0.2	3.8	
Delay (s)	79.9	39.2	29.2	34.6	25.9	11.4	27.0	68.9	23.9	30.6	46.9	
Level of Service	E	D	C	C	C	B	C	E	C	C	D	
Approach Delay (s)	42.0			22.1				37.5			36.3	
Approach LOS	D			C				D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	30.4			HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)				17.0				
Intersection Capacity Utilization	80.4%			ICU Level of Service				D				
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔	
Volume (vph)	0	745	599	191	1291	0	0	0	0	147	0	1026	
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	
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88	
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00	
Flt		1.00	0.85	1.00	1.00						1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00	
Satd. Flow (prot)		3539	1552	1770	3539						1770	2787	
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00	
Satd. Flow (perm)		3539	1552	1770	3539						1770	2787	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	0	784	631	201	1359	0	0	0	0	155	0	1080	
RTOR Reduction (vph)	0	0	424	0	0	0	0	0	0	0	0	28	
Lane Group Flow (vph)	0	784	207	201	1359	0	0	0	0	0	155	1052	
Confl. Peds. (#/hr)	6												
Turn Type		NA	Perm	Prot	NA						Split	NA	Perm
Protected Phases		2		1	6						4	4	
Permitted Phases			2										4
Actuated Green, G (s)		32.8	32.8	14.8	50.6						41.4	41.4	
Effective Green, g (s)		32.8	32.8	13.8	50.6						41.4	41.4	
Actuated g/C Ratio		0.33	0.33	0.14	0.51						0.41	0.41	
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0	
Lane Grp Cap (vph)		1160	509	244	1790						732	1153	
v/s Ratio Prot		0.22		0.11	c0.38						0.09		
v/s Ratio Perm			0.13									c0.38	
v/c Ratio		0.68	0.41	0.82	0.76						0.21	0.91	
Uniform Delay, d1		29.0	26.1	41.9	19.8						18.8	27.6	
Progression Factor		0.52	2.24	1.44	0.77						1.00	1.00	
Incremental Delay, d2		2.5	1.9	17.7	2.5						0.1	10.9	
Delay (s)		17.5	60.3	78.1	17.7						19.0	38.5	
Level of Service		B	E	E	B						B	D	
Approach Delay (s)		36.6			25.5		0.0			36.0			
Approach LOS		D			C		A			D			
<b>Intersection Summary</b>													
HCM 2000 Control Delay	32.3			HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.87												
Actuated Cycle Length (s)	100.0			Sum of lost time (s)				12.0					
Intersection Capacity Utilization	117.2%			ICU Level of Service				H					
Analysis Period (min)	15												
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↕	↕	↔	↔				
Volume (vph)	426	459	0	0	697	121	783	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	448	483	0	0	734	127	824	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	119	0	0	0	0
Lane Group Flow (vph)	448	483	0	0	734	73	824	52	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	17.2	62.9			42.2	42.2	29.6	29.6				
Effective Green, g (s)	16.7	62.9			42.2	42.2	29.1	29.1				
Actuated g/C Ratio	0.17	0.63			0.42	0.42	0.29	0.29				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	573	1171			1493	659	999	449				
v/s Ratio Prot	c0.13	0.26			c0.21		c0.24	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.78	0.41			0.49	0.11	0.82	0.12				
Uniform Delay, d1	39.9	9.3			21.1	17.5	33.1	26.0				
Progression Factor	0.54	0.28			0.54	0.19	1.00	1.00				
Incremental Delay, d2	4.7	0.9			1.1	0.3	5.5	0.1				
Delay (s)	26.1	3.5			12.5	3.7	38.6	26.1				
Level of Service	C	A			B	A	D	C				
Approach Delay (s)		14.4				11.2		36.4			0.0	
Approach LOS		B				B		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		21.3										
HCM 2000 Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		100.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		117.2%									ICU Level of Service	H
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	80	234	898	205	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	84	246	945	216	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1655	217	219			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1655	217	219			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	90	82			
cM capacity (veh/h)	88	822	1350			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	85	246	945	219		
Volume Left	1	246	0	0		
Volume Right	84	0	0	3		
cSH	746	1350	1700	1700		
Volume to Capacity	0.11	0.18	0.56	0.13		
Queue Length 95th (ft)	10	17	0	0		
Control Delay (s)	10.4	8.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.4	1.7		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay		2.0				
Intersection Capacity Utilization		58.9%			ICU Level of Service	B
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↕	↕
Volume (veh/h)	11	1	1128	91	1	287
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1	1187	96	1	302
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TW	LTL		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.90	0.90		0.90		
vC, conflicting volume	1388	1235		1283		
vC1, stage 1 conf vol	1235					
vC2, stage 2 conf vol	153					
vCu, unblocked vol	1376	1205		1258		
IC, single (s)	6.8	6.9		4.1		
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3		2.2		
p0 queue free %	95	99		100		
cM capacity (veh/h)	214	158		492		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	13	1283	1	151	151	
Volume Left	12	0	1	0	0	
Volume Right	1	96	0	0	0	
cSH	208	1700	492	1700	1700	
Volume to Capacity	0.06	0.75	0.00	0.09	0.09	
Queue Length 95th (ft)	5	0	0	0	0	
Control Delay (s)	23.4	0.0	12.3	0.0	0.0	
Lane LOS	C		B			
Approach Delay (s)	23.4	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	74.9%		ICU Level of Service			D
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↕	↕	↕	↕	↕
Volume (vph)	206	329	79	20	647	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96			0.96	1.00
Satd. Flow (prot)	1770	2050		1770	3508			1758			1781	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.74			0.83	1.00
Satd. Flow (perm)	1770	2050		1770	3508			1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	346	83	21	681	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	6	0	0	4	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	423	0	21	720	0	0	117	0	0	13	25
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	19.9	71.0		3.2	54.3			13.8			13.8	33.7
Effective Green, g (s)	19.9	71.0		3.2	54.3			13.8			13.8	33.7
Actuated g/C Ratio	0.20	0.71		0.03	0.54			0.14			0.14	0.34
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)	352	1455		56	1904			187			213	596
v/s Ratio Prot	c0.12	0.21		0.01	c0.21							0.01
v/s Ratio Perm								c0.09			0.01	0.01
v/c Ratio	0.62	0.29		0.38	0.38			0.62			0.06	0.04
Uniform Delay, d1	36.6	5.3		47.4	13.1			40.7			37.5	22.3
Progression Factor	0.73	0.31		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	3.0	0.5		4.2	0.6			6.3			0.1	0.0
Delay (s)	29.7	2.1		51.6	13.7			47.0			37.6	22.3
Level of Service	C	A		D	B			D			D	C
Approach Delay (s)		11.4			14.8			47.0				24.6
Approach LOS		B			B			D				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.4		HCM 2000 Level of Service			B						
HCM 2000 Volume to Capacity ratio	0.47											
Actuated Cycle Length (s)	100.0		Sum of lost time (s)			12.0						
Intersection Capacity Utilization	53.7%		ICU Level of Service			A						
Analysis Period (min)	15											

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↔		↔	↕↔	↕↔		↕↔		↔	↕↔	↕↔
Volume (vph)	3	667	2	3	1135	20	3	0	1	136	1	22
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.85		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1523		1336	1286	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	702	2	3	1195	21	3	0	1	143	1	23
RTOR Reduction (vph)	0	0	0	0	0	10	0	3	0	0	0	20
Lane Group Flow (vph)	3	704	0	3	1195	11	0	1	0	71	73	3
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Actuated Green, G (s)	5.9	29.3		5.2	28.6	28.6		7.8		7.8	7.8	7.8
Effective Green, g (s)	4.9	29.3		4.2	28.6	28.6		6.8		6.8	6.8	6.8
Actuated g/C Ratio	0.09	0.56		0.08	0.55	0.55		0.13		0.13	0.13	0.13
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	165	1982		142	1935	865		198		173	167	205
v/s Ratio Prot	0.00	c0.20		0.00	c0.34			0.00		0.05	c0.06	0.00
v/s Ratio Perm						0.01		0.00		0.05	c0.06	0.00
v/c Ratio	0.02	0.36		0.02	0.62	0.01		0.00		0.41	0.44	0.01
Uniform Delay, d1	21.5	6.3		22.2	8.1	5.4		19.8		20.9	21.0	19.8
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.2		0.1	0.7	0.0		0.0		0.6	0.7	0.0
Delay (s)	21.6	6.5		22.2	8.8	5.4		19.8		21.5	21.7	19.8
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.5			8.8			19.8			21.3	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.0			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		52.3			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		48.0%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕↔	↕↔	↕↔	↕↔	↕↔
Volume (vph)	2	810	1139	45	388	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.96	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1528	3433	1549
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1528	3433	1549
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	2	853	1199	47	408	33
RTOR Reduction (vph)	0	0	0	11	0	28
Lane Group Flow (vph)	2	853	1199	36	408	5
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2			4	
Permitted Phases				6		4
Actuated Green, G (s)	1.3	116.8	111.5	111.5	22.9	22.9
Effective Green, g (s)	0.3	117.1	111.8	111.8	21.9	21.9
Actuated g/C Ratio	0.00	0.79	0.76	0.76	0.15	0.15
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	3	2800	2673	1154	507	229
v/s Ratio Prot	0.00	c0.24	c0.34		c0.12	
v/s Ratio Perm				0.02		0.00
v/c Ratio	0.67	0.30	0.45	0.03	0.80	0.02
Uniform Delay, d1	73.8	4.3	6.7	4.5	61.0	53.9
Progression Factor	1.00	1.00	0.53	0.29	1.00	1.00
Incremental Delay, d2	227.2	0.3	0.4	0.0	9.0	0.0
Delay (s)	301.0	4.5	4.0	1.4	70.0	53.9
Level of Service	F	A	A	A	E	D
Approach Delay (s)		5.2	3.9		68.8	
Approach LOS		A	A		E	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		15.6			HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.51				
Actuated Cycle Length (s)		148.0			Sum of lost time (s)	14.0
Intersection Capacity Utilization		50.1%			ICU Level of Service	A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔	↔	↔↔	↔	↔	↔↔	↔	↔
Volume (vph)	43	942	213	483	854	211	222	102	692	741	222	115
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	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	1.00	1.00	1.00	1.00	1.00
Fr1	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Fl1 Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1554	3433	3539	1583	3433	1863	1580	3433	1768	1768
Fl1 Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1554	3433	3539	1583	3433	1863	1580	3433	1768	1768
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	992	224	508	899	222	234	107	728	780	234	121
RTOR Reduction (vph)	0	0	76	0	0	46	0	0	29	0	13	0
Lane Group Flow (vph)	45	992	148	508	899	176	234	107	699	780	342	0
Confl. Peds. (#/hr)	5					5						
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases	2		6		8							
Actuated Green, G (s)	7.4	32.8	32.8	57.2	82.6	117.6	12.0	10.0	67.2	35.0	33.0	
Effective Green, g (s)	6.4	31.8	31.8	56.2	82.6	117.6	11.0	9.0	65.2	34.0	32.0	
Actuated g/C Ratio	0.04	0.21	0.21	0.38	0.56	0.79	0.07	0.06	0.44	0.23	0.22	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	76	1092	333	1303	1975	1257	255	113	738	788	382	
v/s Ratio Prot	0.03	c0.20		0.15	0.25	0.03	0.07	0.06	c0.36	c0.23	0.19	
v/s Ratio Perm			0.10			0.08			0.08			
v/c Ratio	0.59	0.91	0.44	0.39	0.46	0.14	0.92	0.95	0.95	0.99	0.90	
Uniform Delay, d1	69.5	56.7	50.4	33.4	19.4	3.5	68.1	69.3	39.7	56.8	56.4	
Progression Factor	1.08	0.79	0.66	0.69	0.67	2.09	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.2	12.0	4.0	0.2	0.7	0.0	34.7	67.3	21.0	29.2	22.6	
Delay (s)	86.5	56.9	37.5	23.4	13.6	7.4	102.8	136.6	60.7	86.0	79.0	
Level of Service	F	E	D	C	B	A	F	F	E	F	E	
Approach Delay (s)	54.5			15.8			77.5			83.8		
Approach LOS	D			B			E			F		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	53.5			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.98											
Actuated Cycle Length (s)	148.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	93.6%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔
Volume (vph)	0	1353	1005	202	1156	0	0	0	0	95	2	396
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					95	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1546	1770	3539						1776	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1546	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1424	1058	213	1217	0	0	0	0	100	2	417
RTOR Reduction (vph)	0	0	169	0	0	0	0	0	0	0	0	259
Lane Group Flow (vph)	0	1424	889	213	1217	0	0	0	0	0	102	158
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases		2										4
Actuated Green, G (s)		102.0	102.0	21.6	126.6						13.4	13.4
Effective Green, g (s)		102.0	102.0	20.6	126.6						13.4	13.4
Actuated g/C Ratio		0.69	0.69	0.14	0.86						0.09	0.09
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		2439	1065	246	3027						160	252
v/s Ratio Prot		0.40		c0.12	0.34						c0.06	
v/s Ratio Perm			c0.58									0.06
v/c Ratio		0.58	0.83	0.87	0.40						0.64	0.63
Uniform Delay, d1		12.0	16.8	62.3	2.4						65.0	64.9
Progression Factor		0.71	0.97	0.78	1.79						1.00	1.00
Incremental Delay, d2		0.3	2.7	23.7	0.3						8.1	4.8
Delay (s)		8.8	19.0	72.2	4.5						73.0	69.7
Level of Service		A	B	E	A						E	E
Approach Delay (s)		13.1		14.6		0.0				70.3		
Approach LOS		B		B		A				E		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	20.3			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	148.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	117.0%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	799	634	0	0	584	139	776	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1556				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1556				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	841	667	0	0	615	146	817	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	50	0	183	0	0	0	0
Lane Group Flow (vph)	841	667	0	0	615	96	817	86	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	41.1	99.2			54.6	54.6	41.3	41.3				
Effective Green, g (s)	40.6	99.2			54.6	54.6	40.8	40.8				
Actuated g/C Ratio	0.27	0.67			0.37	0.37	0.28	0.28				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	941	1248			1305	576	946	428				
v/s Ratio Prot	c0.24	c0.36			0.17		c0.24	0.06				
v/s Ratio Perm						0.06						
v/c Ratio	0.89	0.53			0.47	0.17	0.86	0.20				
Uniform Delay, d1	51.6	12.5			35.7	31.4	51.0	41.1				
Progression Factor	0.99	0.71			0.97	0.97	1.00	1.00				
Incremental Delay, d2	8.9	1.4			1.2	0.6	8.2	0.2				
Delay (s)	60.1	10.2			35.7	31.0	59.1	41.3				
Level of Service	E	B			D	C	E	D				
Approach Delay (s)		38.0			34.8		54.7			0.0		
Approach LOS		D			C		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		42.7			HCM 2000 Level of Service			D				
HCM 2000 Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		148.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		117.0%			ICU Level of Service			H				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	4	219	99	255	757	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	231	104	268	797	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1275	798	799			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1275	798	799			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	97	40	87			
cM capacity (veh/h)	161	386	824			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	235	104	268	799		
Volume Left	4	104	0	0		
Volume Right	231	0	0	2		
cSH	377	824	1700	1700		
Volume to Capacity	0.62	0.13	0.16	0.47		
Queue Length 95th (ft)	101	11	0	0		
Control Delay (s)	29.1	10.0	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	29.1	2.8		0.0		
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay		5.6				
Intersection Capacity Utilization		69.2%		ICU Level of Service	C	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Volume (veh/h)	57	1	353	17	1	975
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	1	372	18	1	1026
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.96	0.96		0.96		
vC, conflicting volume	896	381		389		
vC1, stage 1 conf vol	381					
vC2, stage 2 conf vol	515					
vCu, unblocked vol	869	331		341		
IC, single (s)	6.8	6.9		4.1		
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3		2.2		
p0 queue free %	88	100		100		
cM capacity (veh/h)	485	636		1164		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	61	389	1	513	513	
Volume Left	60	0	1	0	0	
Volume Right	1	18	0	0	0	
cSH	487	1700	1164	1700	1700	
Volume to Capacity	0.13	0.23	0.00	0.30	0.30	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	13.4	0.0	8.1	0.0	0.0	
Lane LOS	B		A			
Approach Delay (s)	13.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.6					
Intersection Capacity Utilization	37.0%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	T	T		T	T		T	T		T	T	T
Volume (vph)	81	701	90	7	480	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2075		1770	3527			1736			1776	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2075		1770	3527			1369			1329	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	738	95	7	505	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	2	0	0	1	0	0	9	0	0	0	149
Lane Group Flow (vph)	85	831	0	7	516	0	0	81	0	0	39	42
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	18.5	120.6		1.5	103.6			13.9			13.9	32.4
Effective Green, g (s)	18.5	120.6		1.5	103.6			13.9			13.9	32.4
Actuated g/C Ratio	0.12	0.81		0.01	0.70			0.09			0.09	0.22
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)	221	1690		17	2468			128			124	389
v/s Ratio Prot	c0.05	c0.40		0.00	0.15							0.01
v/s Ratio Perm								c0.06			0.03	0.01
v/c Ratio	0.38	0.49		0.41	0.21			0.63			0.31	0.11
Uniform Delay, d1	59.5	4.2		72.8	7.8			64.6			62.6	46.2
Progression Factor	0.92	0.22		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.9		15.4	0.2			9.8			1.5	0.1
Delay (s)	55.9	1.8		88.2	8.0			74.4			64.1	46.4
Level of Service	E	A		F	A			E			E	D
Approach Delay (s)		6.8			9.1			74.4			49.4	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.5		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.51											
Actuated Cycle Length (s)	148.0		Sum of lost time (s)		12.0							
Intersection Capacity Utilization	67.2%		ICU Level of Service		C							
Analysis Period (min)	15											

c Critical Lane Group

Alternative 4

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	25	1028	1	1	674	128	1	0	3	11	0	5
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.93		1.00	1.00	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1552		1770	1770	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	26	1082	1	1	709	135	1	0	3	12	0	5
RTOR Reduction (vph)	0	0	0	0	78	0	4	0	0	0	0	5
Lane Group Flow (vph)	26	1083	0	1	709	57	0	0	0	6	6	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	9.5	22.5		5.1	18.1	18.1		4.9		4.9	4.9	4.9
Effective Green, g (s)	8.5	22.5		4.1	18.1	18.1		3.9		3.9	3.9	3.9
Actuated g/C Ratio	0.20	0.53		0.10	0.43	0.43		0.09		0.09	0.09	0.09
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	354	1873		170	1507	674		142		162	162	145
v/s Ratio Prot	0.01	c0.31		0.00	c0.20							
v/s Ratio Perm						0.04		0.00		c0.00	0.00	0.00
v/c Ratio	0.07	0.58		0.01	0.47	0.09		0.00		0.04	0.04	0.00
Uniform Delay, d1	13.8	6.8		17.4	8.8	7.3		17.5		17.6	17.6	17.5
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.5		0.0	0.3	0.1		0.0		0.0	0.0	0.0
Delay (s)	13.9	7.3		17.4	9.1	7.3		17.5		17.6	17.6	17.5
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		7.5			8.8			17.5			17.6	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.1			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.52										
Actuated Cycle Length (s)		42.5		Sum of lost time (s)				12.0				
Intersection Capacity Utilization		38.4%		ICU Level of Service			A					
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	30	1039	807	436	33	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.97	1.00	0.94
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1536	3433	1492
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1536	3433	1492
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	32	1094	849	459	35	3
RTOR Reduction (vph)	0	0	0	97	0	3
Lane Group Flow (vph)	32	1094	849	362	35	0
Confl. Peds. (#/hr)				5		5
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases				6		4
Actuated Green, G (s)	5.0	87.5	78.5	78.5	4.2	4.2
Effective Green, g (s)	4.0	87.8	78.8	78.8	3.2	3.2
Actuated g/C Ratio	0.04	0.88	0.79	0.79	0.03	0.03
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	70	3107	2788	1210	109	47
v/s Ratio Prot	0.02	c0.31	0.24		c0.01	
v/s Ratio Perm				0.24		0.00
v/c Ratio	0.46	0.35	0.30	0.30	0.32	0.00
Uniform Delay, d1	46.9	1.1	3.0	2.9	47.3	46.9
Progression Factor	1.00	1.00	0.18	0.01	1.00	1.00
Incremental Delay, d2	4.7	0.3	0.2	0.4	1.7	0.0
Delay (s)	51.6	1.4	0.7	0.4	49.0	46.9
Level of Service	D	A	A	A	D	D
Approach Delay (s)		2.8	0.6		48.9	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		2.4		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.37				
Actuated Cycle Length (s)		100.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		39.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔↔	↔	↔	↔	↔↔	↔↔	↔	↔
Volume (vph)	114	784	174	447	1046	856	157	211	391	206	77	34
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00
Fr1	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	1.00
Fl1 Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1553	3433	3539	1583	1770	1863	2771	3433	1777	1777
Fl1 Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1553	3433	3539	1583	1770	1863	2771	3433	1777	1777
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	825	183	471	1101	901	165	222	412	217	81	36
RTOR Reduction (vph)	0	0	111	0	0	49	0	0	211	0	19	0
Lane Group Flow (vph)	120	825	72	471	1101	852	165	222	201	217	98	0
Confl. Peds. (#/hr)	5					5						
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	9.0	21.9	21.9	25.0	37.9	63.4	29.3	14.6	39.6	25.5	10.8	
Effective Green, g (s)	8.0	20.9	20.9	24.0	37.9	63.4	28.3	13.6	37.6	24.5	9.8	
Actuated g/C Ratio	0.08	0.21	0.21	0.24	0.38	0.63	0.28	0.14	0.38	0.24	0.10	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	141	1062	324	823	1341	1003	500	253	1041	841	174	
v/s Ratio Prot	c0.07	0.16		0.14	0.31	c0.22	c0.09	c0.12	0.05	0.06	0.06	
v/s Ratio Perm			0.05			0.32			0.03			
v/c Ratio	0.85	0.78	0.22	0.57	0.82	0.85	0.33	0.88	0.19	0.26	0.56	
Uniform Delay, d1	45.4	37.3	32.8	33.5	28.0	14.5	28.4	42.4	21.0	30.4	43.1	
Progression Factor	0.99	0.96	0.89	1.03	0.79	0.48	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	34.9	3.5	0.3	1.5	3.1	3.8	0.4	27.1	0.1	0.2	4.1	
Delay (s)	79.9	39.2	29.4	35.9	25.3	10.8	28.7	69.4	21.1	30.6	47.2	
Level of Service	E	D	C	D	C	B	C	E	C	C	D	
Approach Delay (s)	42.0			22.0			36.1			36.4		
Approach LOS	D			C			D			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	30.2			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	80.4%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔
Volume (vph)	0	765	608	191	1305	0	0	0	0	147	0	1042
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1552	1770	3539						1770	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1552	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	805	640	201	1374	0	0	0	0	155	0	1097
RTOR Reduction (vph)	0	0	433	0	0	0	0	0	0	0	0	27
Lane Group Flow (vph)	0	805	207	201	1374	0	0	0	0	0	155	1070
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		32.4	32.4	14.8	50.2						41.8	41.8
Effective Green, g (s)		32.4	32.4	13.8	50.2						41.8	41.8
Actuated g/C Ratio		0.32	0.32	0.14	0.50						0.42	0.42
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1146	502	244	1776						739	1164
v/s Ratio Prot		0.23		0.11	c0.39						0.09	
v/s Ratio Perm			0.13									c0.38
v/c Ratio		0.70	0.41	0.82	0.77						0.21	0.92
Uniform Delay, d1		29.6	26.4	41.9	20.3						18.6	27.5
Progression Factor		0.51	2.23	1.36	0.79						1.00	1.00
Incremental Delay, d2		3.1	2.1	17.6	2.7						0.1	11.5
Delay (s)		18.1	60.9	74.6	18.7						18.7	39.0
Level of Service		B	E	E	B						B	D
Approach Delay (s)		37.1			25.9			0.0			36.5	
Approach LOS		D			C			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	32.8			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	100.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	118.8%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	442	464	0	0	702	121	793	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	465	488	0	0	739	127	835	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	119	0	0	0	0
Lane Group Flow (vph)	465	488	0	0	739	73	835	52	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	17.6	62.7			41.6	41.6	29.8	29.8				
Effective Green, g (s)	17.1	62.7			41.6	41.6	29.3	29.3				
Actuated g/C Ratio	0.17	0.63			0.42	0.42	0.29	0.29				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	587	1168			1472	650	1005	452				
v/s Ratio Prot	c0.14	0.26			c0.21		c0.24	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.79	0.42			0.50	0.11	0.83	0.12				
Uniform Delay, d1	39.7	9.4			21.6	17.9	33.0	25.9				
Progression Factor	0.49	0.39			0.57	0.18	1.00	1.00				
Incremental Delay, d2	4.8	0.9			1.2	0.3	5.8	0.1				
Delay (s)	24.5	4.6			13.3	3.5	38.9	26.0				
Level of Service	C	A			B	A	D	C				
Approach Delay (s)		14.3				11.9		36.7			0.0	
Approach LOS		B				B		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		21.5										
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		100.0						12.0				
Intersection Capacity Utilization		118.8%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↔	↔	
Volume (veh/h)	1	80	234	899	206	3
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	84	246	946	217	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1657	218	220			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1657	218	220			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	90	82			
cM capacity (veh/h)	88	821	1349			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	85	246	946	220		
Volume Left	1	246	0	0		
Volume Right	84	0	0	3		
cSH	745	1349	1700	1700		
Volume to Capacity	0.11	0.18	0.56	0.13		
Queue Length 95th (ft)	10	17	0	0		
Control Delay (s)	10.5	8.3	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.5	1.7		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.0			
Intersection Capacity Utilization			59.0%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Volume (veh/h)	11	1	1129	91	1	288
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	12	1	1188	96	1	303
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLTL			None	
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.90	0.90		0.90		
vC, conflicting volume	1390	1236		1284		
vC1, stage 1 conf vol	1236					
vC2, stage 2 conf vol	154					
vCu, unblocked vol	1377	1206		1259		
IC, single (s)	6.8	6.9		4.1		
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3		2.2		
p0 queue free %	95	99		100		
cM capacity (veh/h)	214	158		491		
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	13	1284	1	152	152	
Volume Left	12	0	1	0	0	
Volume Right	1	96	0	0	0	
cSH	208	1700	491	1700	1700	
Volume to Capacity	0.06	0.76	0.00	0.09	0.09	
Queue Length 95th (ft)	5	0	0	0	0	
Control Delay (s)	23.5	0.0	12.3	0.0	0.0	
Lane LOS	C		B			
Approach Delay (s)	23.5	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	74.9%		ICU Level of Service			D
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	T	T		T	T			T		T	T	T
Volume (vph)	206	334	79	20	651	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96			0.96	1.00
Satd. Flow (prot)	1770	2051		1770	3508			1758			1781	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.74			0.83	1.00
Satd. Flow (perm)	1770	2051		1770	3508			1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	352	83	21	685	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	6	0	0	4	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	429	0	21	724	0	0	117	0	0	13	25
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	19.9	71.0		3.2	54.3			13.8			13.8	33.7
Effective Green, g (s)	19.9	71.0		3.2	54.3			13.8			13.8	33.7
Actuated g/C Ratio	0.20	0.71		0.03	0.54			0.14			0.14	0.34
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)	352	1456		56	1904			187			213	596
v/s Ratio Prot	c0.12	0.21		0.01	c0.21							0.01
v/s Ratio Perm								c0.09			0.01	0.01
v/c Ratio	0.62	0.29		0.38	0.38			0.62			0.06	0.04
Uniform Delay, d1	36.6	5.3		47.4	13.2			40.7			37.5	22.3
Progression Factor	0.71	0.33		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	3.0	0.5		4.2	0.6			6.3			0.1	0.0
Delay (s)	28.8	2.2		51.6	13.7			47.0			37.6	22.3
Level of Service	C	A		D	B			D			D	C
Approach Delay (s)		11.1			14.8			47.0				24.6
Approach LOS		B			B			D				C
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.2		HCM 2000 Level of Service			B						
HCM 2000 Volume to Capacity ratio	0.47											
Actuated Cycle Length (s)	100.0		Sum of lost time (s)			12.0						
Intersection Capacity Utilization	53.8%		ICU Level of Service			A						
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	3	670	2	3	1137	20	3	0	1	136	1	22
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.85		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1523		1336	1286	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	3	705	2	3	1197	21	3	0	1	143	1	23
RTOR Reduction (vph)	0	0	0	0	0	9	0	3	0	0	0	20
Lane Group Flow (vph)	3	707	0	3	1197	12	0	1	0	71	73	3
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8				4
Permitted Phases						6	8			4		4
Actuated Green, G (s)	5.9	29.4		5.2	28.7	28.7		7.8		7.8	7.8	7.8
Effective Green, g (s)	4.9	29.4		4.2	28.7	28.7		6.8		6.8	6.8	6.8
Actuated g/C Ratio	0.09	0.56		0.08	0.55	0.55		0.13		0.13	0.13	0.13
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	165	1985		141	1938	867		197		173	166	205
v/s Ratio Prot	0.00	c0.20		0.00	c0.34							
v/s Ratio Perm						0.01		0.00		0.05	c0.06	0.00
v/c Ratio	0.02	0.36		0.02	0.62	0.01		0.00		0.41	0.44	0.01
Uniform Delay, d1	21.6	6.3		22.2	8.1	5.4		19.8		21.0	21.0	19.9
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.0	0.2		0.1	0.7	0.0		0.0		0.6	0.7	0.0
Delay (s)	21.6	6.5		22.3	8.8	5.4		19.8		21.5	21.7	19.9
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.5			8.8			19.8			21.4	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.0						HCM 2000 Level of Service		A		
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		52.4						Sum of lost time (s)		12.0		
Intersection Capacity Utilization		48.1%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔	↕	↕	↕	↕	↕	
Volume (vph)	2	813	1142	45	388	31	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	0.96	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	3539	1528	3433	1549	
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	3539	1528	3433	1549	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	2	856	1202	47	408	33	
RTOR Reduction (vph)	0	0	0	11	0	28	
Lane Group Flow (vph)	2	856	1202	36	408	5	
Confl. Peds. (#/hr)				5		5	
Turn Type	Prot	NA	NA	Perm	Prot	Perm	
Protected Phases	5	2		6	4		
Permitted Phases				6		4	
Actuated Green, G (s)	1.3	116.8	111.5	111.5	22.9	22.9	
Effective Green, g (s)	0.3	117.1	111.8	111.8	21.9	21.9	
Actuated g/C Ratio	0.00	0.79	0.76	0.76	0.15	0.15	
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0	
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0	
Lane Grp Cap (vph)	3	2800	2673	1154	507	229	
v/s Ratio Prot	0.00	c0.24	c0.34		c0.12		
v/s Ratio Perm				0.02		0.00	
v/c Ratio	0.67	0.31	0.45	0.03	0.80	0.02	
Uniform Delay, d1	73.8	4.3	6.7	4.5	61.0	53.9	
Progression Factor	1.00	1.00	0.42	0.05	1.00	1.00	
Incremental Delay, d2	227.2	0.3	0.4	0.0	9.0	0.0	
Delay (s)	301.0	4.5	3.3	0.3	70.0	53.9	
Level of Service	F	A	A	A	E	D	
Approach Delay (s)		5.2	3.1		68.8		
Approach LOS		A	A		E		
<b>Intersection Summary</b>							
HCM 2000 Control Delay		15.2				HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.51					
Actuated Cycle Length (s)		148.0				Sum of lost time (s)	14.0
Intersection Capacity Utilization		50.1%				ICU Level of Service	A
Analysis Period (min)		15					
c Critical Lane Group							



HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↘	↗↘	↗↘	↗	↘	↗	↘	↗↘	↘	↗
Volume (vph)	43	942	216	530	854	211	224	104	734	741	225	115
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	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	1.00	1.00	1.00	1.00	
Fr1	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Fl1 Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1556	3433	3539	1583	1770	1863	2773	3433	1768	
Fl1 Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1556	3433	3539	1583	1770	1863	2773	3433	1768	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	45	992	227	558	899	222	236	109	773	780	237	121
RTOR Reduction (vph)	0	0	71	0	0	52	0	0	51	0	13	0
Lane Group Flow (vph)	45	992	156	558	899	170	236	109	722	780	345	0
Confl. Peds. (#/hr)	5						5					
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	7.4	44.6	44.6	33.3	70.5	113.6	24.0	14.0	47.3	43.1	33.1	
Effective Green, g (s)	6.4	43.6	43.6	32.3	70.5	113.6	23.0	13.0	45.3	42.1	32.1	
Actuated g/C Ratio	0.04	0.29	0.29	0.22	0.48	0.77	0.16	0.09	0.31	0.28	0.22	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	76	1498	458	749	1685	1215	275	163	923	976	383	
v/s Ratio Prot	0.03	c0.20		0.16	0.25	0.04	c0.13	0.06	c0.17	0.23	c0.19	
v/s Ratio Perm			0.10			0.07			0.09			
v/c Ratio	0.59	0.66	0.34	0.74	0.53	0.14	0.86	0.67	0.78	0.80	0.90	
Uniform Delay, d1	69.5	45.7	40.9	54.0	27.2	4.5	60.9	65.4	46.8	49.0	56.4	
Progression Factor	0.91	0.77	0.57	0.80	0.80	2.69	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	11.2	2.2	1.9	3.5	1.1	0.0	22.3	9.9	4.4	4.6	23.0	
Delay (s)	74.6	37.6	25.1	46.5	22.8	12.1	83.2	75.4	51.2	53.7	79.4	
Level of Service	E	D	C	D	C	B	F	E	D	D	E	
Approach Delay (s)	36.6			29.3			60.3			61.8		
Approach LOS	D			C			E			E		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	44.9			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.79											
Actuated Cycle Length (s)	148.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	78.7%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗↘	↘	↗↘	↗↘	↗					↘	↗
Volume (vph)	0	1378	1023	202	1185	0	0	0	0	95	2	415
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					95	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1546	1770	3539						1776	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1546	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1451	1077	213	1247	0	0	0	0	100	2	437
RTOR Reduction (vph)	0	0	169	0	0	0	0	0	0	0	0	246
Lane Group Flow (vph)	0	1451	908	213	1247	0	0	0	0	0	102	191
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		102.0	102.0	21.2	126.2						13.8	13.8
Effective Green, g (s)		102.0	102.0	20.2	126.2						13.8	13.8
Actuated g/C Ratio		0.69	0.69	0.14	0.85						0.09	0.09
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		2439	1065	241	3017						165	259
v/s Ratio Prot		0.41		c0.12	0.35						0.06	
v/s Ratio Perm			c0.59									c0.07
v/c Ratio		0.59	0.85	0.88	0.41						0.62	0.74
Uniform Delay, d1		12.1	17.3	62.7	2.5						64.6	65.3
Progression Factor		0.58	1.09	0.78	1.68						1.00	1.00
Incremental Delay, d2		0.7	5.8	26.9	0.3						6.7	10.5
Delay (s)		7.7	24.8	76.1	4.5						71.3	75.8
Level of Service		A	C	E	A						E	E
Approach Delay (s)		15.0			14.9			0.0			75.0	
Approach LOS		B			B			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	22.1			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.84											
Actuated Cycle Length (s)	148.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	119.6%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↕	↕	↔	↔				
Volume (vph)	815	642	0	0	593	139	796	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1557				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1557				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	858	676	0	0	624	146	838	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	50	0	182	0	0	0	0
Lane Group Flow (vph)	858	676	0	0	624	96	838	87	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	41.8	98.2			52.9	52.9	42.3	42.3				
Effective Green, g (s)	41.3	98.2			52.9	52.9	41.8	41.8				
Actuated g/C Ratio	0.28	0.66			0.36	0.36	0.28	0.28				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	957	1236			1264	558	969	439				
v/s Ratio Prot	c0.25	c0.36			0.18		c0.24	0.06				
v/s Ratio Perm						0.06						
v/c Ratio	0.90	0.55			0.49	0.17	0.86	0.20				
Uniform Delay, d1	51.3	13.2			37.1	32.6	50.4	40.4				
Progression Factor	1.07	0.75			0.96	0.97	1.00	1.00				
Incremental Delay, d2	8.9	1.4			1.4	0.7	8.1	0.2				
Delay (s)	63.9	11.3			37.1	32.1	58.5	40.5				
Level of Service	E	B			D	C	E	D				
Approach Delay (s)		40.7				36.2		54.1			0.0	
Approach LOS		D				D		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		44.0										D
HCM 2000 Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		148.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		119.6%										H
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	↔
Volume (veh/h)	4	219	99	257	760	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	4	231	104	271	800	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1280	801	802			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1280	801	802			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	97	40	87			
cM capacity (veh/h)	160	384	821			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	235	104	271	802		
Volume Left	4	104	0	0		
Volume Right	231	0	0	2		
cSH	375	821	1700	1700		
Volume to Capacity	0.63	0.13	0.16	0.47		
Queue Length 95th (ft)	102	11	0	0		
Control Delay (s)	29.4	10.0	0.0	0.0		
Lane LOS	D	B				
Approach Delay (s)	29.4	2.8		0.0		
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			5.6			
Intersection Capacity Utilization			69.4%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		T	T
Volume (veh/h)	57	1	355	17	1	977
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	60	1	374	18	1	1028
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TW/TL			None
Median storage (veh)			2			
Upstream signal (ft)			1165			
pX, platoon unblocked	0.96	0.96			0.96	
vC, conflicting volume	899	383			392	
vC1, stage 1 conf vol	383					
vC2, stage 2 conf vol	516					
vCu, unblocked vol	872	333			342	
IC, single (s)	6.8	6.9			4.1	
IC, 2 stage (s)	5.8					
IF (s)	3.5	3.3			2.2	
p0 queue free %	88	100			100	
cM capacity (veh/h)	484	635			1162	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>	
Volume Total	61	392	1	514	514	
Volume Left	60	0	1	0	0	
Volume Right	1	18	0	0	0	
cSH	486	1700	1162	1700	1700	
Volume to Capacity	0.13	0.23	0.00	0.30	0.30	
Queue Length 95th (ft)	11	0	0	0	0	
Control Delay (s)	13.5	0.0	8.1	0.0	0.0	
Lane LOS	B		A			
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.6					
Intersection Capacity Utilization	37.0%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	T	T		T	T		T	T		T	T	T
Volume (vph)	81	709	90	7	489	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2075		1770	3527			1736			1776	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2075		1770	3527			1369			1329	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	746	95	7	515	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	2	0	0	1	0	0	9	0	0	0	149
Lane Group Flow (vph)	85	839	0	7	526	0	0	81	0	0	39	42
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	18.5	120.6		1.5	103.6			13.9			13.9	32.4
Effective Green, g (s)	18.5	120.6		1.5	103.6			13.9			13.9	32.4
Actuated g/C Ratio	0.12	0.81		0.01	0.70			0.09			0.09	0.22
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)	221	1690		17	2468			128			124	389
v/s Ratio Prot	c0.05	c0.40		0.00	0.15							0.01
v/s Ratio Perm								c0.06			0.03	0.01
v/c Ratio	0.38	0.50		0.41	0.21			0.63			0.31	0.11
Uniform Delay, d1	59.5	4.3		72.8	7.8			64.6			62.6	46.2
Progression Factor	0.94	0.22		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.0	0.9		15.4	0.2			9.8			1.5	0.1
Delay (s)	56.9	1.9		88.2	8.0			74.4			64.1	46.4
Level of Service	E	A		F	A			E			E	D
Approach Delay (s)		6.9			9.1			74.4			49.4	
Approach LOS		A			A			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	16.5		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.52											
Actuated Cycle Length (s)	148.0		Sum of lost time (s)		12.0							
Intersection Capacity Utilization	67.7%		ICU Level of Service		C							
Analysis Period (min)	15											
c Critical Lane Group												

Alternative 5A

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	33	1020	1	1	674	187	1	0	3	67	0	12
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94		0.78	0.78	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1568		1388	1388	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1074	1	1	709	197	1	0	3	71	0	13
RTOR Reduction (vph)	0	0	0	0	113	0	4	0	0	0	0	12
Lane Group Flow (vph)	35	1075	0	1	709	84	0	0	0	35	36	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	9.4	23.2		5.1	18.9	18.9		6.1		6.1	6.1	6.1
Effective Green, g (s)	8.4	23.2		4.1	18.9	18.9		5.1		5.1	5.1	5.1
Actuated g/C Ratio	0.19	0.52		0.09	0.43	0.43		0.11		0.11	0.11	0.11
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	334	1849		163	1506	673		180		159	159	181
v/s Ratio Prot	0.02	c0.30		0.00	c0.20							
v/s Ratio Perm						0.05		0.00		0.03	c0.03	0.00
v/c Ratio	0.10	0.58		0.01	0.47	0.12		0.00		0.22	0.23	0.01
Uniform Delay, d1	14.9	7.3		18.3	9.2	7.7		17.4		17.8	17.9	17.4
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.6		0.0	0.3	0.1		0.0		0.3	0.3	0.0
Delay (s)	15.0	7.8		18.3	9.5	7.8		17.4		18.1	18.1	17.4
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		8.1			9.1			17.4			18.0	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.9										
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		44.4						12.0				
Intersection Capacity Utilization		40.8%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	137	979	830	790	442	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.94	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1554	4824	1548
Flt Permitted	0.27	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	494	3539	3539	1554	4824	1548
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	1031	874	832	465	41
RTOR Reduction (vph)	0	0	0	285	0	35
Lane Group Flow (vph)	144	1031	874	547	465	6
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	78.5	78.5	66.8	66.8	15.2	15.2
Effective Green, g (s)	77.5	78.8	67.1	67.1	14.2	14.2
Actuated g/C Ratio	0.76	0.77	0.66	0.66	0.14	0.14
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	459	2734	2328	1022	671	215
v/s Ratio Prot	0.02	c0.29	0.25		c0.10	
v/s Ratio Perm	0.22			c0.35		0.00
v/c Ratio	0.31	0.38	0.38	0.54	0.69	0.03
Uniform Delay, d1	4.3	3.7	7.9	9.2	41.8	37.9
Progression Factor	1.00	1.00	0.94	2.02	0.65	0.13
Incremental Delay, d2	0.4	0.4	0.1	0.4	3.0	0.0
Delay (s)	4.7	4.1	7.6	19.0	30.0	4.9
Level of Service	A	A	A	B	C	A
Approach Delay (s)		4.2	13.1		27.9	
Approach LOS		A	B		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		12.2				
HCM 2000 Volume to Capacity ratio		0.56				
Actuated Cycle Length (s)		102.0				14.0
Intersection Capacity Utilization		64.5%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑		↑↑		↑↑			
Volume (vph)	0	1146	274	417	1238	750	376	0	361	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		4.0	4.0		4.0		4.0			
Lane Util. Factor		0.86		0.97	0.95		0.97		0.88			
Flpb. ped/bikes		1.00		1.00	1.00		1.00		0.99			
Flpb. ped/bikes		1.00		1.00	1.00		1.00		1.00			
Frt		0.97		1.00	0.94		1.00		0.85			
Flt Protected		1.00		0.95	1.00		0.95		1.00			
Satd. Flow (prot)		6205		3433	3339		3433		2765			
Flt Permitted		1.00		0.95	1.00		0.95		1.00			
Satd. Flow (perm)		6205		3433	3339		3433		2765			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1206	288	439	1303	789	396	0	380	0	0	0
RTOR Reduction (vph)	0	38	0	0	80	0	0	0	50	0	0	0
Lane Group Flow (vph)	0	1456	0	439	2012	0	396	0	330	0	0	0
Confl. Peds. (#/hr)			5					5				
Turn Type		NA		Prot	NA		Prot		pm+ov			
Protected Phases		2		1	6		3		1			
Permitted Phases									3			
Actuated Green, G (s)		57.4		18.2	78.6		16.4		34.6			
Effective Green, g (s)		56.4		17.2	78.6		15.4		32.6			
Actuated g/C Ratio		0.55		0.17	0.77		0.15		0.32			
Clearance Time (s)		4.0		3.0	4.0		3.0		3.0			
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		3431		578	2572		518		992			
v/s Ratio Prot		0.23		0.13	c0.60		c0.12		0.06			
v/s Ratio Perm									0.06			
v/c Ratio		0.42		0.76	0.78		0.76		0.33			
Uniform Delay, d1		13.3		40.4	6.8		41.6		26.4			
Progression Factor		0.71		1.07	0.76		1.00		1.00			
Incremental Delay, d2		0.4		2.9	1.2		6.6		0.2			
Delay (s)		9.8		46.2	6.4		48.2		26.6			
Level of Service		A		D	A		D		C			
Approach Delay (s)		9.8			13.3			37.6		0.0		
Approach LOS		A			B			D		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		16.1										
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		102.0			Sum of lost time (s)				13.0			
Intersection Capacity Utilization		75.6%			ICU Level of Service				D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↑	↑↑						↑	↑↑
Volume (vph)	0	836	664	191	1342	0	0	0	0	147	0	1061
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
Lane Util. Factor		0.95	0.88	1.00	0.95						1.00	0.88
Flpb. ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb. ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2693	1770	3539						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2693	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	880	699	201	1413	0	0	0	0	155	0	1117
RTOR Reduction (vph)	0	0	469	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	880	230	201	1413	0	0	0	0	0	155	1092
Confl. Peds. (#/hr)			6									
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		33.6	33.6	14.9	51.5						42.5	42.5
Effective Green, g (s)		33.6	33.6	13.9	51.5						42.5	42.5
Actuated g/C Ratio		0.33	0.33	0.14	0.50						0.42	0.42
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1165	887	241	1786						737	1161
v/s Ratio Prot		0.25		0.11	c0.40						0.09	
v/s Ratio Perm			0.09									c0.39
v/c Ratio		0.76	0.26	0.83	0.79						0.21	0.94
Uniform Delay, d1		30.5	25.1	42.9	20.8						19.0	28.5
Progression Factor		0.78	1.24	0.43	0.45						1.00	1.00
Incremental Delay, d2		4.2	0.7	18.7	2.8						0.1	14.4
Delay (s)		28.1	31.8	37.0	12.2						19.2	42.9
Level of Service		C	C	D	B						B	D
Approach Delay (s)		29.7			15.3			0.0			40.0	
Approach LOS		C			B			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		27.5									C	
HCM 2000 Volume to Capacity ratio		0.90										
Actuated Cycle Length (s)		102.0			Sum of lost time (s)						12.0	
Intersection Capacity Utilization		106.1%			ICU Level of Service						G	
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	501	476	0	0	702	121	830	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	527	501	0	0	739	127	874	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	117	0	0	0	0
Lane Group Flow (vph)	527	501	0	0	739	73	874	54	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	19.6	63.2			40.1	40.1	31.3	31.3				
Effective Green, g (s)	19.1	63.2			40.1	40.1	30.8	30.8				
Actuated g/C Ratio	0.19	0.62			0.39	0.39	0.30	0.30				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	642	1154			1391	614	1036	466				
v/s Ratio Prot	c0.15	0.27			c0.21		c0.25	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.82	0.43			0.53	0.12	0.84	0.12				
Uniform Delay, d1	39.8	10.1			23.7	19.7	33.3	25.7				
Progression Factor	0.46	1.23			0.69	0.59	1.00	1.00				
Incremental Delay, d2	5.2	1.0			1.4	0.4	6.3	0.1				
Delay (s)	23.6	13.4			17.7	12.0	39.6	25.8				
Level of Service	C	B			B	B	D	C				
Approach Delay (s)		18.6				16.9		37.4			0.0	
Approach LOS		B				B		D			A	

Intersection Summary			
HCM 2000 Control Delay	24.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	106.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (veh/h)	1	77	220	771	178	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	81	232	812	187	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				421		
pX, platoon unblocked	0.64					
vC, conflicting volume	1463	188	189			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1442	188	189			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	91	83			
cM capacity (veh/h)	77	854	1384			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	82	232	812	189
Volume Left	1	232	0	0
Volume Right	81	0	0	2
cSH	756	1384	1700	1700
Volume to Capacity	0.11	0.17	0.48	0.11
Queue Length 95th (ft)	9	15	0	0
Control Delay (s)	10.3	8.1	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	10.3	1.8		0.0
Approach LOS	B			

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Volume (vph)	260	0	29	0	26	1	11	699	91	1	8	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	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	0.88
Frt	1.00	0.85			1.00			0.98			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)	1711	1531			1854			1833			1852	2787
Flt Permitted	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (perm)	1711	1531			1854			1833			1852	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	274	0	31	0	27	1	12	736	96	1	8	263
RTOR Reduction (vph)	0	25	0	0	1	0	0	3	0	0	0	196
Lane Group Flow (vph)	274	6	0	0	27	0	0	841	0	0	9	67
Turn Type	Split	NA			NA		Split	NA		Split	NA	pm+ov
Protected Phases	4	4			8		2	2		6	6	4
Permitted Phases				8								6
Actuated Green, G (s)	19.1	19.1			4.5			53.2			6.1	25.2
Effective Green, g (s)	19.1	19.1			4.5			53.2			6.1	25.2
Actuated g/C Ratio	0.19	0.19			0.05			0.54			0.06	0.25
Clearance Time (s)	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
Lane Grp Cap (vph)	330	295			84			986			114	822
v/s Ratio Prot	c0.16	0.00			c0.01			c0.46			0.00	c0.02
v/s Ratio Perm												0.01
v/c Ratio	0.83	0.02			0.32			0.85			0.08	0.08
Uniform Delay, d1	38.3	32.3			45.7			19.5			43.8	28.0
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	16.1	0.0			2.2			7.2			0.3	0.0
Delay (s)	54.4	32.3			47.9			26.7			44.0	28.1
Level of Service	D	C			D			C			D	C
Approach Delay (s)		52.2			47.9			26.7			28.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Volume (vph)	206	346	79	20	651	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00			1.00			0.95			1.00	1.00
Frt	1.00	0.97			1.00			0.99			1.00	0.85
Flt Protected	0.95	1.00			0.95			1.00			0.96	1.00
Satd. Flow (prot)	1770	2052			1770			3508			1758	1781
Flt Permitted	0.95	1.00			0.95			1.00			0.74	0.83
Satd. Flow (perm)	1770	2052			1770			3508			1361	1544
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	364	83	21	685	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	7	0	0	3	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	440	0	21	725	0	0	117	0	0	13	25
Turn Type	Prot	NA			Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2			1	6		8			4	5
Permitted Phases				8								4
Actuated Green, G (s)	20.3	68.1			7.9	55.7		14.0			14.0	34.3
Effective Green, g (s)	20.3	68.1			7.9	55.7		14.0			14.0	34.3
Actuated g/C Ratio	0.20	0.67			0.08	0.55		0.14			0.14	0.34
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)	352	1370			137	1915		186			211	594
v/s Ratio Prot	c0.12	0.21			0.01	c0.21		c0.09			0.01	0.01
v/s Ratio Perm												0.01
v/c Ratio	0.62	0.32			0.15	0.38		0.63			0.06	0.04
Uniform Delay, d1	37.3	7.2			43.9	13.2		41.5			38.3	22.8
Progression Factor	1.07	0.34			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.0	0.6			0.5	0.6		6.5			0.1	0.0
Delay (s)	42.9	3.0			44.5	13.8		48.0			38.4	22.8
Level of Service	D	A			D	B		D			D	C
Approach Delay (s)		16.0			14.7			48.0			25.1	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	13	668	2	3	1133	102	3	0	1	204	1	31
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1548		1336	1285	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	703	2	3	1193	107	3	0	1	215	1	33
RTOR Reduction (vph)	0	0	0	0	0	47	0	3	0	0	0	28
Lane Group Flow (vph)	14	705	0	3	1193	60	0	1	0	107	109	5
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.3	31.5		3.2	30.4	30.4		9.6		9.6	9.6	9.6
Effective Green, g (s)	3.3	31.5		2.2	30.4	30.4		8.6		8.6	8.6	8.6
Actuated g/C Ratio	0.06	0.58		0.04	0.56	0.56		0.16		0.16	0.16	0.16
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	107	2052		71	1981	886		245		211	203	250
v/s Ratio Prot	0.01	c0.20		0.00	c0.34							
v/s Ratio Perm						0.04		0.00		0.08	c0.08	0.00
v/c Ratio	0.13	0.34		0.04	0.60	0.07		0.00		0.51	0.54	0.02
Uniform Delay, d1	24.1	6.0		25.0	7.9	5.5		19.2		20.9	21.0	19.3
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1		0.2	0.6	0.0		0.0		0.7	1.4	0.0
Delay (s)	24.7	6.1		25.3	8.5	5.5		19.2		21.6	22.4	19.3
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.5			8.3			19.2			21.6	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.2										
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		54.3						12.0				
Intersection Capacity Utilization		48.0%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	47	835	1106	366	1466	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.94	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1553	4824	1559
Flt Permitted	0.09	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	167	3539	3539	1553	4824	1559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	879	1164	385	1543	151
RTOR Reduction (vph)	0	0	0	231	0	57
Lane Group Flow (vph)	49	879	1164	154	1543	94
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	54.4	54.1	45.3	45.3	51.6	51.6
Effective Green, g (s)	53.4	54.4	45.6	45.6	50.6	50.6
Actuated g/C Ratio	0.47	0.48	0.40	0.40	0.44	0.44
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	131	1688	1415	621	2141	691
v/s Ratio Prot	0.01	c0.25	c0.33		c0.32	
v/s Ratio Perm	0.16			0.10		0.06
v/c Ratio	0.37	0.52	0.82	0.25	0.72	0.14
Uniform Delay, d1	41.5	20.7	30.6	22.8	25.9	18.8
Progression Factor	1.00	1.00	0.75	1.17	0.76	0.50
Incremental Delay, d2	1.8	0.4	3.7	0.2	1.9	0.4
Delay (s)	43.3	21.1	26.7	26.8	21.7	9.8
Level of Service	D	C	C	C	C	A
Approach Delay (s)		22.3	26.7		20.6	
Approach LOS		C	C		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		23.2				
HCM 2000 Volume to Capacity ratio		0.78				
Actuated Cycle Length (s)		114.0				14.0
Intersection Capacity Utilization		73.5%				D
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑	↑	↑↑	↑	↑↑			
Volume (vph)	0	1836	466	483	1109	168	369	0	692	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	4.0	4.0	4.0	4.0		4.0			
Lane Util. Factor		0.91	1.00	0.97	0.95	1.00	0.97		0.88			
Flpb. ped/bikes		1.00	0.99	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	0.85	1.00	1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	1561	3433	3539	1583	3433		2764			
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	1561	3433	3539	1583	3433		2764			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1933	491	508	1167	177	388	0	728	0	0	0
RTOR Reduction (vph)	0	0	11	0	0	42	0	0	6	0	0	0
Lane Group Flow (vph)	0	1933	480	508	1167	135	388	0	722	0	0	0
Confl. Peds. (#/hr)			5					5				
Turn Type		NA	pm+ov	Prot	NA	Perm	Prot		pm+ov			
Protected Phases		2	3	1	6		3		1			
Permitted Phases			2			6			3			
Actuated Green, G (s)		59.8	79.6	24.4	87.2	87.2	19.8		44.2			
Effective Green, g (s)		58.8	77.6	23.4	87.2	87.2	18.8		42.2			
Actuated g/C Ratio		0.52	0.68	0.21	0.76	0.76	0.16		0.37			
Clearance Time (s)		4.0	3.0	3.0	4.0	4.0	3.0		3.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)		2622	1117	704	2707	1210	566		1120			
v/s Ratio Prot		c0.38	0.07	c0.15	0.33		0.11		c0.13			
v/s Ratio Perm			0.24			0.09			0.13			
v/c Ratio		0.74	0.43	0.72	0.43	0.11	0.69		0.64			
Uniform Delay, d1		21.6	8.2	42.3	4.7	3.4	44.8		29.7			
Progression Factor		0.83	0.35	1.21	1.49	2.58	1.00		1.00			
Incremental Delay, d2		1.5	0.2	2.9	0.4	0.1	3.4		1.3			
Delay (s)		19.3	3.1	54.3	7.4	9.0	48.3		31.0			
Level of Service		B	A	D	A	A	D		C			
Approach Delay (s)		16.0			20.4			37.0		0.0		
Approach LOS		B			C			D		A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		21.9			HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio		0.73										
Actuated Cycle Length (s)		114.0			Sum of lost time (s)				13.0			
Intersection Capacity Utilization		70.6%			ICU Level of Service				C			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑	↑					↑	↑↑
Volume (vph)	0	1425	1087	202	1291	0	0	0	0	95	2	474
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Flpb. ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb. ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1550	1770	3539						1776	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1550	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1500	1144	213	1359	0	0	0	0	100	2	499
RTOR Reduction (vph)	0	0	203	0	0	0	0	0	0	0	0	181
Lane Group Flow (vph)	0	1500	941	213	1359	0	0	0	0	0	102	318
Confl. Peds. (#/hr)			6									
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		73.1	73.1	15.8	91.9					14.1	14.1	
Effective Green, g (s)		73.1	73.1	14.8	91.9					14.1	14.1	
Actuated g/C Ratio		0.64	0.64	0.13	0.81					0.12	0.12	
Clearance Time (s)		4.0	4.0	3.0	4.0					4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Lane Grp Cap (vph)		2269	993	229	2852					219	344	
v/s Ratio Prot		0.42		c0.12	0.38					0.06		
v/s Ratio Perm			c0.61								c0.11	
v/c Ratio		0.66	0.95	0.93	0.48					0.47	0.92	
Uniform Delay, d1		12.7	18.7	49.1	3.5					46.4	49.4	
Progression Factor		0.60	1.08	0.30	0.72					1.00	1.00	
Incremental Delay, d2		1.0	13.8	35.1	0.4					1.6	29.6	
Delay (s)		8.7	33.9	49.8	2.9					48.0	79.0	
Level of Service		A	C	D	A					D	E	
Approach Delay (s)		19.6			9.2			0.0			73.7	
Approach LOS		B			A			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		23.0			HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		114.0			Sum of lost time (s)				12.0			
Intersection Capacity Utilization		128.6%			ICU Level of Service				H			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	856	648	0	0	607	139	888	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Flpb, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1558				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1558				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	901	682	0	0	639	146	935	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	68	0	170	0	0	0	0
Lane Group Flow (vph)	901	682	0	0	639	78	935	99	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	33.6	70.8			33.7	33.7	35.7	35.7				
Effective Green, g (s)	33.1	70.8			33.7	33.7	35.2	35.2				
Actuated g/C Ratio	0.29	0.62			0.30	0.30	0.31	0.31				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	996	1157			1046	462	1060	481				
v/s Ratio Prot	c0.26	c0.37			0.18		c0.27	0.06				
v/s Ratio Perm						0.05						
v/c Ratio	0.90	0.59			0.61	0.17	0.88	0.21				
Uniform Delay, d1	38.9	12.9			34.5	29.8	37.4	29.1				
Progression Factor	0.54	1.14			0.94	0.87	1.00	1.00				
Incremental Delay, d2	8.7	1.7			2.6	0.8	8.8	0.2				
Delay (s)	29.8	16.4			35.1	26.6	46.2	29.2				
Level of Service	C	B			D	C	D	C				
Approach Delay (s)		24.0				33.5		42.4			0.0	
Approach LOS		C				C		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		32.3										C
HCM 2000 Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		114.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		128.6%										H
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	3	211	93	199	680	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	222	98	209	716	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				421		
pX, platoon unblocked						
vC, conflicting volume	1122	717	718			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1122	717	718			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	48	89			
cM capacity (veh/h)	203	430	883			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	225	98	209	718		
Volume Left	3	98	0	0		
Volume Right	222	0	0	2		
cSH	423	883	1700	1700		
Volume to Capacity	0.53	0.11	0.12	0.42		
Queue Length 95th (ft)	76	9	0	0		
Control Delay (s)	22.8	9.6	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	22.8	3.1		0.0		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay				4.9		
Intersection Capacity Utilization			64.3%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	↔
Volume (vph)	114	0	13	0	89	1	40	165	17	1	26	862
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	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	0.88
Frt	1.00	0.85			1.00			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			1.00	1.00
Satd. Flow (prot)	1711	1531			1860			1827			1859	2787
Flt Permitted	0.95	1.00			1.00			0.99			1.00	1.00
Satd. Flow (perm)	1711	1531			1860			1827			1859	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	120	0	14	0	94	1	42	174	18	1	27	907
RTOR Reduction (vph)	0	11	0	0	1	0	0	4	0	0	0	579
Lane Group Flow (vph)	120	3	0	0	94	0	0	230	0	0	28	328
Turn Type	Split	NA			NA		Split	NA		Split	NA	pm+ov
Protected Phases	4	4			8		2	2		6	6	4
Permitted Phases				8								6
Actuated Green, G (s)	12.9	12.9			6.7			12.1			6.8	19.7
Effective Green, g (s)	12.9	12.9			6.7			12.1			6.8	19.7
Actuated g/C Ratio	0.24	0.24			0.12			0.22			0.12	0.36
Clearance Time (s)	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
Lane Grp Cap (vph)	404	362			228			405			231	1211
v/s Ratio Prot	0.07	0.00			c0.05			c0.13			0.02	c0.06
v/s Ratio Perm												0.05
v/c Ratio	0.30	0.01			0.41			0.57			0.12	0.27
Uniform Delay, d1	17.1	15.9			22.1			18.9			21.2	12.3
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.0			1.2			1.8			0.2	0.1
Delay (s)	17.5	15.9			23.3			20.7			21.4	12.4
Level of Service	B	B			C			C			C	B
Approach Delay (s)		17.3			23.3			20.7			12.7	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	↔
Volume (vph)	81	716	90	7	503	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	1.00			1.00	0.95		1.00			1.00	1.00
Frt	1.00	0.98			1.00	1.00		0.97			1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00		0.97			0.95	1.00
Satd. Flow (prot)	1770	2076			1770	3527		1736			1776	1583
Flt Permitted	0.95	1.00			0.95	1.00		0.76			0.71	1.00
Satd. Flow (perm)	1770	2076			1770	3527		1369			1323	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	754	95	7	529	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	3	0	0	1	0	0	12	0	0	0	155
Lane Group Flow (vph)	85	846	0	7	540	0	0	78	0	0	39	36
Turn Type	Prot	NA			Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2			1	6		8			4	5
Permitted Phases				8								4
Actuated Green, G (s)	10.8	90.2			1.4	80.8		10.4			10.4	21.2
Effective Green, g (s)	10.8	90.2			1.4	80.8		10.4			10.4	21.2
Actuated g/C Ratio	0.09	0.79			0.01	0.71		0.09			0.09	0.19
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)	167	1642			21	2499		124			120	349
v/s Ratio Prot	0.05	c0.41			0.00	c0.15						0.01
v/s Ratio Perm								c0.06			0.03	0.01
v/c Ratio	0.51	0.52			0.33	0.22		0.63			0.33	0.10
Uniform Delay, d1	49.1	4.2			55.8	5.7		49.9			48.5	38.5
Progression Factor	1.22	0.38			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	1.0			9.1	0.2		10.0			1.6	0.1
Delay (s)	61.9	2.6			65.0	5.9		59.9			50.1	38.6
Level of Service	E	A			E	A		E			D	D
Approach Delay (s)		8.0			6.7			59.9			40.6	
Approach LOS		A			A			E			D	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Alternative 5B

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↕	↕	↕	
Volume (vph)	33	1022	1	1	676	187	1	0	3	67	0	12	
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	0.95	1.00	
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00	
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583	
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94		0.80	0.80	1.00	
Satd. Flow (perm)	1770	3539		1770	3539	1583		1566		1416	1416	1583	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	35	1076	1	1	712	197	1	0	3	71	0	13	
RTOR Reduction (vph)	0	0	0	0	0	113	0	4	0	0	0	12	
Lane Group Flow (vph)	35	1077	0	1	712	84	0	0	0	35	36	1	
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm	
Protected Phases	5	2		1	6			8				4	
Permitted Phases						6	8			4		4	
Actuated Green, G (s)	9.4	23.2		5.1	18.9	18.9		6.0		6.0	6.0	6.0	
Effective Green, g (s)	8.4	23.2		4.1	18.9	18.9		5.0		5.0	5.0	5.0	
Actuated g/C Ratio	0.19	0.52		0.09	0.43	0.43		0.11		0.11	0.11	0.11	
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0	
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0	
Lane Grp Cap (vph)	335	1853		163	1509	675		176		159	159	178	
v/s Ratio Prot	0.02	c0.30		0.00	c0.20								
v/s Ratio Perm						0.05		0.00		0.02	c0.03	0.00	
v/c Ratio	0.10	0.58		0.01	0.47	0.12		0.00		0.22	0.23	0.01	
Uniform Delay, d1	14.8	7.2		18.3	9.1	7.7		17.4		17.9	17.9	17.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.6		0.0	0.3	0.1		0.0		0.3	0.3	0.0	
Delay (s)	15.0	7.8		18.3	9.4	7.8		17.4		18.1	18.2	17.5	
Level of Service	B	A		B	A	A		B		B	B	B	
Approach Delay (s)		8.0			9.1			17.4			18.0		
Approach LOS		A			A			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay		8.9			HCM 2000 Level of Service					A			
HCM 2000 Volume to Capacity ratio		0.53											
Actuated Cycle Length (s)		44.3			Sum of lost time (s)					12.0			
Intersection Capacity Utilization		40.8%			ICU Level of Service					A			
Analysis Period (min)		15											
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	137	980	832	791	444	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.94	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1554	4824	1548
Flt Permitted	0.29	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	533	3539	3539	1554	4824	1548
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	144	1032	876	833	467	41
RTOR Reduction (vph)	0	0	0	290	0	35
Lane Group Flow (vph)	144	1032	876	543	467	6
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6		4
Permitted Phases				6		4
Actuated Green, G (s)	78.8	78.5	66.2	66.2	15.2	15.2
Effective Green, g (s)	77.8	78.8	66.5	66.5	14.2	14.2
Actuated g/C Ratio	0.76	0.77	0.65	0.65	0.14	0.14
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	495	2734	2307	1013	671	215
v/s Ratio Prot	0.02	c0.29	0.25		c0.10	
v/s Ratio Perm	0.20			c0.35		0.00
v/c Ratio	0.29	0.38	0.38	0.54	0.70	0.03
Uniform Delay, d1	6.8	3.7	8.2	9.5	41.8	37.9
Progression Factor	1.00	1.00	1.02	2.16	0.75	0.20
Incremental Delay, d2	0.3	0.4	0.1	0.4	3.0	0.0
Delay (s)	7.1	4.1	8.5	20.9	34.5	7.5
Level of Service	A	A	A	C	C	A
Approach Delay (s)		4.5	14.6		32.3	
Approach LOS		A	B		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		13.7			HCM 2000 Level of Service	
HCM 2000 Volume to Capacity ratio		0.56				B
Actuated Cycle Length (s)		102.0			Sum of lost time (s)	
Intersection Capacity Utilization		64.6%			ICU Level of Service	
Analysis Period (min)		15				C
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑↑	↑↑		↑↑		↑↑			
Volume (vph)	0	1146	278	447	1238	750	379	0	391	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0		4.0	4.0		4.0		4.0			
Lane Util. Factor		0.86		0.97	0.95		0.97		0.88			
Frbp, ped/bikes		1.00		1.00	1.00		1.00		0.99			
Flpb, ped/bikes		1.00		1.00	1.00		1.00		1.00			
Frt		0.97		1.00	0.94		1.00		0.85			
Flt Protected		1.00		0.95	1.00		0.95		1.00			
Satd. Flow (prot)		6202		3433	3339		3433		2769			
Flt Permitted		1.00		0.95	1.00		0.95		1.00			
Satd. Flow (perm)		6202		3433	3339		3433		2769			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1206	293	471	1303	789	399	0	412	0	0	0
RTOR Reduction (vph)	0	43	0	0	81	0	0	0	42	0	0	0
Lane Group Flow (vph)	0	1456	0	471	2011	0	399	0	370	0	0	0
Confl. Peds. (#/hr)			5					5				
Turn Type		NA		Prot	NA		Prot		pm+ov			
Protected Phases		2		1	6		3		1			
Permitted Phases									3			
Actuated Green, G (s)		50.5		25.0	78.5		16.5		41.5			
Effective Green, g (s)		49.5		24.0	78.5		15.5		39.5			
Actuated g/C Ratio		0.49		0.24	0.77		0.15		0.39			
Clearance Time (s)		4.0		3.0	4.0		3.0		3.0			
Vehicle Extension (s)		3.0		3.0	3.0		3.0		3.0			
Lane Grp Cap (vph)		3009		807	2569		521		1180			
v/s Ratio Prot		0.23		0.14	c0.60		c0.12		0.07			
v/s Ratio Perm									0.06			
v/c Ratio		0.48		0.58	0.78		0.77		0.31			
Uniform Delay, d1		17.7		34.6	6.8		41.5		21.8			
Progression Factor		0.66		0.89	0.79		1.00		1.00			
Incremental Delay, d2		0.5		0.5	1.2		6.6		0.2			
Delay (s)		12.1		31.3	6.6		48.1		22.0			
Level of Service		B		C	A		D		C			
Approach Delay (s)		12.1			11.1			34.8			0.0	
Approach LOS		B			B			C			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		15.4										
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		102.0							13.0			
Intersection Capacity Utilization		75.7%							D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑↑	↑	↑↑						↑	↑↑
Volume (vph)	0	856	673	191	1356	0	0	0	0	147	0	1077
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
Lane Util. Factor		0.95	0.88	1.00	0.95						1.00	0.88
Frbp, ped/bikes		1.00	0.97	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	2693	1770	3539						1770	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	2693	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	901	708	201	1427	0	0	0	0	155	0	1134
RTOR Reduction (vph)	0	0	481	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	901	227	201	1427	0	0	0	0	0	155	1109
Confl. Peds. (#/hr)			6									
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		32.7	32.7	14.9	50.6						43.4	43.4
Effective Green, g (s)		32.7	32.7	13.9	50.6						43.4	43.4
Actuated g/C Ratio		0.32	0.32	0.14	0.50						0.43	0.43
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1134	863	241	1755						753	1185
v/s Ratio Prot		0.25		0.11	c0.40						0.09	
v/s Ratio Perm			0.08									c0.40
v/c Ratio		0.79	0.26	0.83	0.81						0.21	0.94
Uniform Delay, d1		31.6	25.7	42.9	21.7						18.4	28.0
Progression Factor		0.96	4.20	0.44	0.46						1.00	1.00
Incremental Delay, d2		5.3	0.7	18.6	3.2						0.1	13.5
Delay (s)		35.6	108.7	37.4	13.2						18.6	41.4
Level of Service		D	F	D	B						B	D
Approach Delay (s)		67.8			16.2			0.0			38.7	
Approach LOS		E			B			A			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		40.9									D	
HCM 2000 Volume to Capacity ratio		0.91										
Actuated Cycle Length (s)		102.0									12.0	
Intersection Capacity Utilization		107.3%									G	
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	516	480	0	0	706	121	839	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	543	505	0	0	743	127	883	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	54	0	117	0	0	0	0
Lane Group Flow (vph)	543	505	0	0	743	73	883	54	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	20.1	63.0			39.4	39.4	31.5	31.5				
Effective Green, g (s)	19.6	63.0			39.4	39.4	31.0	31.0				
Actuated g/C Ratio	0.19	0.62			0.39	0.39	0.30	0.30				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	659	1150			1367	603	1043	469				
v/s Ratio Prot	c0.16	0.27			c0.21		c0.26	0.04				
v/s Ratio Perm						0.05						
v/c Ratio	0.82	0.44			0.54	0.12	0.85	0.12				
Uniform Delay, d1	39.5	10.2			24.3	20.2	33.3	25.6				
Progression Factor	0.39	1.16			0.69	0.58	1.00	1.00				
Incremental Delay, d2	4.7	1.0			1.5	0.4	6.4	0.1				
Delay (s)	20.0	12.8			18.2	12.0	39.7	25.7				
Level of Service	C	B			B	B	D	C				
Approach Delay (s)		16.5				17.3		37.4			0.0	
Approach LOS		B				B		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		24.1										
HCM 2000 Volume to Capacity ratio		0.71										
Actuated Cycle Length (s)		102.0				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		107.3%				ICU Level of Service		G				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive


5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	77	220	773	180	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	81	232	814	189	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				421		
pX, platoon unblocked	0.64					
vC, conflicting volume	1467	191	192			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1449	191	192			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	90	83			
cM capacity (veh/h)	76	851	1382			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	82	232	814	192		
Volume Left	1	232	0	0		
Volume Right	81	0	0	2		
cSH	753	1382	1700	1700		
Volume to Capacity	0.11	0.17	0.48	0.11		
Queue Length 95th (ft)	9	15	0	0		
Control Delay (s)	10.4	8.1	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.4	1.8		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			52.2%		ICU Level of Service	A
Analysis Period (min)			15			



HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Volume (vph)	261	0	29	0	26	1	12	699	91	1	8	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	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	0.88
Frt	1.00	0.85			1.00			0.98			1.00	0.85
Flt Protected	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (prot)	1711	1531			1854			1833			1852	2787
Flt Permitted	0.95	1.00			1.00			1.00			0.99	1.00
Satd. Flow (perm)	1711	1531			1854			1833			1852	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	275	0	31	0	27	1	13	736	96	1	8	264
RTOR Reduction (vph)	0	25	0	0	1	0	0	3	0	0	0	197
Lane Group Flow (vph)	275	6	0	0	27	0	0	842	0	0	9	67
Turn Type	Split	NA			NA		Split	NA		Split	NA	pm+ov
Protected Phases	4	4			8		2	2		6	6	4
Permitted Phases				8								6
Actuated Green, G (s)	19.1	19.1			4.5			53.2			6.1	25.2
Effective Green, g (s)	19.1	19.1			4.5			53.2			6.1	25.2
Actuated g/C Ratio	0.19	0.19			0.05			0.54			0.06	0.25
Clearance Time (s)	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
Lane Grp Cap (vph)	330	295			84			986			114	822
v/s Ratio Prot	c0.16	0.00			c0.01			c0.46			0.00	c0.02
v/s Ratio Perm												0.01
v/c Ratio	0.83	0.02			0.32			0.85			0.08	0.08
Uniform Delay, d1	38.4	32.3			45.7			19.5			43.8	28.0
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	16.3	0.0			2.2			7.3			0.3	0.0
Delay (s)	54.7	32.3			47.9			26.8			44.0	28.1
Level of Service	D	C			D			C			D	C
Approach Delay (s)		52.4			47.9			26.8			28.6	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	98.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔	↔		↔		↔	↔	↔
Volume (vph)	206	350	79	20	655	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	1.00			1.00	0.95		1.00			1.00	1.00
Frt	1.00	0.97			1.00	0.99		0.99			1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00		0.96			0.96	1.00
Satd. Flow (prot)	1770	2053			1770	3508		1758			1781	1583
Flt Permitted	0.95	1.00			0.95	1.00		0.74			0.83	1.00
Satd. Flow (perm)	1770	2053			1770	3508		1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	368	83	21	689	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	7	0	0	3	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	444	0	21	729	0	0	117	0	0	13	25
Turn Type	Prot	NA			Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2			1	6		8			4	5
Permitted Phases				8								4
Actuated Green, G (s)	20.2	68.2			7.8	55.8		14.0			14.0	34.2
Effective Green, g (s)	20.2	68.2			7.8	55.8		14.0			14.0	34.2
Actuated g/C Ratio	0.20	0.67			0.08	0.55		0.14			0.14	0.34
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)	350	1372			135	1919		186			211	592
v/s Ratio Prot	c0.12	0.22			0.01	c0.21		c0.09			0.01	0.01
v/s Ratio Perm												0.01
v/c Ratio	0.62	0.32			0.16	0.38		0.63			0.06	0.04
Uniform Delay, d1	37.4	7.1			44.0	13.2		41.5			38.3	22.9
Progression Factor	1.08	0.36			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	3.1	0.6			0.5	0.6		6.5			0.1	0.0
Delay (s)	43.3	3.2			44.6	13.8		48.0			38.4	22.9
Level of Service	D	A			D	B		D			D	C
Approach Delay (s)		16.2			14.6			48.0			25.2	
Approach LOS		B			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	13	671	2	3	1135	102	3	0	1	204	1	31
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1548		1336	1285	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	706	2	3	1195	107	3	0	1	215	1	33
RTOR Reduction (vph)	0	0	0	0	0	47	0	3	0	0	0	28
Lane Group Flow (vph)	14	708	0	3	1195	60	0	1	0	107	109	5
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.3	31.5		3.2	30.4	30.4		9.6		9.6	9.6	9.6
Effective Green, g (s)	3.3	31.5		2.2	30.4	30.4		8.6		8.6	8.6	8.6
Actuated g/C Ratio	0.06	0.58		0.04	0.56	0.56		0.16		0.16	0.16	0.16
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	107	2052		71	1981	886		245		211	203	250
v/s Ratio Prot	0.01	c0.20		0.00	c0.34							
v/s Ratio Perm						0.04		0.00		0.08	c0.08	0.00
v/c Ratio	0.13	0.35		0.04	0.60	0.07		0.00		0.51	0.54	0.02
Uniform Delay, d1	24.1	6.0		25.0	7.9	5.5		19.2		20.9	21.0	19.3
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1		0.2	0.6	0.0		0.0		0.7	1.4	0.0
Delay (s)	24.7	6.1		25.3	8.5	5.5		19.2		21.6	22.4	19.3
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.5			8.3			19.2			21.6	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.2										
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		54.3						12.0				
Intersection Capacity Utilization		48.0%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	47	837	1108	368	1469	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	11	12
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.94	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1553	4824	1559
Flt Permitted	0.09	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	164	3539	3539	1553	4824	1559
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	49	881	1166	387	1546	151
RTOR Reduction (vph)	0	0	0	233	0	57
Lane Group Flow (vph)	49	881	1166	154	1546	94
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	54.2	53.9	45.1	45.1	51.8	51.8
Effective Green, g (s)	53.2	54.2	45.4	45.4	50.8	50.8
Actuated g/C Ratio	0.47	0.48	0.40	0.40	0.45	0.45
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	130	1682	1409	618	2149	694
v/s Ratio Prot	0.01	c0.25	c0.33		c0.32	
v/s Ratio Perm	0.16			0.10		0.06
v/c Ratio	0.38	0.52	0.83	0.25	0.72	0.14
Uniform Delay, d1	41.9	20.9	30.8	22.9	25.8	18.6
Progression Factor	1.00	1.00	0.78	1.15	0.76	0.49
Incremental Delay, d2	1.8	0.4	3.9	0.2	1.9	0.4
Delay (s)	43.7	21.3	27.9	26.7	21.5	9.4
Level of Service	D	C	C	C	C	A
Approach Delay (s)		22.5	27.6		20.4	
Approach LOS		C	C		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		23.5				
HCM 2000 Volume to Capacity ratio		0.78				
Actuated Cycle Length (s)		114.0				14.0
Intersection Capacity Utilization		73.6%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑	↑	↑↑	↑	↑↑			
Volume (vph)	0	1836	471	530	1109	168	373	0	734	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	4.0	4.0	4.0	4.0	4.0		4.0			
Lane Util. Factor		0.91	1.00	0.97	0.95	1.00	0.97		0.88			
Flpb. ped/bikes		1.00	0.99	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	0.85	1.00	1.00	0.85	1.00		0.85			
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95		1.00			
Satd. Flow (prot)		5085	1562	3433	3539	1583	3433		2764			
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95		1.00			
Satd. Flow (perm)		5085	1562	3433	3539	1583	3433		2764			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1933	496	558	1167	177	393	0	773	0	0	0
RTOR Reduction (vph)	0	0	10	0	0	42	0	0	6	0	0	0
Lane Group Flow (vph)	0	1933	486	558	1167	135	393	0	767	0	0	0
Confl. Peds. (#/hr)		5					5					
Turn Type		NA	pm+ov	Prot	NA	Perm	Prot		pm+ov			
Protected Phases		2	3	1	6		3		1			
Permitted Phases		2		6		3		3				
Actuated Green, G (s)		58.1	78.4	25.6	86.7	86.7	20.3		45.9			
Effective Green, g (s)		57.1	76.4	24.6	86.7	86.7	19.3		43.9			
Actuated g/C Ratio		0.50	0.67	0.22	0.76	0.76	0.17		0.39			
Clearance Time (s)		4.0	3.0	3.0	4.0	4.0	3.0		3.0			
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0		3.0			
Lane Grp Cap (vph)		2546	1101	740	2691	1203	581		1161			
v/s Ratio Prot		c0.38	0.07	c0.16	0.33		0.11		c0.14			
v/s Ratio Perm			0.24			0.09			0.13			
v/c Ratio		0.76	0.44	0.75	0.43	0.11	0.68		0.66			
Uniform Delay, d1		22.9	8.8	41.9	4.9	3.6	44.4		28.9			
Progression Factor		0.81	0.36	1.21	1.55	2.61	1.00		1.00			
Incremental Delay, d2		1.7	0.2	3.5	0.4	0.1	3.1		1.4			
Delay (s)		20.3	3.4	54.1	7.9	9.5	47.5		30.3			
Level of Service		C	A	D	A	A	D		C			
Approach Delay (s)		16.9		21.6		36.1		0.0				
Approach LOS		B		C		D		A				
<b>Intersection Summary</b>												
HCM 2000 Control Delay		22.6		HCM 2000 Level of Service		C						
HCM 2000 Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		114.0		Sum of lost time (s)		13.0						
Intersection Capacity Utilization		72.1%		ICU Level of Service		C						
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑						↑	↑↑
Volume (vph)	0	1450	1104	202	1319	0	0	0	0	95	2	493
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
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Flpb. ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb. ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Frt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1550	1770	3539						1776	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1550	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1526	1162	213	1388	0	0	0	0	100	2	519
RTOR Reduction (vph)	0	0	226	0	0	0	0	0	0	0	0	161
Lane Group Flow (vph)	0	1526	936	213	1388	0	0	0	0	0	102	358
Confl. Peds. (#/hr)		6					6					
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases		2		6		3		3		4		4
Actuated Green, G (s)		71.5	71.5	15.6	90.1					15.9		15.9
Effective Green, g (s)		71.5	71.5	14.6	90.1					15.9		15.9
Actuated g/C Ratio		0.63	0.63	0.13	0.79					0.14		0.14
Clearance Time (s)		4.0	4.0	3.0	4.0					4.0		4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Lane Grp Cap (vph)		2219	972	226	2797					247		388
v/s Ratio Prot		0.43		c0.12	0.39					0.06		
v/s Ratio Perm			c0.60									c0.13
v/c Ratio		0.69	0.96	0.94	0.50					0.41		0.92
Uniform Delay, d1		13.9	20.0	49.3	4.1					44.8		48.4
Progression Factor		0.59	1.17	0.31	0.58					1.00		1.00
Incremental Delay, d2		1.1	15.9	37.4	0.4					1.1		27.2
Delay (s)		9.4	39.3	52.4	2.8					45.9		75.6
Level of Service		A	D	D	A					D		E
Approach Delay (s)		22.3		9.4		0.0		70.7				
Approach LOS		C		A		A		E				
<b>Intersection Summary</b>												
HCM 2000 Control Delay		24.2		HCM 2000 Level of Service		C						
HCM 2000 Volume to Capacity ratio		0.95										
Actuated Cycle Length (s)		114.0		Sum of lost time (s)		12.0						
Intersection Capacity Utilization		131.1%		ICU Level of Service		H						
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	872	656	0	0	616	139	907	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1558				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1558				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	918	691	0	0	648	146	955	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	68	0	166	0	0	0	0
Lane Group Flow (vph)	918	691	0	0	648	78	955	103	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	34.1	70.4			32.8	32.8	36.1	36.1				
Effective Green, g (s)	33.6	70.4			32.8	32.8	35.6	35.6				
Actuated g/C Ratio	0.29	0.62			0.29	0.29	0.31	0.31				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	1011	1150			1018	449	1072	486				
v/s Ratio Prot	c0.27	c0.37			0.18		c0.28	0.07				
v/s Ratio Perm						0.05						
v/c Ratio	0.91	0.60			0.64	0.17	0.89	0.21				
Uniform Delay, d1	38.7	13.3			35.4	30.4	37.3	28.9				
Progression Factor	0.53	1.06			0.95	0.89	1.00	1.00				
Incremental Delay, d2	8.6	1.8			3.0	0.8	9.4	0.2				
Delay (s)	29.0	15.8			36.4	27.8	46.8	29.0				
Level of Service	C	B			D	C	D	C				
Approach Delay (s)		23.3			34.9		42.9			0.0		
Approach LOS		C			C		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		32.5			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		114.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		131.1%			ICU Level of Service			H				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↑	↑	↔
Volume (veh/h)	3	211	93	202	682	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	222	98	213	718	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)				421		
pX, platoon unblocked						
vC, conflicting volume	1127	719	720			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1127	719	720			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	98	48	89			
cM capacity (veh/h)	201	428	882			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	225	98	213	720		
Volume Left	3	98	0	0		
Volume Right	222	0	0	2		
cSH	422	882	1700	1700		
Volume to Capacity	0.53	0.11	0.13	0.42		
Queue Length 95th (ft)	76	9	0	0		
Control Delay (s)	22.9	9.6	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	22.9	3.0		0.0		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay				4.9		
Intersection Capacity Utilization			64.4%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	↔
Volume (vph)	116	0	13	0	89	1	40	165	17	1	26	865
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	12	12	12	12	12	12	12	12
Total Lost time (s)	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	0.88
Frt	1.00	0.85			1.00			0.99			1.00	0.85
Flt Protected	0.95	1.00			1.00			0.99			1.00	1.00
Satd. Flow (prot)	1711	1531			1860			1827			1859	2787
Flt Permitted	0.95	1.00			1.00			0.99			1.00	1.00
Satd. Flow (perm)	1711	1531			1860			1827			1859	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	122	0	14	0	94	1	42	174	18	1	27	911
RTOR Reduction (vph)	0	11	0	0	1	0	0	4	0	0	0	582
Lane Group Flow (vph)	122	3	0	0	94	0	0	230	0	0	28	329
Turn Type	Split	NA			NA		Split	NA		Split	NA	pm+ov
Protected Phases	4	4			8		2	2		6	6	4
Permitted Phases				8								6
Actuated Green, G (s)	12.9	12.9			6.7			12.1			6.8	19.7
Effective Green, g (s)	12.9	12.9			6.7			12.1			6.8	19.7
Actuated g/C Ratio	0.24	0.24			0.12			0.22			0.12	0.36
Clearance Time (s)	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
Lane Grp Cap (vph)	404	362			228			405			231	1211
v/s Ratio Prot	0.07	0.00			c0.05			c0.13			0.02	c0.06
v/s Ratio Perm												0.05
v/c Ratio	0.30	0.01			0.41			0.57			0.12	0.27
Uniform Delay, d1	17.1	15.9			22.1			18.9			21.2	12.3
Progression Factor	1.00	1.00			1.00			1.00			1.00	1.00
Incremental Delay, d2	0.4	0.0			1.2			1.8			0.2	0.1
Delay (s)	17.5	15.9			23.3			20.7			21.4	12.4
Level of Service	B	B			C			C			C	B
Approach Delay (s)	17.4				23.3			20.7			12.7	
Approach LOS	B				C			C			B	

Intersection Summary			
HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	54.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔			↔		↔	↔	↔
Volume (vph)	81	724	90	7	512	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	1.00	1.00			1.00	0.95		1.00			1.00	1.00
Frt	1.00	0.98			1.00	1.00		0.97			1.00	0.85
Flt Protected	0.95	1.00			0.95	1.00		0.97			0.95	1.00
Satd. Flow (prot)	1770	2076			1770	3528		1736			1776	1583
Flt Permitted	0.95	1.00			0.95	1.00		0.76			0.71	1.00
Satd. Flow (perm)	1770	2076			1770	3528		1369			1323	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	762	95	7	539	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	3	0	0	1	0	0	12	0	0	0	155
Lane Group Flow (vph)	85	854	0	7	550	0	0	78	0	0	39	36
Turn Type	Prot	NA			Prot	NA		Perm	NA		Perm	NA
Protected Phases	5	2			1	6		8			4	5
Permitted Phases				8								4
Actuated Green, G (s)	10.8	90.2			1.4	80.8		10.4			10.4	21.2
Effective Green, g (s)	10.8	90.2			1.4	80.8		10.4			10.4	21.2
Actuated g/C Ratio	0.09	0.79			0.01	0.71		0.09			0.09	0.19
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)	167	1642			21	2500		124			120	349
v/s Ratio Prot	0.05	c0.41			0.00	c0.16						0.01
v/s Ratio Perm								c0.06			0.03	0.01
v/c Ratio	0.51	0.52			0.33	0.22		0.63			0.33	0.10
Uniform Delay, d1	49.1	4.2			55.8	5.7		49.9			48.5	38.5
Progression Factor	1.19	0.38			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	2.1	1.0			9.1	0.2		10.0			1.6	0.1
Delay (s)	60.7	2.6			65.0	5.9		59.9			50.1	38.6
Level of Service	E	A			E	A		E			D	D
Approach Delay (s)	7.8				6.7			59.9			40.6	
Approach LOS	A				A			E			D	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	114.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Alternative 6A

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	33	999	1	1	681	187	1	0	3	67	0	12
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94		0.80	0.80	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1566		1416	1416	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1052	1	1	717	197	1	0	3	71	0	13
RTOR Reduction (vph)	0	0	0	0	0	112	0	4	0	0	0	12
Lane Group Flow (vph)	35	1053	0	1	717	85	0	0	0	35	36	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	8.8	22.7		5.1	19.0	19.0		6.0		6.0	6.0	6.0
Effective Green, g (s)	7.8	22.7		4.1	19.0	19.0		5.0		5.0	5.0	5.0
Actuated g/C Ratio	0.18	0.52		0.09	0.43	0.43		0.11		0.11	0.11	0.11
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	315	1834		165	1535	686		178		161	161	180
v/s Ratio Prot	0.02	c0.30		0.00	c0.20							
v/s Ratio Perm						0.05		0.00		0.02	c0.03	0.00
v/c Ratio	0.11	0.57		0.01	0.47	0.12		0.00		0.22	0.22	0.01
Uniform Delay, d1	15.1	7.2		18.0	8.8	7.4		17.2		17.6	17.6	17.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5		0.0	0.3	0.1		0.0		0.2	0.3	0.0
Delay (s)	15.3	7.8		18.0	9.1	7.5		17.2		17.9	17.9	17.2
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		8.0			8.8			17.2			17.8	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		43.8			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		40.2%			ICU Level of Service			A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR	
Lane Configurations	↔	↕	↕	↕	↕	↕	
Volume (vph)	91	1004	843	526	162	33	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0	
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00	
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	1.00	0.85	1.00	0.85	
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	3539	1554	3433	1539	
Flt Permitted	0.28	1.00	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	515	3539	3539	1554	3433	1539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	96	1057	887	554	171	35	
RTOR Reduction (vph)	0	0	0	152	0	32	
Lane Group Flow (vph)	96	1057	887	402	171	3	
Confl. Peds. (#/hr)				5		5	
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm	
Protected Phases	5	2		6	4		
Permitted Phases	2			6		4	
Actuated Green, G (s)	83.3	83.3	73.8	73.8	10.4	10.4	
Effective Green, g (s)	82.3	83.6	74.1	74.1	9.4	9.4	
Actuated g/C Ratio	0.81	0.82	0.73	0.73	0.09	0.09	
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0	
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0	
Lane Grp Cap (vph)	470	2900	2570	1128	316	141	
v/s Ratio Prot	0.01	c0.30	0.25		c0.05		
v/s Ratio Perm	0.16			0.26		0.00	
v/c Ratio	0.20	0.36	0.35	0.36	0.54	0.02	
Uniform Delay, d1	2.7	2.4	5.1	5.2	44.2	42.1	
Progression Factor	1.00	1.00	0.42	0.58	1.00	1.00	
Incremental Delay, d2	0.2	0.4	0.3	0.7	1.9	0.1	
Delay (s)	2.9	2.7	2.4	3.7	46.1	42.2	
Level of Service	A	A	A	A	D	D	
Approach Delay (s)		2.7	2.9		45.5		
Approach LOS		A	A		D		
<b>Intersection Summary</b>							
HCM 2000 Control Delay		6.0			HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.40					
Actuated Cycle Length (s)		102.0			Sum of lost time (s)		14.0
Intersection Capacity Utilization		45.6%			ICU Level of Service		A
Analysis Period (min)		15					
c Critical Lane Group							

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↘	↗↘	↗↘	↗	↘	↗	↘	↗↘	↘	↗
Volume (vph)	24	947	195	447	1190	587	162	172	391	246	93	11
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	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	1.00	1.00	1.00	1.00	
Fr1	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Fl1 Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1558	3433	3539	1583	1770	1863	2768	3433	1832	
Fl1 Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1558	3433	3539	1583	1770	1863	2768	3433	1832	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	997	205	471	1253	618	171	181	412	259	98	12
RTOR Reduction (vph)	0	0	86	0	0	83	0	0	84	0	5	0
Lane Group Flow (vph)	25	997	119	471	1253	535	171	181	328	259	106	0
Confl. Peds. (#/hr)	5					5						
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	2.5	40.0	40.0	20.6	58.1	71.8	17.2	14.7	35.3	13.7	11.2	
Effective Green, g (s)	1.5	39.0	39.0	19.6	58.1	71.8	16.2	13.7	33.3	12.7	10.2	
Actuated g/C Ratio	0.01	0.38	0.38	0.19	0.57	0.70	0.16	0.13	0.33	0.12	0.10	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	26	1944	595	659	2015	1114	281	250	903	427	183	
v/s Ratio Prot	0.01	0.20		c0.14	c0.35	0.06	0.10	c0.10	0.07	c0.08	0.06	
v/s Ratio Perm			0.08			0.27			0.05			
v/c Ratio	0.96	0.51	0.20	0.71	0.62	0.48	0.61	0.72	0.36	0.61	0.58	
Uniform Delay, d1	50.2	24.2	21.1	38.6	14.6	6.8	39.9	42.3	26.2	42.3	43.8	
Progression Factor	0.98	0.84	0.66	0.95	0.75	1.09	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	154.6	0.9	0.7	2.2	0.9	0.2	3.7	9.9	0.2	2.4	4.3	
Delay (s)	203.7	21.2	14.6	38.8	11.9	7.6	43.7	52.3	26.5	44.7	48.2	
Level of Service	F	C	B	D	B	A	D	D	C	D	D	
Approach Delay (s)	23.8		16.2				36.4			45.8		
Approach LOS	C		B				D			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	23.8		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.67											
Actuated Cycle Length (s)	102.0		Sum of lost time (s)				17.0					
Intersection Capacity Utilization	65.6%		ICU Level of Service				C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗↘	↘	↗↘	↗↘	↗				↗↘	↘	↗
Volume (vph)	0	890	687	191	1262	0	0	0	0	147	0	960
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		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1551	1770	3539						1770	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1551	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	937	723	201	1328	0	0	0	0	155	0	1011
RTOR Reduction (vph)	0	0	461	0	0	0	0	0	0	0	0	40
Lane Group Flow (vph)	0	937	262	201	1328	0	0	0	0	0	155	971
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		36.9	36.9	14.9	54.8						39.2	39.2
Effective Green, g (s)		36.9	36.9	13.9	54.8						39.2	39.2
Actuated g/C Ratio		0.36	0.36	0.14	0.54						0.38	0.38
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1280	561	241	1901						680	1071
v/s Ratio Prot		c0.26		c0.11	0.38						0.09	
v/s Ratio Perm			0.17									c0.35
v/c Ratio		0.73	0.47	0.83	0.70						0.23	0.91
Uniform Delay, d1		28.3	25.0	42.9	17.5						21.2	29.7
Progression Factor		0.73	2.53	0.41	0.67						1.00	1.00
Incremental Delay, d2		3.4	2.5	19.1	1.7						0.2	10.9
Delay (s)		24.1	65.7	36.6	13.4						21.4	40.6
Level of Service		C	E	D	B						C	D
Approach Delay (s)		42.2		16.5		0.0			38.0			
Approach LOS		D		B		A			D			
<b>Intersection Summary</b>												
HCM 2000 Control Delay	32.1		HCM 2000 Level of Service				C					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	102.0		Sum of lost time (s)				12.0					
Intersection Capacity Utilization	119.6%		ICU Level of Service				H					
Analysis Period (min)	15											
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	542	488	0	0	672	121	779	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	571	514	0	0	707	127	820	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	56	0	120	0	0	0	0
Lane Group Flow (vph)	571	514	0	0	707	71	820	51	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	21.1	64.9			40.3	40.3	29.6	29.6				
Effective Green, g (s)	20.6	64.9			40.3	40.3	29.1	29.1				
Actuated g/C Ratio	0.20	0.64			0.40	0.40	0.29	0.29				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	693	1185			1398	617	979	440				
v/s Ratio Prot	c0.17	0.28			c0.20		c0.24	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.82	0.43			0.51	0.11	0.84	0.12				
Uniform Delay, d1	39.0	9.3			23.3	19.5	34.2	26.9				
Progression Factor	1.07	0.68			0.59	0.20	1.00	1.00				
Incremental Delay, d2	5.2	1.0			1.3	0.4	6.2	0.1				
Delay (s)	46.8	7.3			15.0	4.3	40.5	27.0				
Level of Service	D	A			B	A	D	C				
Approach Delay (s)		28.1			13.4		38.1			0.0		
Approach LOS		C			B		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		27.3			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		102.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		119.6%			ICU Level of Service			H				
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	84	193	520	235	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	88	203	547	247	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1202	248	249			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1202	248	249			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	89	85			
cM capacity (veh/h)	172	790	1316			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	89	203	547	249		
Volume Left	1	203	0	0		
Volume Right	88	0	0	2		
cSH	758	1316	1700	1700		
Volume to Capacity	0.12	0.15	0.32	0.15		
Queue Length 95th (ft)	10	14	0	0		
Control Delay (s)	10.4	8.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.4	2.2		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay		2.4				
Intersection Capacity Utilization		39.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	↔
Volume (veh/h)	42	14	25	6	5	1	77	667	77	1	299	21
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	44	15	26	6	5	1	81	702	81	1	315	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL						None					
Median storage (veh)	2											
Upstream signal (ft)	1165											
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1196	1273	168	1098	1244	743	337			783		
vC1, stage 1 conf vol	328	328		905	905							
vC2, stage 2 conf vol	868	945		193	339							
vCu, unblocked vol	1176	1259	168	1072	1227	694	337			737		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)	6.5	5.5		6.5	5.5							
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	95	97	98	98	100	93			100		
cM capacity (veh/h)	268	289	846	263	297	362	1219			812		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	85	13	81	783	1	210	127					
Volume Left	44	6	81	0	1	0	0					
Volume Right	26	1	0	81	0	0	22					
cSH	345	283	1219	1700	812	1700	1700					
Volume to Capacity	0.25	0.04	0.07	0.46	0.00	0.12	0.07					
Queue Length 95th (ft)	24	3	5	0	0	0	0					
Control Delay (s)	18.8	18.3	8.2	0.0	9.4	0.0	0.0					
Lane LOS	C	C	A		A							
Approach Delay (s)	18.8	18.3	0.8		0.0							
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay	1.9											
Intersection Capacity Utilization	58.9%			ICU Level of Service			B					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	206	353	79	20	617	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96			0.96	1.00
Satd. Flow (prot)	1770	2053		1770	3506			1758			1781	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.74			0.83	1.00
Satd. Flow (perm)	1770	2053		1770	3506			1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	372	83	21	649	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	6	0	0	4	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	449	0	21	688	0	0	117	0	0	13	25
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6		8			4		5
Permitted Phases							8			4		
Actuated Green, G (s)	20.2	72.8		3.2	55.8		14.0			14.0		34.2
Effective Green, g (s)	20.2	72.8		3.2	55.8		14.0			14.0		34.2
Actuated g/C Ratio	0.20	0.71		0.03	0.55		0.14			0.14		0.34
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)	350	1465		55	1917		186			211		592
v/s Ratio Prot	c0.12	0.22		0.01	c0.20							0.01
v/s Ratio Perm							c0.09			0.01		
v/c Ratio	0.62	0.31		0.38	0.36		0.63			0.06		0.04
Uniform Delay, d1	37.4	5.4		48.4	13.0		41.5			38.3		22.9
Progression Factor	0.91	0.38		1.00	1.00		1.00			1.00		1.00
Incremental Delay, d2	3.1	0.5		4.4	0.5		6.5			0.1		0.0
Delay (s)	37.0	2.5		52.8	13.5		48.0			38.4		22.9
Level of Service	D	A		D	B		D			D		C
Approach Delay (s)	13.7				14.7		48.0				25.2	
Approach LOS	B				B		D				C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	17.4			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.46											
Actuated Cycle Length (s)	102.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	52.9%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Volume (vph)	13	675	2	3	1113	102	3	0	1	204	1	31
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1548		1336	1285	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	711	2	3	1172	107	3	0	1	215	1	33
RTOR Reduction (vph)	0	0	0	0	0	48	0	3	0	0	0	28
Lane Group Flow (vph)	14	713	0	3	1172	59	0	1	0	107	109	5
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.3	30.9		3.2	29.8	29.8		9.6		9.6	9.6	9.6
Effective Green, g (s)	3.3	30.9		2.2	29.8	29.8		8.6		8.6	8.6	8.6
Actuated g/C Ratio	0.06	0.58		0.04	0.55	0.55		0.16		0.16	0.16	0.16
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	108	2035		72	1963	878		247		213	205	253
v/s Ratio Prot	0.01	c0.20		0.00	c0.33							
v/s Ratio Perm						0.04		0.00		0.08	c0.08	0.00
v/c Ratio	0.13	0.35		0.04	0.60	0.07		0.00		0.50	0.53	0.02
Uniform Delay, d1	23.8	6.1		24.7	8.0	5.5		18.9		20.6	20.7	19.0
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	0.1		0.2	0.6	0.0		0.0		0.7	1.3	0.0
Delay (s)	24.4	6.2		25.0	8.5	5.6		18.9		21.3	22.0	19.0
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.6			8.3			18.9			21.3	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.2										A
HCM 2000 Volume to Capacity ratio		0.58										
Actuated Cycle Length (s)		53.7				Sum of lost time (s)		12.0				
Intersection Capacity Utilization		47.4%				ICU Level of Service		A				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/28/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Volume (vph)	40	848	1132	213	522	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1558	3433	1553
Flt Permitted	0.17	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	316	3539	3539	1558	3433	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	893	1192	224	549	102
RTOR Reduction (vph)	0	0	0	98	0	81
Lane Group Flow (vph)	42	893	1192	126	549	21
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	46.3	46.0	39.2	39.2	15.7	15.7
Effective Green, g (s)	45.3	46.3	39.5	39.5	14.7	14.7
Actuated g/C Ratio	0.65	0.66	0.56	0.56	0.21	0.21
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	241	2340	1997	879	720	326
v/s Ratio Prot	0.00	c0.25	c0.34		c0.16	
v/s Ratio Perm	0.11			0.08		0.01
v/c Ratio	0.17	0.38	0.60	0.14	0.76	0.07
Uniform Delay, d1	10.8	5.4	10.0	7.2	26.0	22.1
Progression Factor	1.00	1.00	0.67	1.78	1.00	1.00
Incremental Delay, d2	0.3	0.5	1.1	0.3	4.8	0.1
Delay (s)	11.2	5.8	7.8	13.2	30.8	22.2
Level of Service	B	A	A	B	C	C
Approach Delay (s)		6.1	8.7		29.5	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		12.4				HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio		0.66				B
Actuated Cycle Length (s)		70.0			Sum of lost time (s)	14.0
Intersection Capacity Utilization		55.6%			ICU Level of Service	B
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗	↘	↔	↗	↘	↔	↗	↘	↔	↗	↘
Volume (vph)	13	1109	249	483	1087	238	238	145	692	579	173	26
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	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	1.00	1.00	1.00	1.00	
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1558	3433	3539	1583	1770	1863	2771	3433	1827	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1558	3433	3539	1583	1770	1863	2771	3433	1827	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	1167	262	508	1144	251	251	153	728	609	182	27
RTOR Reduction (vph)	0	0	74	0	0	58	0	0	52	0	4	0
Lane Group Flow (vph)	14	1167	188	508	1144	193	251	153	676	609	205	0
Confl. Peds. (#/hr)	5			5			5			5		
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6					8	
Actuated Green, G (s)	2.7	49.0	49.0	31.6	77.9	107.7	24.6	16.6	48.2	29.8	21.8	
Effective Green, g (s)	1.7	48.0	48.0	30.6	77.9	107.7	23.6	15.6	46.2	28.8	20.8	
Actuated g/C Ratio	0.01	0.34	0.34	0.22	0.56	0.77	0.17	0.11	0.33	0.21	0.15	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	21	1743	534	750	1969	1217	298	207	993	706	271	
v/s Ratio Prot	0.01	c0.23		0.15	0.32	0.03	c0.14	0.08	c0.15	c0.18	0.11	
v/s Ratio Perm			0.12			0.09			0.10			
v/c Ratio	0.67	0.67	0.35	0.68	0.58	0.16	0.84	0.74	0.68	0.86	0.76	
Uniform Delay, d1	68.9	39.2	34.4	50.2	20.4	4.2	56.4	60.2	40.5	53.7	57.2	
Progression Factor	1.09	0.90	0.86	0.86	0.78	1.88	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	53.4	1.8	1.6	2.0	1.0	0.0	18.9	12.9	1.9	10.6	11.3	
Delay (s)	128.3	37.3	31.1	45.0	16.9	8.0	75.3	73.1	42.5	64.3	68.5	
Level of Service	F	D	C	D	B	A	E	E	D	E	E	
Approach Delay (s)	37.1			23.2			53.9			65.4		
Approach LOS	D			C			D			E		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	40.1			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.76											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	73.5%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘	↔	↗	↘					↗	↘
Volume (vph)	0	1350	1014	202	1323	0	0	0	0	95	2	490
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					95	2	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95							1.00
Frpb, ped/bikes		1.00	0.98	1.00	1.00							1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00							1.00
Flt		1.00	0.85	1.00	1.00							1.00
Flt Protected		1.00	1.00	0.95	1.00							0.95
Satd. Flow (prot)		3539	1547	1770	3539							1776
Flt Permitted		1.00	1.00	0.95	1.00							0.95
Satd. Flow (perm)		3539	1547	1770	3539							1776
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1421	1067	213	1393	0	0	0	0	100	2	516
RTOR Reduction (vph)	0	0	235	0	0	0	0	0	0	0	0	156
Lane Group Flow (vph)	0	1421	832	213	1393	0	0	0	0	0	102	360
Confl. Peds. (#/hr)	6						6					
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		87.9	87.9	20.3	111.2							20.8
Effective Green, g (s)		87.9	87.9	19.3	111.2							20.8
Actuated g/C Ratio		0.63	0.63	0.14	0.79							0.15
Clearance Time (s)		4.0	4.0	3.0	4.0							4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0							3.0
Lane Grp Cap (vph)		2221	971	244	2810							263
v/s Ratio Prot		0.40		c0.12	0.39							0.06
v/s Ratio Perm			c0.54									c0.13
v/c Ratio		0.64	0.86	0.87	0.50							0.39
Uniform Delay, d1		16.2	21.0	59.1	4.9							53.8
Progression Factor		0.61	0.94	1.12	0.81							1.00
Incremental Delay, d2		1.0	6.9	23.8	0.4							1.0
Delay (s)		10.8	26.7	90.0	4.4							54.8
Level of Service		B	C	F	A							D
Approach Delay (s)		17.6		15.7		0.0						72.5
Approach LOS		B		B		A						E
<b>Intersection Summary</b>												
HCM 2000 Control Delay	24.2			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.86											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	125.6%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	807	622	0	0	615	139	911	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1558				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1558				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	849	655	0	0	647	146	959	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	53	0	173	0	0	0	0
Lane Group Flow (vph)	849	655	0	0	647	93	959	96	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	38.8	87.8			45.5	45.5	44.7	44.7				
Effective Green, g (s)	38.3	87.8			45.5	45.5	44.2	44.2				
Actuated g/C Ratio	0.27	0.63			0.32	0.32	0.32	0.32				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	939	1168			1150	507	1083	491				
v/s Ratio Prot	c0.25	c0.35			0.18		c0.28	0.06				
v/s Ratio Perm						0.06						
v/c Ratio	0.90	0.56			0.56	0.18	0.89	0.20				
Uniform Delay, d1	49.1	15.0			39.0	33.9	45.5	34.9				
Progression Factor	0.95	1.03			0.85	0.67	1.00	1.00				
Incremental Delay, d2	9.3	1.6			1.9	0.8	8.8	0.1				
Delay (s)	55.8	17.0			35.0	23.4	54.3	35.1				
Level of Service	E	B			D	C	D	D				
Approach Delay (s)		38.9				32.9		50.1			0.0	
Approach LOS		D				C		D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		41.5										D
HCM 2000 Volume to Capacity ratio		0.78										
Actuated Cycle Length (s)		140.0						12.0				
Intersection Capacity Utilization		125.6%										H
Analysis Period (min)		15										

HCM Unsignalized Intersection Capacity Analysis  
1001: Redwood Boulevard & Wood Hollow Drive

5/28/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	3	190	100	261	489	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	200	105	275	515	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1001	516	517			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1001	516	517			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	64	90			
cM capacity (veh/h)	242	559	1049			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	203	105	275	517		
Volume Left	3	105	0	0		
Volume Right	200	0	0	2		
cSH	548	1049	1700	1700		
Volume to Capacity	0.37	0.10	0.16	0.30		
Queue Length 95th (ft)	43	8	0	0		
Control Delay (s)	15.4	8.8	0.0	0.0		
Lane LOS	C	A				
Approach Delay (s)	15.4	2.4		0.0		
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay				3.7		
Intersection Capacity Utilization			53.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔		↔	↔		↔	↔	↔
Volume (veh/h)	23	8	60	45	12	1	64	337	9	1	627	49
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	24	8	63	47	13	1	67	355	9	1	660	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL						None					
Median storage (veh)							2					
Upstream signal (ft)							1165					
pX, platoon unblocked	0.95	0.95		0.95	0.95	0.95				0.95		
vC, conflicting volume	1185	1187	356	894	1208	359	712			364		
vC1, stage 1 conf vol	688	688		494	494							
vC2, stage 2 conf vol	497	499		399	714							
vCu, unblocked vol	1169	1172	356	864	1194	304	712			309		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)	6.5	5.5		6.5	5.5							
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	98	90	87	96	100	92			100		
cM capacity (veh/h)	325	360	641	374	321	660	884			1191		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	96	61	67	364	1	440	272					
Volume Left	24	47	67	0	1	0	0					
Volume Right	63	1	0	9	0	0	52					
cSH	487	364	884	1700	1191	1700	1700					
Volume to Capacity	0.20	0.17	0.08	0.21	0.00	0.26	0.16					
Queue Length 95th (ft)	18	15	6	0	0	0	0					
Control Delay (s)	14.2	16.9	9.4	0.0	8.0	0.0	0.0					
Lane LOS	B	C	A		A							
Approach Delay (s)	14.2	16.9	1.5		0.0							
Approach LOS	B	C										
<b>Intersection Summary</b>												
Average Delay	2.3											
Intersection Capacity Utilization	40.6%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/28/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	81	689	90	7	511	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2074		1770	3528			1736			1776	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2074		1770	3528			1369			1331	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	725	95	7	538	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	2	0	0	1	0	0	9	0	0	0	148
Lane Group Flow (vph)	85	818	0	7	549	0	0	81	0	0	39	43
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		
Actuated Green, G (s)	18.0	113.0		1.5	96.5			13.5			13.5	31.5
Effective Green, g (s)	18.0	113.0		1.5	96.5			13.5			13.5	31.5
Actuated g/C Ratio	0.13	0.81		0.01	0.69			0.10			0.10	0.22
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)	227	1674		18	2431			132			128	401
v/s Ratio Prot	c0.05	c0.39		0.00	0.16							0.01
v/s Ratio Perm							c0.06			0.03		
v/c Ratio	0.37	0.49		0.39	0.23			0.61			0.30	0.11
Uniform Delay, d1	55.8	4.3		68.8	8.0			60.7			58.9	43.1
Progression Factor	0.88	0.22		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.9	0.9		13.4	0.2			8.2			1.3	0.1
Delay (s)	50.1	1.8		82.1	8.2			68.9			60.2	43.2
Level of Service	D	A		F	A			E			E	D
Approach Delay (s)	6.4				9.1		68.9				46.1	
Approach LOS	A				A		E				D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.5			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.51											
Actuated Cycle Length (s)	140.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	66.6%			ICU Level of Service			C					
Analysis Period (min)	15											

c Critical Lane Group

Alternative 6B

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	33	999	1	1	681	187	1	0	3	67	0	12
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.99		0.95	0.95	1.00
Satd. Flow (prot)	1770	3539		1770	3539	1583		1653		1681	1681	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.94		0.80	0.80	1.00
Satd. Flow (perm)	1770	3539		1770	3539	1583		1566		1416	1416	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	35	1052	1	1	717	197	1	0	3	71	0	13
RTOR Reduction (vph)	0	0	0	0	0	112	0	4	0	0	0	12
Lane Group Flow (vph)	35	1053	0	1	717	85	0	0	0	35	36	1
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	8.8	22.7		5.1	19.0	19.0		6.0		6.0	6.0	6.0
Effective Green, g (s)	7.8	22.7		4.1	19.0	19.0		5.0		5.0	5.0	5.0
Actuated g/C Ratio	0.18	0.52		0.09	0.43	0.43		0.11		0.11	0.11	0.11
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	315	1834		165	1535	686		178		161	161	180
v/s Ratio Prot	0.02	c0.30		0.00	c0.20							
v/s Ratio Perm						0.05		0.00		0.02	c0.03	0.00
v/c Ratio	0.11	0.57		0.01	0.47	0.12		0.00		0.22	0.22	0.01
Uniform Delay, d1	15.1	7.2		18.0	8.8	7.4		17.2		17.6	17.6	17.2
Progression Factor	1.00	1.00		1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	0.5		0.0	0.3	0.1		0.0		0.2	0.3	0.0
Delay (s)	15.3	7.8		18.0	9.1	7.5		17.2		17.9	17.9	17.2
Level of Service	B	A		B	A	A		B		B	B	B
Approach Delay (s)		8.0			8.8			17.2			17.8	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		8.8			HCM 2000 Level of Service			A				
HCM 2000 Volume to Capacity ratio		0.53										
Actuated Cycle Length (s)		43.8		Sum of lost time (s)				12.0				
Intersection Capacity Utilization		40.2%		ICU Level of Service			A					
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	91	1004	843	526	162	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1554	3433	1539
Flt Permitted	0.30	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	553	3539	3539	1554	3433	1539
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	96	1057	887	554	171	35
RTOR Reduction (vph)	0	0	0	151	0	32
Lane Group Flow (vph)	96	1057	887	403	171	3
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2		6	4	
Permitted Phases	2			6		4
Actuated Green, G (s)	83.6	83.3	73.9	73.9	10.4	10.4
Effective Green, g (s)	82.6	83.6	74.2	74.2	9.4	9.4
Actuated g/C Ratio	0.81	0.82	0.73	0.73	0.09	0.09
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	500	2900	2574	1130	316	141
v/s Ratio Prot	0.01	c0.30	0.25		c0.05	
v/s Ratio Perm	0.15			0.26		0.00
v/c Ratio	0.19	0.36	0.34	0.36	0.54	0.02
Uniform Delay, d1	3.7	2.4	5.1	5.1	44.2	42.1
Progression Factor	1.00	1.00	0.12	0.14	1.00	1.00
Incremental Delay, d2	0.2	0.4	0.3	0.7	1.9	0.1
Delay (s)	3.9	2.7	0.9	1.5	46.1	42.2
Level of Service	A	A	A	A	D	D
Approach Delay (s)		2.8	1.1		45.5	
Approach LOS		A	A		D	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		5.1		HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.40				
Actuated Cycle Length (s)		102.0		Sum of lost time (s)		14.0
Intersection Capacity Utilization		45.6%		ICU Level of Service		A
Analysis Period (min)		15				
c Critical Lane Group						



HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↗↘	↘	↗↘	↗↘	↗↘	↗↘	↗↘	↗↘	↗↘	↗↘	↗↘
Volume (vph)	24	947	195	447	1190	587	162	172	391	246	93	11
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00
Fr1	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	1.00
Fl1 Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1558	3433	3539	1583	1770	1863	2768	3433	1832	1832
Fl1 Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1558	3433	3539	1583	1770	1863	2768	3433	1832	1832
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	25	997	205	471	1253	618	171	181	412	259	98	12
RTOR Reduction (vph)	0	0	86	0	0	83	0	0	84	0	5	0
Lane Group Flow (vph)	25	997	119	471	1253	535	171	181	328	259	106	0
Confl. Peds. (#/hr)	5					5						
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	2.5	40.0	40.0	20.6	58.1	71.8	17.2	14.7	35.3	13.7	11.2	
Effective Green, g (s)	1.5	39.0	39.0	19.6	58.1	71.8	16.2	13.7	33.3	12.7	10.2	
Actuated g/C Ratio	0.01	0.38	0.38	0.19	0.57	0.70	0.16	0.13	0.33	0.12	0.10	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	26	1944	595	659	2015	1114	281	250	903	427	183	
v/s Ratio Prot	0.01	0.20		c0.14	c0.35	0.06	0.10	c0.10	0.07	c0.08	0.06	
v/s Ratio Perm			0.08			0.27			0.05			
v/c Ratio	0.96	0.51	0.20	0.71	0.62	0.48	0.61	0.72	0.36	0.61	0.58	
Uniform Delay, d1	50.2	24.2	21.1	38.6	14.6	6.8	39.9	42.3	26.2	42.3	43.8	
Progression Factor	0.98	0.84	0.66	0.95	0.75	1.09	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	154.6	0.9	0.7	2.2	0.9	0.2	3.7	9.9	0.2	2.4	4.3	
Delay (s)	203.8	21.2	14.7	38.8	11.9	7.6	43.7	52.3	26.5	44.7	48.2	
Level of Service	F	C	B	D	B	A	D	D	C	D	D	
Approach Delay (s)	23.8			16.2			36.4			45.8		
Approach LOS	C			B			D			D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	23.8			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.67											
Actuated Cycle Length (s)	102.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	65.6%			ICU Level of Service			C					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗↘	↘	↗↘	↗↘	↗↘					↗↘	↗↘
Volume (vph)	0	890	687	191	1262	0	0	0	0	147	0	960
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		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Fr1		1.00	0.85	1.00	1.00						1.00	0.85
Fl1 Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1551	1770	3539						1770	2787
Fl1 Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1551	1770	3539						1770	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	937	723	201	1328	0	0	0	0	155	0	1011
RTOR Reduction (vph)	0	0	461	0	0	0	0	0	0	0	0	40
Lane Group Flow (vph)	0	937	262	201	1328	0	0	0	0	0	155	971
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		36.9	36.9	14.9	54.8						39.2	39.2
Effective Green, g (s)		36.9	36.9	13.9	54.8						39.2	39.2
Actuated g/C Ratio		0.36	0.36	0.14	0.54						0.38	0.38
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		1280	561	241	1901						680	1071
v/s Ratio Prot		c0.26		c0.11	0.38						0.09	
v/s Ratio Perm			0.17									c0.35
v/c Ratio		0.73	0.47	0.83	0.70						0.23	0.91
Uniform Delay, d1		28.3	25.0	42.9	17.5						21.2	29.7
Progression Factor		0.74	2.57	0.41	0.67						1.00	1.00
Incremental Delay, d2		3.4	2.5	19.1	1.7						0.2	10.9
Delay (s)		24.3	66.9	36.6	13.4						21.4	40.6
Level of Service		C	E	D	B						C	D
Approach Delay (s)		42.8		16.5		0.0				38.0		
Approach LOS		D		B		A				D		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	32.3			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.82											
Actuated Cycle Length (s)	102.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	119.6%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	542	488	0	0	672	121	779	3	160	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1544				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1544				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	571	514	0	0	707	127	820	3	168	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	56	0	120	0	0	0	0
Lane Group Flow (vph)	571	514	0	0	707	71	820	51	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	21.1	64.9			40.3	40.3	29.6	29.6				
Effective Green, g (s)	20.6	64.9			40.3	40.3	29.1	29.1				
Actuated g/C Ratio	0.20	0.64			0.40	0.40	0.29	0.29				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	693	1185			1398	617	979	440				
v/s Ratio Prot	c0.17	0.28			c0.20		c0.24	0.03				
v/s Ratio Perm						0.05						
v/c Ratio	0.82	0.43			0.51	0.11	0.84	0.12				
Uniform Delay, d1	39.0	9.3			23.3	19.5	34.2	26.9				
Progression Factor	1.07	0.68			0.59	0.20	1.00	1.00				
Incremental Delay, d2	5.2	1.0			1.3	0.4	6.2	0.1				
Delay (s)	46.9	7.3			14.9	4.3	40.5	27.0				
Level of Service	D	A			B	A	D	C				
Approach Delay (s)		28.1			13.3		38.1			0.0		
Approach LOS		C			B		D			A		
<b>Intersection Summary</b>												
HCM 2000 Control Delay		27.3			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.69										
Actuated Cycle Length (s)		102.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		119.6%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis  
 1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↔	↑	↑	
Volume (veh/h)	1	84	193	522	236	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	1	88	203	549	248	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1205	249	251			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1205	249	251			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	89	85			
cM capacity (veh/h)	172	789	1315			
<b>Direction, Lane #</b>						
	EB 1	NB 1	NB 2	SB 1		
Volume Total	89	203	549	251		
Volume Left	1	203	0	0		
Volume Right	88	0	0	2		
cSH	757	1315	1700	1700		
Volume to Capacity	0.12	0.15	0.32	0.15		
Queue Length 95th (ft)	10	14	0	0		
Control Delay (s)	10.4	8.2	0.0	0.0		
Lane LOS	B	A				
Approach Delay (s)	10.4	2.2		0.0		
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay		2.4				
Intersection Capacity Utilization		39.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔			↔	↔		↔	↔	↔
Volume (veh/h)	42	14	25	6	5	1	77	668	77	1	301	21
Sign Control	Stop			Stop			Free			Free		
Grade	0%			0%			0%			0%		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	44	15	26	6	5	1	81	703	81	1	317	22
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	TWLTL						None					
Median storage (veh)	2											
Upstream signal (ft)	1165											
pX, platoon unblocked	0.94	0.94		0.94	0.94	0.94				0.94		
vC, conflicting volume	1199	1276	169	1100	1247	744	339			784		
vC1, stage 1 conf vol	330	330		906	906							
vC2, stage 2 conf vol	869	946		194	341							
vCu, unblocked vol	1180	1262	169	1074	1231	695	339			738		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)	6.5	5.5		6.5	5.5							
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	95	97	98	98	100	93			100		
cM capacity (veh/h)	268	288	845	262	297	361	1217			812		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	85	13	81	784	1	211	128					
Volume Left	44	6	81	0	1	0	0					
Volume Right	26	1	0	81	0	0	22					
cSH	345	283	1217	1700	812	1700	1700					
Volume to Capacity	0.25	0.04	0.07	0.46	0.00	0.12	0.08					
Queue Length 95th (ft)	24	3	5	0	0	0	0					
Control Delay (s)	18.9	18.3	8.2	0.0	9.4	0.0	0.0					
Lane LOS	C	C	A		A							
Approach Delay (s)	18.9	18.3	0.8		0.0							
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay	1.9											
Intersection Capacity Utilization	59.0%			ICU Level of Service			B					
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	206	358	79	20	621	41	102	1	12	11	1	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.97		1.00	0.99			0.99			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.96			0.96	1.00
Satd. Flow (prot)	1770	2054		1770	3506			1758			1781	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.74			0.83	1.00
Satd. Flow (perm)	1770	2054		1770	3506			1361			1544	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	217	377	83	21	654	43	107	1	13	12	1	74
RTOR Reduction (vph)	0	5	0	0	4	0	0	4	0	0	0	49
Lane Group Flow (vph)	217	455	0	21	693	0	0	117	0	0	13	25
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6		8			4		5
Permitted Phases							8				4	4
Actuated Green, G (s)	20.2	72.8		3.2	55.8		14.0			14.0		34.2
Effective Green, g (s)	20.2	72.8		3.2	55.8		14.0			14.0		34.2
Actuated g/C Ratio	0.20	0.71		0.03	0.55		0.14			0.14		0.34
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)	350	1465		55	1917		186			211		592
v/s Ratio Prot	c0.12	0.22		0.01	c0.20							0.01
v/s Ratio Perm							c0.09				0.01	0.01
v/c Ratio	0.62	0.31		0.38	0.36		0.63			0.06		0.04
Uniform Delay, d1	37.4	5.4		48.4	13.0		41.5			38.3		22.9
Progression Factor	0.91	0.38		1.00	1.00		1.00			1.00		1.00
Incremental Delay, d2	3.1	0.5		4.4	0.5		6.5			0.1		0.0
Delay (s)	37.1	2.6		52.8	13.6		48.0			38.4		22.9
Level of Service	D	A		D	B		D			D		C
Approach Delay (s)	13.6			14.7			48.0			25.2		
Approach LOS	B			B			D			C		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	17.3			HCM 2000 Level of Service			B					
HCM 2000 Volume to Capacity ratio	0.46											
Actuated Cycle Length (s)	102.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	53.0%			ICU Level of Service			A					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: West Campus Drive & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↕	↔	↕	↔	↔	↕	↕
Volume (vph)	13	677	2	3	1115	102	3	0	1	204	1	31
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	0.95	1.00
Frt	1.00	1.00		1.00	1.00	0.85		0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00		0.96		0.95	0.95	1.00
Satd. Flow (prot)	1770	3538		1770	3539	1583		1735		1681	1686	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00		0.86		0.76	0.73	1.00
Satd. Flow (perm)	1770	3538		1770	3539	1583		1548		1336	1285	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	713	2	3	1174	107	3	0	1	215	1	33
RTOR Reduction (vph)	0	0	0	0	0	48	0	3	0	0	0	28
Lane Group Flow (vph)	14	715	0	3	1174	59	0	1	0	107	109	5
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases						6	8			4		4
Actuated Green, G (s)	4.3	30.9		3.2	29.8	29.8		9.6		9.6	9.6	9.6
Effective Green, g (s)	3.3	30.9		2.2	29.8	29.8		8.6		8.6	8.6	8.6
Actuated g/C Ratio	0.06	0.58		0.04	0.55	0.55		0.16		0.16	0.16	0.16
Clearance Time (s)	3.0	4.0		3.0	4.0	4.0		3.0		3.0	3.0	3.0
Vehicle Extension (s)	3.0	4.0		3.0	4.0	4.0		2.0		2.0	2.0	2.0
Lane Grp Cap (vph)	108	2035		72	1963	878		247		213	205	253
v/s Ratio Prot	0.01	c0.20		0.00	c0.33							
v/s Ratio Perm						0.04		0.00		0.08	c0.08	0.00
v/c Ratio	0.13	0.35		0.04	0.60	0.07		0.00		0.50	0.53	0.02
Uniform Delay, d1	23.8	6.1		24.7	8.0	5.5		18.9		20.6	20.7	19.0
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	0.1		0.2	0.6	0.0		0.0		0.7	1.3	0.0
Delay (s)	24.4	6.2		25.0	8.5	5.6		18.9		21.3	22.0	19.0
Level of Service	C	A		C	A	A		B		C	C	B
Approach Delay (s)		6.6			8.3			18.9			21.3	
Approach LOS		A			A			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		9.2										
HCM 2000 Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		53.7						12.0				
Intersection Capacity Utilization		47.5%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
3: San Marin Drive & East Campus Drive

5/29/2014

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↔	↕	↕	↕	↕	↕
Volume (vph)	40	851	1134	213	522	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	4.0	4.0	4.0	5.0	5.0
Lane Util. Factor	1.00	0.95	0.95	1.00	0.97	1.00
Frbp, ped/bikes	1.00	1.00	1.00	0.98	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1557	3433	1553
Flt Permitted	0.17	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	314	3539	3539	1557	3433	1553
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	42	896	1194	224	549	102
RTOR Reduction (vph)	0	0	0	98	0	80
Lane Group Flow (vph)	42	896	1194	126	549	22
Confl. Peds. (#/hr)				5		5
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Actuated Green, G (s)	46.8	46.5	39.7	39.7	16.2	16.2
Effective Green, g (s)	45.8	46.8	40.0	40.0	15.2	15.2
Actuated g/C Ratio	0.65	0.66	0.56	0.56	0.21	0.21
Clearance Time (s)	4.0	4.3	4.3	4.3	4.0	4.0
Vehicle Extension (s)	3.0	4.0	3.5	3.5	3.0	3.0
Lane Grp Cap (vph)	239	2332	1993	877	734	332
v/s Ratio Prot	0.00	c0.25	c0.34		c0.16	
v/s Ratio Perm	0.11			0.08		0.01
v/c Ratio	0.18	0.38	0.60	0.14	0.75	0.07
Uniform Delay, d1	11.1	5.5	10.2	7.4	26.1	22.2
Progression Factor	1.00	1.00	0.58	1.52	1.00	1.00
Incremental Delay, d2	0.4	0.5	1.1	0.3	4.2	0.1
Delay (s)	11.5	6.0	7.0	11.5	30.3	22.3
Level of Service	B	A	A	B	C	C
Approach Delay (s)		6.2	7.7		29.0	
Approach LOS		A	A		C	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		11.9				
HCM 2000 Volume to Capacity ratio		0.66				
Actuated Cycle Length (s)		71.0				14.0
Intersection Capacity Utilization		55.6%				
Analysis Period (min)		15				
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis  
4: Redwood Boulevard & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔↔	↔	↔↔	↔↔	↔	↔	↔	↔↔	↔↔	↔	↔
Volume (vph)	13	1109	251	530	1087	238	240	147	734	579	175	26
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	4.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95	1.00	1.00	1.00	0.88	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00	0.99	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	1.00	1.00
Flt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	1.00
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1557	3433	3539	1583	1770	1863	2772	3433	1827	1827
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1557	3433	3539	1583	1770	1863	2772	3433	1827	1827
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	14	1167	264	558	1144	251	253	155	773	609	184	27
RTOR Reduction (vph)	0	0	74	0	0	57	0	0	51	0	3	0
Lane Group Flow (vph)	14	1167	190	558	1144	194	253	155	722	609	208	0
Confl. Peds. (#/hr)	5					5						
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	7	3	8	1	7	4	
Permitted Phases			2			6			8			
Actuated Green, G (s)	2.6	48.1	48.1	34.3	79.8	110.0	24.7	16.4	50.7	30.2	21.9	
Effective Green, g (s)	1.6	47.1	47.1	33.3	79.8	110.0	23.7	15.4	48.7	29.2	20.9	
Actuated g/C Ratio	0.01	0.33	0.33	0.23	0.56	0.77	0.17	0.11	0.34	0.21	0.15	
Clearance Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	19	1686	516	805	1988	1226	295	202	1028	705	268	
v/s Ratio Prot	0.01	c0.23		0.16	0.32	0.03	c0.14	0.08	c0.16	c0.18	0.11	
v/s Ratio Perm			0.12			0.09			0.10			
v/c Ratio	0.74	0.69	0.37	0.69	0.58	0.16	0.86	0.77	0.70	0.86	0.77	
Uniform Delay, d1	70.0	41.2	36.1	49.7	20.1	4.1	57.5	61.6	40.4	54.5	58.3	
Progression Factor	1.14	0.90	0.84	1.03	1.12	2.30	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	81.6	2.1	1.8	2.1	1.0	0.0	21.0	15.9	2.2	10.7	13.0	
Delay (s)	161.3	39.3	32.0	53.2	23.5	9.5	78.5	77.5	42.6	65.2	71.3	
Level of Service	F	D	C	D	C	A	E	E	D	E	E	
Approach Delay (s)	39.1			30.2			54.9			66.8		
Approach LOS	D			C			D			E		
<b>Intersection Summary</b>												
HCM 2000 Control Delay	43.5			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.78											
Actuated Cycle Length (s)	142.0			Sum of lost time (s)			17.0					
Intersection Capacity Utilization	75.0%			ICU Level of Service			D					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
5: US 101 Southbound Ramps & San Marin Drive

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔	↔	↔	↔↔						↔	↔↔
Volume (vph)	0	1374	1031	202	1351	0	0	0	0	95	2	508
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					95	4.0	4.0
Lane Util. Factor		0.95	1.00	1.00	0.95						1.00	0.88
Frpb, ped/bikes		1.00	0.98	1.00	1.00						1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00						1.00	1.00
Flt		1.00	0.85	1.00	1.00						1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (prot)		3539	1546	1770	3539						1776	2787
Flt Permitted		1.00	1.00	0.95	1.00						0.95	1.00
Satd. Flow (perm)		3539	1546	1770	3539						1776	2787
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1446	1085	213	1422	0	0	0	0	100	2	535
RTOR Reduction (vph)	0	0	242	0	0	0	0	0	0	0	0	145
Lane Group Flow (vph)	0	1446	843	213	1422	0	0	0	0	0	102	390
Confl. Peds. (#/hr)	6											
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4		4
Permitted Phases			2									4
Actuated Green, G (s)		88.3	88.3	20.4	111.7						22.3	22.3
Effective Green, g (s)		88.3	88.3	19.4	111.7						22.3	22.3
Actuated g/C Ratio		0.62	0.62	0.14	0.79						0.16	0.16
Clearance Time (s)		4.0	4.0	3.0	4.0						4.0	4.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0						3.0	3.0
Lane Grp Cap (vph)		2200	961	241	2783						278	437
v/s Ratio Prot		0.41		c0.12	0.40						0.06	
v/s Ratio Perm			c0.55									c0.14
v/c Ratio		0.66	0.88	0.88	0.51						0.37	0.89
Uniform Delay, d1		17.2	22.3	60.2	5.4						53.5	58.7
Progression Factor		0.62	0.94	0.66	1.88						1.00	1.00
Incremental Delay, d2		1.0	7.8	25.4	0.4						0.8	19.9
Delay (s)		11.8	28.9	65.1	10.6						54.4	78.6
Level of Service		B	C	E	B						D	E
Approach Delay (s)		19.1			17.7			0.0			74.7	
Approach LOS		B			B			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay	26.0			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	142.0			Sum of lost time (s)			12.0					
Intersection Capacity Utilization	128.1%			ICU Level of Service			H					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
6: US 101 Northbound Ramps & San Marin Drive/Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↑			↔	↔	↔	↔				
Volume (vph)	823	630	0	0	624	139	931	15	240	0	0	0
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				
Lane Util. Factor	0.97	1.00			0.95	1.00	0.97	1.00				
Frbp, ped/bikes	1.00	1.00			1.00	0.99	1.00	0.97				
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00				
Frt	1.00	1.00			1.00	0.85	1.00	0.86				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (prot)	3433	1863			3539	1563	3433	1558				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00				
Satd. Flow (perm)	3433	1863			3539	1563	3433	1558				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	866	663	0	0	657	146	980	16	253	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	53	0	172	0	0	0	0
Lane Group Flow (vph)	866	663	0	0	657	93	980	97	0	0	0	0
Confl. Peds. (#/hr)						1			5			
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	5	2			6		8	8				
Permitted Phases					6							
Actuated Green, G (s)	39.9	88.5			45.1	45.1	46.0	46.0				
Effective Green, g (s)	39.4	88.5			45.1	45.1	45.5	45.5				
Actuated g/C Ratio	0.28	0.62			0.32	0.32	0.32	0.32				
Clearance Time (s)	3.5	4.0			4.0	4.0	3.5	3.5				
Vehicle Extension (s)	2.0	4.0			4.0	4.0	2.5	2.5				
Lane Grp Cap (vph)	952	1161			1124	496	1100	499				
v/s Ratio Prot	c0.25	c0.36			0.19		c0.29	0.06				
v/s Ratio Perm						0.06						
v/c Ratio	0.91	0.57			0.58	0.19	0.89	0.19				
Uniform Delay, d1	49.6	15.6			40.6	35.2	45.9	35.0				
Progression Factor	1.02	0.40			0.96	0.96	1.00	1.00				
Incremental Delay, d2	9.5	1.6			2.2	0.8	9.2	0.1				
Delay (s)	59.8	7.9			41.0	34.5	55.1	35.1				
Level of Service	E	A			D	C	E	D				
Approach Delay (s)		37.3				39.8		50.8			0.0	
Approach LOS		D				D		D			A	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	142.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	128.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis  
1001: Redwood Boulevard & Wood Hollow Drive

5/29/2014

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔	↔	↔	↑	↑	↔
Volume (veh/h)	3	190	100	263	491	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	3	200	105	277	517	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1005	518	519			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1005	518	519			
IC, single (s)	6.4	6.2	4.1			
IC, 2 stage (s)						
IF (s)	3.5	3.3	2.2			
p0 queue free %	99	64	90			
cM capacity (veh/h)	241	558	1047			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	203	105	277	519
Volume Left	3	105	0	0
Volume Right	200	0	0	2
cSH	546	1047	1700	1700
Volume to Capacity	0.37	0.10	0.16	0.31
Queue Length 95th (ft)	43	8	0	0
Control Delay (s)	15.4	8.8	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	15.4	2.4		0.0
Approach LOS	C			

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis  
1002: Redwood Boulevard & Rush Landing Road

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔			↔	↔		↔	↔	
Volume (veh/h)	23	8	60	45	12	1	64	339	9	1	630	49
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	24	8	63	47	13	1	67	357	9	1	663	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							TWTL				None	
Median storage (veh)								2				
Upstream signal (ft)								1165				
pX, platoon unblocked	0.95	0.95		0.95	0.95	0.95				0.95		
vC, conflicting volume	1190	1192	357	897	1213	362	715			366		
vC1, stage 1 conf vol	691	691		496	496							
vC2, stage 2 conf vol	499	501		401	717							
vCu, unblocked vol	1174	1176	357	866	1198	303	715			308		
IC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
IC, 2 stage (s)	6.5	5.5		6.5	5.5							
IF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	98	90	87	96	100	92			100		
cM capacity (veh/h)	323	359	639	373	320	659	881			1188		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>NB 2</b>	<b>SB 1</b>	<b>SB 2</b>	<b>SB 3</b>					
Volume Total	96	61	67	366	1	442	273					
Volume Left	24	47	67	0	1	0	0					
Volume Right	63	1	0	9	0	0	52					
cSH	486	363	881	1700	1188	1700	1700					
Volume to Capacity	0.20	0.17	0.08	0.22	0.00	0.26	0.16					
Queue Length 95th (ft)	18	15	6	0	0	0	0					
Control Delay (s)	14.2	16.9	9.4	0.0	8.0	0.0	0.0					
Lane LOS	B	C	A		A							
Approach Delay (s)	14.2	16.9	1.5		0.0							
Approach LOS	B	C										
<b>Intersection Summary</b>												
Average Delay	2.3											
Intersection Capacity Utilization	40.7%		ICU Level of Service		A							
Analysis Period (min)	15											

HCM Signalized Intersection Capacity Analysis  
1007: Binford Road & Atherton Avenue

5/29/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Volume (vph)	81	697	90	7	520	11	62	2	22	36	1	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	0.95			1.00			1.00	1.00
Fr <sub>t</sub>	1.00	0.98		1.00	1.00			0.97			1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00			0.97			0.95	1.00
Satd. Flow (prot)	1770	2075		1770	3528			1736			1776	1583
Fit Permitted	0.95	1.00		0.95	1.00			0.76			0.71	1.00
Satd. Flow (perm)	1770	2075		1770	3528			1369			1331	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	85	734	95	7	547	12	65	2	23	38	1	191
RTOR Reduction (vph)	0	2	0	0	1	0	0	9	0	0	0	148
Lane Group Flow (vph)	85	827	0	7	558	0	0	81	0	0	39	43
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	pm+ov
Protected Phases	5	2		1	6			8			4	5
Permitted Phases							8			4		4
Actuated Green, G (s)	18.1	114.9		1.5	98.3			13.6			13.6	31.7
Effective Green, g (s)	18.1	114.9		1.5	98.3			13.6			13.6	31.7
Actuated g/C Ratio	0.13	0.81		0.01	0.69			0.10			0.10	0.22
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)	225	1678		18	2442			131			127	397
v/s Ratio Prot	c0.05	c0.40		0.00	0.16							0.01
v/s Ratio Perm								c0.06				0.03
v/c Ratio	0.38	0.49		0.39	0.23			0.62			0.31	0.11
Uniform Delay, d1	56.8	4.3		69.8	8.0			61.7			59.8	43.9
Progression Factor	0.87	0.25		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	0.9	0.9		13.4	0.2			8.4			1.4	0.1
Delay (s)	50.6	2.0		83.1	8.2			70.1			61.2	44.0
Level of Service	D	A		F	A			E			E	D
Approach Delay (s)		6.5			9.1			70.1				46.9
Approach LOS		A			A			E				D
<b>Intersection Summary</b>												
HCM 2000 Control Delay	15.7		HCM 2000 Level of Service		B							
HCM 2000 Volume to Capacity ratio	0.51											
Actuated Cycle Length (s)	142.0		Sum of lost time (s)		12.0							
Intersection Capacity Utilization	67.0%		ICU Level of Service		C							
Analysis Period (min)	15											
c Critical Lane Group												