

Appendix 4.12 DSP Traffic Synchro

Existing AM Conditions

Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

Existing AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		175				
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		25			30
Link Distance (ft)	127		478			451
Travel Time (s)	2.9		13.0			10.3
Volume (vph)	380	175	743	365	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	380	175	743	365	0	0
Lane Group Flow (vph)	380	175	743	365	0	0
Turn Type		Prot		custom		
Protected Phases	1	1	2	2		
Permitted Phases				1		
Detector Phases	1	1	2	2		
Minimum Initial (s)	4.0	4.0	4.0	4.0		
Minimum Split (s)	20.0	20.0	20.0	20.0		
Total Split (s)	39.0	39.0	61.0	61.0	0.0	0.0
Total Split (%)	39.0%	39.0%	61.0%	61.0%	0.0%	0.0%
Maximum Green (s)	35.0	35.0	57.0	57.0		
Yellow Time (s)	3.5	3.5	3.5	3.5		
All-Red Time (s)	0.5	0.5	0.5	0.5		
Lead/Lag	Lead	Lead	Lag	Lag		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Recall Mode	Min	Min	Min	Min		
Walk Time (s)	5.0	5.0	5.0	5.0		
Flash Dont Walk (s)	11.0	11.0	11.0	11.0		
Pedestrian Calls (#/hr)	0	0	0	0		
Act Effct Green (s)	17.9	17.9	29.0	56.9		
Actuated g/C Ratio	0.31	0.31	0.51	1.00		
v/c Ratio	0.68	0.28	0.78	0.23		
Control Delay	21.3	4.4	13.9	0.3		
Queue Delay	0.0	0.0	0.2	0.0		
Total Delay	21.3	4.4	14.0	0.3		
LOS	C	A	B	A		
Approach Delay	16.0		9.5			
Approach LOS	B		A			

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

Existing AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Stops (vph)	289	21	506	0		
Fuel Used(gal)	6	2	7	2		
CO Emissions (g/hr)	434	114	494	106		
NOx Emissions (g/hr)	84	22	96	21		
VOC Emissions (g/hr)	101	26	114	24		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 56.9

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

 ø1	 ø2
39 s	61 s

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	150		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.853	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1589	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1589	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203								218	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		435			449			617			731	
Travel Time (s)		8.5			8.7			16.8			19.9	
Volume (vph)	0	592	203	145	660	0	0	0	0	418	4	218
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	592	203	145	660	0	0	0	0	418	4	218
Lane Group Flow (vph)	0	592	203	145	660	0	0	0	0	418	222	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	40.0	40.0	23.0	63.0	0.0	0.0	0.0	0.0	37.0	37.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	23.0%	63.0%	0.0%	0.0%	0.0%	0.0%	37.0%	37.0%	0.0%
Maximum Green (s)		36.0	36.0	19.0	59.0					33.0	33.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		51.9	51.9	19.0	74.9					17.1	17.1	
Actuated g/C Ratio		0.52	0.52	0.19	0.75					0.17	0.17	
v/c Ratio		0.32	0.22	0.43	0.25					0.71	0.49	
Control Delay		11.4	3.1	45.9	8.0					39.5	6.5	
Queue Delay		0.0	0.0	0.0	0.0					0.0	0.0	
Total Delay		11.4	3.1	45.9	8.0					39.5	6.5	
LOS		B	A	D	A					D	A	

7: Gravenstein Highway & SB US 101 Off-ramp

Lane Group												
Approach Delay	9.3		14.8								28.1	
Approach LOS	A				B						C	
Stops (vph)	391		53	111	325					380	31	
Fuel Used(gal)	6		1	3	6					7	2	
CO Emissions (g/hr)	431		81	186	396					519	126	
NOx Emissions (g/hr)	84		16	36	77					101	24	
VOC Emissions (g/hr)	100		19	43	92					120	29	
Dilemma Vehicles (#)	17		0	0	40					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 64 (64%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø2	 ø1	 ø4
40 s	23 s	37 s
 ø6		
63 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Existing AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	1770	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						86
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	449			431	524	
Travel Time (s)	8.7			8.4	14.3	
Volume (vph)	1013	0	0	538	267	88
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1013	0	0	538	267	88
Lane Group Flow (vph)	1013	0	0	538	267	88
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	57.0	0.0	0.0	57.0	43.0	43.0
Total Split (%)	57.0%	0.0%	0.0%	57.0%	43.0%	43.0%
Maximum Green (s)	53.0			53.0	39.0	39.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	73.2			73.2	18.8	18.8
Actuated g/C Ratio	0.73			0.73	0.19	0.19
v/c Ratio	0.39			0.21	0.80	0.24
Control Delay	1.7			4.6	39.7	7.7
Queue Delay	0.1			0.0	0.0	0.0
Total Delay	1.9			4.6	39.7	7.7
LOS	A			A	D	A
Approach Delay	1.9			4.6	31.8	
Approach LOS	A			A	C	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

Existing AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	69			190	246	16
Fuel Used(gal)	4			4	4	1
CO Emissions (g/hr)	290			252	300	41
NOx Emissions (g/hr)	57			49	58	8
VOC Emissions (g/hr)	67			58	70	10
Dilemma Vehicles (#)	23			14	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 44 (44%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 40

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 8.2

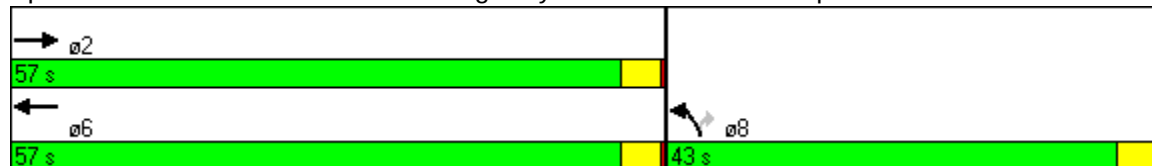
Intersection LOS: A

Intersection Capacity Utilization 49.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	100		0	450		0	0		150
Storage Lanes	1		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt			0.850		0.924			0.998				0.850
Flt Protected	0.950	0.958		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1695	1583	1770	1721	0	1610	3383	0	1770	1863	1583
Flt Permitted	0.950	0.958		0.950			0.950			0.950		
Satd. Flow (perm)	1681	1695	1583	1770	1721	0	1610	3383	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			576		31			1				265
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		431			249			1249			478	
Travel Time (s)		8.4			4.9			34.1			13.0	
Volume (vph)	420	29	652	47	30	31	244	652	9	1	119	265
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	420	29	652	47	30	31	244	652	9	1	119	265
Lane Group Flow (vph)	219	230	652	47	61	0	244	661	0	1	119	265
Turn Type	Split		pm+ov	Split			Split			Split		Perm
Protected Phases	7	7	5	3	3		5	5		1	1	
Permitted Phases			7									1
Detector Phases	7	7	5	3	3		5	5		1	1	1
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	20.0		8.0	8.0		8.0	8.0	8.0
Total Split (s)	26.0	26.0	35.0	20.0	20.0	0.0	35.0	35.0	0.0	19.0	19.0	19.0
Total Split (%)	26.0%	26.0%	35.0%	20.0%	20.0%	0.0%	35.0%	35.0%	0.0%	19.0%	19.0%	19.0%
Maximum Green (s)	22.0	22.0	31.0	16.0	16.0		31.0	31.0		15.0	15.0	15.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None		None	None	None
Walk Time (s)				5.0	5.0							
Flash Dont Walk (s)				11.0	11.0							
Pedestrian Calls (#/hr)				0	0							
Act Effct Green (s)	18.9	18.9	67.1	8.0	8.0		47.4	47.4		11.6	11.6	11.6
Actuated g/C Ratio	0.19	0.19	0.67	0.08	0.08		0.47	0.47		0.12	0.12	0.12
v/c Ratio	0.69	0.72	0.52	0.33	0.37		0.32	0.41		0.00	0.55	0.64
Control Delay	29.9	30.8	6.7	44.1	26.6		21.7	21.1		36.0	45.6	10.1
Queue Delay	0.3	0.3	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	30.2	31.1	6.7	44.1	26.6		21.7	21.1		36.0	45.6	10.1
LOS	C	C	A	D	C		C	C		D	D	B

9: Gravenstein Highway & Old Redwood Highway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		16.5			34.2			21.3			21.2	
Approach LOS		B			C			C			C	
Stops (vph)	201	212	315	45	33		161	438		2	109	35
Fuel Used(gal)	4	4	5	1	1		4	12		0	2	2
CO Emissions (g/hr)	247	262	370	59	48		300	808		1	140	123
NOx Emissions (g/hr)	48	51	72	11	9		58	157		0	27	24
VOC Emissions (g/hr)	57	61	86	14	11		70	187		0	33	29
Dilemma Vehicles (#)	0	6	0	0	3		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 6 (6%), Referenced to phase 6:, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 19.7

Intersection LOS: B

Intersection Capacity Utilization 60.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

 ø1	 ø5	 ø3	 ø7
19 s	35 s	20 s	26 s

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	0		0	1		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.966			0.894			0.999			0.997	
Flt Protected		0.965			0.991			0.999				
Satd. Flow (prot)	0	1736	0	0	1650	0	0	3532	0	0	3529	0
Flt Permitted		0.965			0.991			0.999				
Satd. Flow (perm)	0	1736	0	0	1650	0	0	3532	0	0	3529	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		680			733			402			1249	
Travel Time (s)		18.5			16.7			11.0			34.1	
Volume (vph)	47	1	16	5	1	22	11	832	3	4	799	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	1	16	5	1	22	11	832	3	4	799	15
Lane Group Flow (vph)	0	64	0	0	28	0	0	846	0	0	818	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 47.8%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
10: William Street & Old Redwood Highway

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	47	1	16	5	1	22	11	832	3	4	799	15
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	47	1	16	5	1	22	11	832	3	4	799	15
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	64	28	427	419	404	415						
Volume Left (vph)	47	5	11	0	4	0						
Volume Right (vph)	16	22	0	3	0	15						
Hadj (s)	0.03	-0.40	0.05	0.03	0.04	0.01						
Departure Headway (s)	6.9	6.6	5.9	5.9	5.9	5.9						
Degree Utilization, x	0.12	0.05	0.70	0.68	0.66	0.68						
Capacity (veh/h)	496	503	595	595	597	593						
Control Delay (s)	10.8	9.9	20.3	19.5	18.7	19.3						
Approach Delay (s)	10.8	9.9	19.9		19.0							
Approach LOS	B	A	C		C							
Intersection Summary												
Delay			19.0									
HCM Level of Service			C									
Intersection Capacity Utilization			47.8%		ICU Level of Service		A					
Analysis Period (min)			15									

14: West Sierra Avenue & Old Redwood Highway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	100		0	0		200
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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			0.850			0.850						0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1863	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1863	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			6			427						57
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		253			263			215			372	
Travel Time (s)		6.9			7.2			5.9			10.1	
Volume (vph)	93	186	6	19	160	427	8	316	1	324	423	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	93	186	6	19	160	427	8	316	1	324	423	57
Lane Group Flow (vph)	93	186	6	19	160	427	8	317	0	324	423	57
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Detector Phases	5	2	2	1	6	6	3	8		7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	20.0
Total Split (s)	19.0	19.0	19.0	20.0	20.0	20.0	9.0	24.0	0.0	37.0	52.0	52.0
Total Split (%)	19.0%	19.0%	19.0%	20.0%	20.0%	20.0%	9.0%	24.0%	0.0%	37.0%	52.0%	52.0%
Maximum Green (s)	15.0	15.0	15.0	16.0	16.0	16.0	5.0	20.0		33.0	48.0	48.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
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
Recall Mode	None	None	None	None	Min	Min	None	None		None	Max	Max
Walk Time (s)					5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)					11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)					0	0		0			0	0
Act Effct Green (s)	9.6	19.4	19.4	6.5	12.2	12.2	5.1	26.8		19.6	49.1	49.1
Actuated g/C Ratio	0.11	0.24	0.24	0.07	0.15	0.15	0.06	0.33		0.24	0.60	0.60
v/c Ratio	0.46	0.42	0.02	0.15	0.58	0.71	0.08	0.52		0.77	0.38	0.06
Control Delay	39.1	30.6	17.5	41.3	38.9	9.4	45.9	31.5		32.9	12.6	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	39.1	30.6	17.5	41.3	38.9	9.4	45.9	31.5		32.9	12.6	3.8
LOS	D	C	B	D	D	A	D	C		C	B	A

Lanes, Volumes, Timings
14: West Sierra Avenue & Old Redwood Highway

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		33.1			18.2			31.9			20.2	
Approach LOS		C			B			C			C	
Stops (vph)	81	145	4	20	138	51	10	254		281	220	8
Fuel Used(gal)	1	2	0	0	2	2	0	4		4	3	0
CO Emissions (g/hr)	87	148	3	20	151	138	9	251		299	229	18
NOx Emissions (g/hr)	17	29	1	4	29	27	2	49		58	45	3
VOC Emissions (g/hr)	20	34	1	5	35	32	2	58		69	53	4
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 82.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 23.3

Intersection LOS: C

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 14: West Sierra Avenue & Old Redwood Highway

 ø1	 ø2	 ø3	 ø4
20 s	19 s	9 s	52 s
 ø5	 ø6	 ø7	 ø8
19 s	20 s	37 s	24 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Existing AM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999				0.866	
Flt Protected			0.950			
Satd. Flow (prot)	1861	0	1770	1863	1613	0
Flt Permitted			0.950			
Satd. Flow (perm)	1861	0	1770	1863	1613	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	414			1181	699	
Travel Time (s)	9.4			26.8	15.9	
Volume (vph)	530	3	230	615	1	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	530	3	230	615	1	111
Lane Group Flow (vph)	533	0	230	615	112	0
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	57.7%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
15: East Cotati Avenue & Charles Street

Existing AM

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱		↱	↱	↱	
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	530	3	230	615	1	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	530	3	230	615	1	111
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type					None	
Median storage (veh)						
Upstream signal (ft)	677					
pX, platoon unblocked			0.95		0.95	0.95
vC, conflicting volume			533		1606	532
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			507		1640	506
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			77		99	79
cM capacity (veh/h)			1002		81	537
Direction, Lane #	EB 1	WB 1	WB 2	NB 1		
Volume Total	533	230	615	112		
Volume Left	0	230	0	1		
Volume Right	3	0	0	111		
cSH	1700	1002	1700	511		
Volume to Capacity	0.31	0.23	0.36	0.22		
Queue Length 95th (ft)	0	22	0	21		
Control Delay (s)	0.0	9.7	0.0	14.0		
Lane LOS		A		B		
Approach Delay (s)	0.0	2.6		14.0		
Approach LOS				B		
Intersection Summary						
Average Delay		2.5				
Intersection Capacity Utilization		57.7%		ICU Level of Service	B	
Analysis Period (min)		15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.950			0.990			0.969			0.997	
Flt Protected		0.986			0.958			0.998			0.999	
Satd. Flow (prot)	0	1745	0	0	1767	0	0	1801	0	0	1855	0
Flt Permitted		0.986			0.958			0.998			0.999	
Satd. Flow (perm)	0	1745	0	0	1767	0	0	1801	0	0	1855	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			30			25	
Link Distance (ft)		712			699			1471			418	
Travel Time (s)		19.4			15.9			33.4			11.4	
Volume (vph)	12	15	16	197	12	16	15	295	93	6	431	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	15	16	197	12	16	15	295	93	6	431	9
Lane Group Flow (vph)	0	43	0	0	225	0	0	403	0	0	446	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 56.1% ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Stop			Stop			Stop			Stop		
Volume (vph)	12	15	16	197	12	16	15	295	93	6	431	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	15	16	197	12	16	15	295	93	6	431	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	43	225	403	446								
Volume Left (vph)	12	197	15	6								
Volume Right (vph)	16	16	93	9								
Hadj (s)	-0.13	0.17	-0.10	0.02								
Departure Headway (s)	6.7	6.4	5.4	5.5								
Degree Utilization, x	0.08	0.40	0.61	0.68								
Capacity (veh/h)	433	507	632	636								
Control Delay (s)	10.3	13.7	16.5	19.3								
Approach Delay (s)	10.3	13.7	16.5	19.3								
Approach LOS	B	B	C	C								
Intersection Summary												
Delay			16.8									
HCM Level of Service			C									
Intersection Capacity Utilization			56.1%	ICU Level of Service		B						
Analysis Period (min)			15									

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

Existing AM

											
Lane Group	WBL	WBR	NBL	NBR	SEL	SET	SER	NWL	NWT	NWR	
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0	0	50	0	50		0	50		0	
Storage Lanes	1	0	1	1	1		0	1		0	
Turning Speed (mph)	15	25	15	9	15		9	15		9	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	
Frt	0.865					0.999					
Flt Protected			0.950		0.950			0.950			
Satd. Flow (prot)	1611	0	1770	1863	1770	3536	0	1770	3539	0	
Flt Permitted			0.950		0.950			0.950			
Satd. Flow (perm)	1611	0	1770	1863	1770	3536	0	1770	3539	0	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Link Speed (mph)	30		25			25			25		
Link Distance (ft)	305		266			402			372		
Travel Time (s)	6.9		7.3			11.0			10.1		
Volume (vph)	0	16	1	0	10	804	6	7	829	0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj. Flow (vph)	0	16	1	0	10	804	6	7	829	0	
Lane Group Flow (vph)	16	0	1	0	10	810	0	7	829	0	
Sign Control	Stop		Stop			Free			Free		
Intersection Summary											
Area Type:	Other										
Control Type:	Unsignalized										
Intersection Capacity Utilization	39.6%				ICU Level of Service A						
Analysis Period (min)	15										

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		1
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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					0.996			0.890				0.850
Flt Protected	0.950							0.991		0.950		
Satd. Flow (prot)	1770	1863	0	0	1855	0	0	1643	0	1770	0	1583
Flt Permitted	0.950							0.991		0.950		
Satd. Flow (perm)	1770	1863	0	0	1855	0	0	1643	0	1770	0	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		263			414			283			310	
Travel Time (s)		7.2			9.4			7.7			7.0	
Volume (vph)	1	508	0	0	600	18	2	0	9	16	0	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	508	0	0	600	18	2	0	9	16	0	4
Lane Group Flow (vph)	1	508	0	0	618	0	0	11	0	16	0	4
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 49.3% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

143: East Cotati Avenue & La Plaza

Existing AM

																						
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR										
Lane Configurations																						
Sign Control	Free			Free			Stop			Stop												
Grade	0%			0%			0%			0%												
Volume (veh/h)	1	508	0	0	600	18	2	0	9	16	0	4										
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00										
Hourly flow rate (vph)	1	508	0	0	600	18	2	0	9	16	0	4										
Pedestrians																						
Lane Width (ft)																						
Walking Speed (ft/s)																						
Percent Blockage																						
Right turn flare (veh)																						
Median type	None						None															
Median storage veh																						
Upstream signal (ft)	263																					
pX, platoon unblocked				0.92			0.92			0.92	0.92	0.92	0.92									
vC, conflicting volume	618			508				1123	1128	508	1128	1119	609									
vC1, stage 1 conf vol																						
vC2, stage 2 conf vol																						
vCu, unblocked vol	618			465				1134	1139	465	1139	1130	609									
tC, single (s)	4.1			4.1				7.1	6.5	6.2	7.1	6.5	6.2									
tC, 2 stage (s)																						
tF (s)	2.2			2.2				3.5	4.0	3.3	3.5	4.0	3.3									
p0 queue free %	100			100				99	100	98	90	100	99									
cM capacity (veh/h)	962			1008				164	185	549	161	187	495									
Direction, Lane #	EB 1	EB 2	WB 1	NB 1	SB 1	SB 2																
Volume Total	1	508	618	11	16	4																
Volume Left	1	0	0	2	16	0																
Volume Right	0	0	18	9	0	4																
cSH	962	1700	1700	385	161	495																
Volume to Capacity	0.00	0.30	0.36	0.03	0.10	0.01																
Queue Length 95th (ft)	0	0	0	2	8	1																
Control Delay (s)	8.7	0.0	0.0	14.6	29.8	12.3																
Lane LOS	A			B	D	B																
Approach Delay (s)	0.0	0.0		14.6	26.3																	
Approach LOS			B		D																	
Intersection Summary																						
Average Delay	0.6																					
Intersection Capacity Utilization	49.3%			ICU Level of Service			A															
Analysis Period (min)	15																					

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

Existing AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		50	0		50	50		0	50		0
Storage Lanes	0		0	0		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.887						0.998				
Flt Protected											0.999	
Satd. Flow (prot)	0	1652	0	0	1863	0	0	1859	0	0	1861	0
Flt Permitted											0.999	
Satd. Flow (perm)	0	1652	0	0	1863	0	0	1859	0	0	1861	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		293			283			418			215	
Travel Time (s)		8.0			7.7			11.4			5.9	
Volume (vph)	0	1	5	0	0	0	0	325	5	8	441	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	5	0	0	0	0	325	5	8	441	0
Lane Group Flow (vph)	0	6	0	0	0	0	0	330	0	0	449	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	39.6%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

144: La Plaza & Old Redwood Highway

Existing AM

Movement												
Lane Configurations												
Sign Control	Stop 				Stop 				Free 		Free 	
Grade	0%				0%				0%		0%	
Volume (veh/h)	0	1	5	0	0	0	0	325	5	8	441	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	5	0	0	0	0	325	5	8	441	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)											215	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87		0.87					
vC, conflicting volume	784	787	441	790	784	328	441	330				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	751	754	355	758	751	328	355	330				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	100	100	99	100	100	100	100	99				
cM capacity (veh/h)	282	291	597	276	292	714	1043	1229				
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	0	330	449								
Volume Left	0	0	0	8								
Volume Right	5	0	5	0								
cSH	508	1700	1043	1229								
Volume to Capacity	0.01	0.00	0.00	0.01								
Queue Length 95th (ft)	1	0	0	0								
Control Delay (s)	12.2	0.0	0.0	0.2								
Lane LOS	B	A		A								
Approach Delay (s)	12.2	0.0	0.0	0.2								
Approach LOS	B	A										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			39.6%		ICU Level of Service				A			
Analysis Period (min)			15									

Lanes, Volumes, Timings
145: La Plaza & West Sierra Avenue

Existing AM

Lane Group												
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	50		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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	0.983						0.999				0.995	
Flt Protected	0.970										0.999	
Satd. Flow (prot)	0	1776	0	0	1863	0	0	1861	0	0	1852	0
Flt Permitted	0.970										0.999	
Satd. Flow (perm)	0	1776	0	0	1863	0	0	1861	0	0	1852	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	25				25				25		25	
Link Distance (ft)	298				293				433		253	
Travel Time (s)	8.1				8.0				11.8		6.9	
Volume (vph)	5	2	1	0	0	0	2	280	3	4	212	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	2	1	0	0	0	2	280	3	4	212	9
Lane Group Flow (vph)	0	8	0	0	0	0	0	285	0	0	225	0
Sign Control	Stop				Stop				Free		Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 26.0%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

145: La Plaza & West Sierra Avenue

Existing AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	2	1	0	0	0	2	280	3	4	212	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	2	1	0	0	0	2	280	3	4	212	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												253
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	510	512	216	512	514	282	221	283				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471	473	154	473	476	282	159	283				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	99	100	100	100	100	100	100	100				
cM capacity (veh/h)	464	452	826	461	450	757	1316	1279				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	0	285	225								
Volume Left	5	0	2	4								
Volume Right	1	0	3	9								
cSH	488	1700	1316	1279								
Volume to Capacity	0.02	0.00	0.00	0.00								
Queue Length 95th (ft)	1	0	0	0								
Control Delay (s)	12.5	0.0	0.1	0.2								
Lane LOS	B	A	A	A								
Approach Delay (s)	12.5	0.0	0.1	0.2								
Approach LOS	B	A										
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization	26.0%		ICU Level of Service				A					
Analysis Period (min)	15											

Existing PM Conditions

Synchro

Lanes, Volumes, Timings
3: Old Redwood Highway & Commerce Boulevard

Existing PM

	↑	↗	↖	↓	↙	↘
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations	↑	↗			↙	↘
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50
Trailing Detector (ft)	0	0			0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected					0.950	
Satd. Flow (prot)	1863	1583	0	0	1770	1583
Flt Permitted					0.950	
Satd. Flow (perm)	1863	1583	0	0	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						74
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	478			451	146	
Travel Time (s)	10.9			10.3	3.3	
Volume (vph)	549	745	0	0	475	74
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	549	745	0	0	475	74
Lane Group Flow (vph)	549	745	0	0	475	74
Turn Type	custom				Perm	
Protected Phases	2	2			1	
Permitted Phases		1				1
Detector Phases	2	2			1	1
Minimum Initial (s)	4.0	4.0			4.0	4.0
Minimum Split (s)	20.0	20.0			20.0	20.0
Total Split (s)	55.0	55.0	0.0	0.0	45.0	45.0
Total Split (%)	55.0%	55.0%	0.0%	0.0%	45.0%	45.0%
Maximum Green (s)	51.0	51.0			41.0	41.0
Yellow Time (s)	3.5	3.5			3.5	3.5
All-Red Time (s)	0.5	0.5			0.5	0.5
Lead/Lag	Lag	Lag			Lead	Lead
Lead-Lag Optimize?	Yes	Yes			Yes	Yes
Vehicle Extension (s)	3.0	3.0			3.0	3.0
Recall Mode	Min	Min			Min	Min
Walk Time (s)	5.0	5.0			5.0	5.0
Flash Dont Walk (s)	11.0	11.0			11.0	11.0
Pedestrian Calls (#/hr)	0	0			0	0
Act Effct Green (s)	23.6	53.1			19.7	19.7
Actuated g/C Ratio	0.44	1.00			0.37	0.37
v/c Ratio	0.66	0.47			0.72	0.12
Control Delay	14.0	1.0			17.6	4.4
Queue Delay	0.1	0.0			0.0	0.0
Total Delay	14.1	1.0			17.6	4.4
LOS	B	A			B	A
Approach Delay	6.5				15.8	
Approach LOS	A				B	

Lanes, Volumes, Timings
 3: Old Redwood Highway & Commerce Boulevard

Existing PM

	↑	↗	↖	↓	↙	↘
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Stops (vph)	367	0			351	12
Fuel Used(gal)	6	3			7	1
CO Emissions (g/hr)	394	205			511	49
NOx Emissions (g/hr)	77	40			99	10
VOC Emissions (g/hr)	91	47			118	11
Dilemma Vehicles (#)	0	0			0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 53.1

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 9.3

Intersection LOS: A

Intersection Capacity Utilization 61.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 3: Old Redwood Highway & Commerce Boulevard

 ø1	 ø2
45 s	55 s

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	150		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.850	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			242								147	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		435			449			617			731	
Travel Time (s)		8.5			8.7			16.8			19.9	
Volume (vph)	0	693	242	89	900	0	0	0	0	587	0	176
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	693	242	89	900	0	0	0	0	587	0	176
Lane Group Flow (vph)	0	693	242	89	900	0	0	0	0	587	176	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	40.0	40.0	23.0	63.0	0.0	0.0	0.0	0.0	37.0	37.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	23.0%	63.0%	0.0%	0.0%	0.0%	0.0%	37.0%	37.0%	0.0%
Maximum Green (s)		36.0	36.0	19.0	59.0					33.0	33.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		51.1	51.1	16.4	69.5					22.5	22.5	
Actuated g/C Ratio		0.51	0.51	0.16	0.70					0.22	0.22	
v/c Ratio		0.38	0.26	0.31	0.37					0.76	0.37	
Control Delay		10.8	3.0	45.3	12.0					37.4	8.6	
Queue Delay		0.0	0.0	0.0	0.3					0.0	0.0	
Total Delay		10.8	3.0	45.3	12.3					37.4	8.6	
LOS		B	A	D	B					D	A	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.8			15.2						30.7	
Approach LOS		A			B						C	
Stops (vph)		343	27	70	557					526	37	
Fuel Used(gal)		6	1	2	9					10	2	
CO Emissions (g/hr)		439	78	114	651					709	108	
NOx Emissions (g/hr)		85	15	22	127					138	21	
VOC Emissions (g/hr)		102	18	27	151					164	25	
Dilemma Vehicles (#)		24	0	0	65					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 64 (64%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 17.4

Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø2	 ø1	 ø4
40 s	23 s	37 s
 ø6		
63 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Existing PM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	1770	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						44
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	449			431	524	
Travel Time (s)	8.7			8.4	14.3	
Volume (vph)	1265	0	0	628	358	172
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1265	0	0	628	358	172
Lane Group Flow (vph)	1265	0	0	628	358	172
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	57.0	0.0	0.0	57.0	43.0	43.0
Total Split (%)	57.0%	0.0%	0.0%	57.0%	43.0%	43.0%
Maximum Green (s)	53.0			53.0	39.0	39.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	67.6			67.6	24.4	24.4
Actuated g/C Ratio	0.68			0.68	0.24	0.24
v/c Ratio	0.53			0.26	0.83	0.41
Control Delay	2.7			5.3	37.6	22.8
Queue Delay	0.1			0.0	0.0	0.0
Total Delay	2.8			5.3	37.6	22.8
LOS	A			A	D	C
Approach Delay	2.8			5.3	32.8	
Approach LOS	A			A	C	

8: Gravenstein Highway & NB US 101 Off-ramp

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	207			234	325	101
Fuel Used(gal)	6			4	6	2
CO Emissions (g/hr)	444			307	391	136
NOx Emissions (g/hr)	86			60	76	27
VOC Emissions (g/hr)	103			71	91	32
Dilemma Vehicles (#)	34			27	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 44 (44%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 10.0

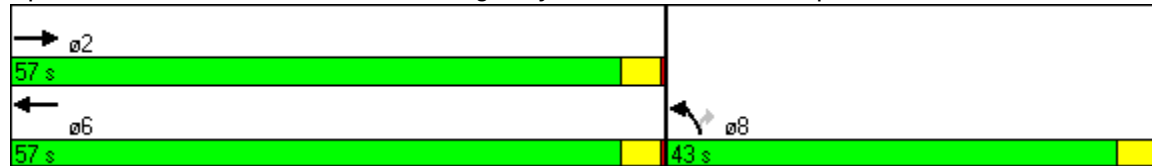
Intersection LOS: B

Intersection Capacity Utilization 61.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	100		0	450		0	0		150
Storage Lanes	1		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt			0.850		0.927			0.991				0.850
Flt Protected	0.950	0.962		0.950			0.950			0.950		
Satd. Flow (prot)	1681	1702	1583	1770	1727	0	1610	3360	0	1770	1863	1583
Flt Permitted	0.950	0.962		0.950			0.950			0.950		
Satd. Flow (perm)	1681	1702	1583	1770	1727	0	1610	3360	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			446		37			6				235
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		431			249			1249			478	
Travel Time (s)		8.4			4.9			28.4			10.9	
Volume (vph)	577	70	790	53	39	37	333	680	42	16	220	235
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	577	70	790	53	39	37	333	680	42	16	220	235
Lane Group Flow (vph)	315	332	790	53	76	0	333	722	0	16	220	235
Turn Type	Split		pm+ov	Split			Split			Split		Perm
Protected Phases	7	7	5	3	3		5	5		1	1	
Permitted Phases			7									1
Detector Phases	7	7	5	3	3		5	5		1	1	1
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	20.0	20.0		8.0	8.0		8.0	8.0	8.0
Total Split (s)	29.0	29.0	32.0	20.0	20.0	0.0	32.0	32.0	0.0	19.0	19.0	19.0
Total Split (%)	29.0%	29.0%	32.0%	20.0%	20.0%	0.0%	32.0%	32.0%	0.0%	19.0%	19.0%	19.0%
Maximum Green (s)	25.0	25.0	28.0	16.0	16.0		28.0	28.0		15.0	15.0	15.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	None		None	None	None
Walk Time (s)				5.0	5.0							
Flash Dont Walk (s)				11.0	11.0							
Pedestrian Calls (#/hr)				0	0							
Act Effct Green (s)	24.3	24.3	62.9	8.3	8.3		37.9	37.9		15.4	15.4	15.4
Actuated g/C Ratio	0.24	0.24	0.63	0.08	0.08		0.38	0.38		0.15	0.15	0.15
v/c Ratio	0.77	0.80	0.68	0.36	0.43		0.55	0.57		0.06	0.77	0.53
Control Delay	29.5	30.8	11.9	44.1	26.8		32.4	29.4		36.2	55.9	9.6
Queue Delay	0.2	0.3	0.1	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	29.7	31.1	12.0	44.1	26.8		32.4	29.4		36.2	55.9	9.6
LOS	C	C	B	D	C		C	C		D	E	A

9: Gravenstein Highway & Old Redwood Highway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		20.3			33.9			30.4			32.1	
Approach LOS		C			C			C			C	
Stops (vph)	272	295	432	50	41		267	573		16	194	31
Fuel Used(gal)	5	5	8	1	1		7	15		0	4	2
CO Emissions (g/hr)	344	373	533	66	60		483	1015		19	307	105
NOx Emissions (g/hr)	67	73	104	13	12		94	197		4	60	21
VOC Emissions (g/hr)	80	86	123	15	14		112	235		4	71	24
Dilemma Vehicles (#)	0	14	0	0	3		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 6 (6%), Referenced to phase 6:, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 74.8%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

 ø1	 ø5	 ø3	 ø7
19 s	32 s	20 s	29 s

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	0		0	1		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.963			0.889			0.999			0.993	
Flt Protected		0.966			0.995			0.999			0.999	
Satd. Flow (prot)	0	1733	0	0	1648	0	0	3532	0	0	3511	0
Flt Permitted		0.966			0.995			0.999			0.999	
Satd. Flow (perm)	0	1733	0	0	1648	0	0	3532	0	0	3511	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		680			733			402			1249	
Travel Time (s)		18.5			16.7			11.0			28.4	
Volume (vph)	67	2	26	3	2	23	12	967	6	22	997	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	2	26	3	2	23	12	967	6	22	997	49
Lane Group Flow (vph)	0	95	0	0	28	0	0	985	0	0	1068	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 63.7% ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis 10: William Street & Old Redwood Highway

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	67	2	26	3	2	23	12	967	6	22	997	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	67	2	26	3	2	23	12	967	6	22	997	49
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	95	28	496	490	521	548						
Volume Left (vph)	67	3	12	0	22	0						
Volume Right (vph)	26	23	0	6	0	49						
Hadj (s)	0.01	-0.44	0.05	0.03	0.06	-0.03						
Departure Headway (s)	7.1	7.0	6.5	6.5	6.5	6.4						
Degree Utilization, x	0.19	0.05	0.90	0.89	0.93	0.97						
Capacity (veh/h)	496	490	536	546	553	560						
Control Delay (s)	11.7	10.4	42.2	40.0	47.3	54.2						
Approach Delay (s)	11.7	10.4	41.1		50.8							
Approach LOS	B	B	E		F							
Intersection Summary												
Delay			44.2									
HCM Level of Service			E									
Intersection Capacity Utilization			63.7%		ICU Level of Service		B					
Analysis Period (min)			15									

Lanes, Volumes, Timings
14: West Sierra Ave & Old Redwood Highway

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	100		0	100		0	0		200
Storage Lanes	1		1	1		1	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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			0.850			0.850			0.997			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1857	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1857	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			4			370			1			132
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		253			263			215			372	
Travel Time (s)		6.9			7.2			5.9			10.1	
Volume (vph)	87	283	6	10	212	370	17	498	10	432	443	132
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	87	283	6	10	212	370	17	498	10	432	443	132
Lane Group Flow (vph)	87	283	6	10	212	370	17	508	0	432	443	132
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						4
Detector Phases	5	2	2	1	6	6	3	8		7	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	20.0
Total Split (s)	19.0	19.0	19.0	20.0	20.0	20.0	9.0	24.0	0.0	37.0	52.0	52.0
Total Split (%)	19.0%	19.0%	19.0%	20.0%	20.0%	20.0%	9.0%	24.0%	0.0%	37.0%	52.0%	52.0%
Maximum Green (s)	15.0	15.0	15.0	16.0	16.0	16.0	5.0	20.0		33.0	48.0	48.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	0.5
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
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
Recall Mode	None	None	None	None	Min	Min	None	None		None	Max	Max
Walk Time (s)					5.0	5.0		5.0			5.0	5.0
Flash Dont Walk (s)					11.0	11.0		11.0			11.0	11.0
Pedestrian Calls (#/hr)					0	0		0			0	0
Act Effct Green (s)	9.5	24.5	24.5	6.1	15.2	15.2	5.0	23.5		24.8	49.2	49.2
Actuated g/C Ratio	0.11	0.28	0.28	0.06	0.17	0.17	0.05	0.27		0.29	0.57	0.57
v/c Ratio	0.46	0.54	0.01	0.09	0.65	0.63	0.18	1.01		0.86	0.42	0.14
Control Delay	41.2	32.0	19.7	45.1	44.7	9.3	48.8	80.1		36.2	14.6	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	41.2	32.0	19.7	45.1	44.7	9.3	48.8	80.1		36.2	14.6	3.0
LOS	D	C	B	D	D	A	D	F		D	B	A

Lanes, Volumes, Timings
14: West Sierra Ave & Old Redwood Highway

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		34.0			22.6			79.1			22.4	
Approach LOS		C			C			E			C	
Stops (vph)	77	229	4	12	185	45	19	359		384	249	13
Fuel Used(gal)	1	3	0	0	3	2	0	11		6	4	1
CO Emissions (g/hr)	85	233	4	11	218	119	19	741		421	257	38
NOx Emissions (g/hr)	17	45	1	2	42	23	4	144		82	50	7
VOC Emissions (g/hr)	20	54	1	3	50	28	4	172		98	60	9
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 87

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 36.1

Intersection LOS: D

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 14: West Sierra Ave & Old Redwood Highway

 ø1	 ø2	 ø3	 ø4
20 s	19 s	9 s	52 s
 ø5	 ø6	 ø7	 ø8
19 s	20 s	37 s	24 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Existing PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Turning Speed (mph)		9	15		15	15
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950			
Satd. Flow (prot)	1861	0	1770	1863	1863	1583
Flt Permitted			0.950			
Satd. Flow (perm)	1861	0	1770	1863	1863	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	414			1174	699	
Travel Time (s)	9.4			26.7	15.9	
Volume (vph)	824	6	129	621	0	231
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	824	6	129	621	0	231
Lane Group Flow (vph)	830	0	129	621	0	231
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	64.7%			ICU Level of Service C		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

Existing PM

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗		↖	↗	↖	↗
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Volume (veh/h)	824	6	129	621	0	231
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	824	6	129	621	0	231
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			830		1706	827
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			830		1706	827
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			84		100	38
cM capacity (veh/h)			802		84	371
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2	
Volume Total	830	129	621	0	231	
Volume Left	0	129	0	0	0	
Volume Right	6	0	0	0	231	
cSH	1700	802	1700	1700	371	
Volume to Capacity	0.49	0.16	0.37	0.00	0.62	
Queue Length 95th (ft)	0	14	0	0	100	
Control Delay (s)	0.0	10.3	0.0	0.0	29.4	
Lane LOS		B		A	D	
Approach Delay (s)	0.0	1.8		29.4		
Approach LOS				D		
Intersection Summary						
Average Delay			4.5			
Intersection Capacity Utilization			64.7%		ICU Level of Service	C
Analysis Period (min)			15			

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.954			0.976			0.964			0.993	
Flt Protected		0.986			0.966			0.999			0.997	
Satd. Flow (prot)	0	1752	0	0	1756	0	0	1794	0	0	1844	0
Flt Permitted		0.986			0.966			0.999			0.997	
Satd. Flow (perm)	0	1752	0	0	1756	0	0	1794	0	0	1844	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			30			25	
Link Distance (ft)		712			699			1471			418	
Travel Time (s)		19.4			15.9			33.4			11.4	
Volume (vph)	18	24	22	113	18	28	12	485	182	28	400	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	24	22	113	18	28	12	485	182	28	400	23
Lane Group Flow (vph)	0	64	0	0	159	0	0	679	0	0	451	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	62.4%						ICU Level of Service B					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	24	22	113	18	28	12	485	182	28	400	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	24	22	113	18	28	12	485	182	28	400	23
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	64	159	679	451								
Volume Left (vph)	18	113	12	28								
Volume Right (vph)	22	28	182	23								
Hadj (s)	-0.12	0.07	-0.12	0.02								
Departure Headway (s)	7.2	7.0	5.4	5.7								
Degree Utilization, x	0.13	0.31	1.01	0.72								
Capacity (veh/h)	449	483	679	614								
Control Delay (s)	11.3	13.1	60.4	21.9								
Approach Delay (s)	11.3	13.1	60.4	21.9								
Approach LOS	B	B	F	C								
Intersection Summary												
Delay			39.7									
HCM Level of Service			E									
Intersection Capacity Utilization			62.4%	ICU Level of Service		B						
Analysis Period (min)			15									

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Hwy

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Turning Speed (mph)	15		9	15		25	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.925			0.865			0.998			0.996	
Flt Protected		0.984					0.950			0.950		
Satd. Flow (prot)	0	1695	0	0	1611	0	1770	3532	0	1770	3525	0
Flt Permitted		0.984					0.950			0.950		
Satd. Flow (perm)	0	1695	0	0	1611	0	1770	3532	0	1770	3525	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		266			305			372			402	
Travel Time (s)		7.3			6.9			10.1			11.0	
Volume (vph)	3	1	5	0	0	43	4	940	11	75	1002	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	1	5	0	0	43	4	940	11	75	1002	26
Lane Group Flow (vph)	0	9	0	0	43	0	4	951	0	75	1028	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 45.2% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

141: La Plaza & Old Redwood Hwy

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	1	5	0	0	43	4	940	11	75	1002	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	1	5	0	0	43	4	940	11	75	1002	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)								372				
pX, platoon unblocked												
vC, conflicting volume	1686	2124	514	1610	2132	476	1028			951		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1686	2124	514	1610	2132	476	1028			951		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	94	98	99	100	100	92	99			90		
cM capacity (veh/h)	51	44	505	62	44	536	671			718		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	43	4	627	324	75	668	360				
Volume Left	3	0	4	0	0	75	0	0				
Volume Right	5	43	0	0	11	0	0	26				
cSH	99	536	671	1700	1700	718	1700	1700				
Volume to Capacity	0.09	0.08	0.01	0.37	0.19	0.10	0.39	0.21				
Queue Length 95th (ft)	7	7	0	0	0	9	0	0				
Control Delay (s)	45.0	12.3	10.4	0.0	0.0	10.6	0.0	0.0				
Lane LOS	E	B	B			B						
Approach Delay (s)	45.0	12.3	0.0			0.7						
Approach LOS	E	B										
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			45.2%			ICU Level of Service		A				
Analysis Period (min)			15									

Lanes, Volumes, Timings
143: East Cotati Ave & East Cotati Avenue

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	50		0		0	0	0	0	
Storage Lanes	1		0	1		0		1	0	0	1	
Turning Speed (mph)	15		9	15		9	15	15	9	15	9	9
Lane Util. Factor	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					0.990			0.878			0.850	
Flt Protected	0.950			0.950				0.995		0.950		
Satd. Flow (prot)	1770	1863	0	1770	1844	0	0	1627	0	1770	1583	0
Flt Permitted	0.950			0.950				0.995		0.950		
Satd. Flow (perm)	1770	1863	0	1770	1844	0	0	1627	0	1770	1583	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25		30		
Link Distance (ft)		263			414			283		310		
Travel Time (s)		7.2			9.4			7.7		7.0		
Volume (vph)	4	721	0	1	583	42	2	2	37	71	0	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	721	0	1	583	42	2	2	37	71	0	7
Lane Group Flow (vph)	4	721	0	1	625	0	0	41	0	71	7	0
Sign Control		Free			Free			Stop		Stop		
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	55.2%				ICU Level of Service B							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
143: East Cotati Ave & East Cotati Avenue

Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER	SER2
Lane Configurations												
Sign Control	Free			Free				Stop		Stop		
Grade	0%			0%				0%		0%		
Volume (veh/h)	4	721	0	1	583	42	2	2	37	71	0	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	721	0	1	583	42	2	2	37	71	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type							None		None			
Median storage veh												
Upstream signal (ft)	263											
pX, platoon unblocked				0.87				0.87	0.87	0.87	0.87	0.87
vC, conflicting volume	625			721			1321	1356	721	1373	1335	604
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	625			679			1370	1410	679	1429	1386	604
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	98	91	18	100	99
cM capacity (veh/h)	956			793			106	120	392	87	124	498
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SE 1	SE 2					
Volume Total	4	721	1	625	41	71	7					
Volume Left	4	0	1	0	2	71	0					
Volume Right	0	0	0	42	37	0	7					
cSH	956	1700	793	1700	315	87	498					
Volume to Capacity	0.00	0.42	0.00	0.37	0.13	0.82	0.01					
Queue Length 95th (ft)	0	0	0	0	11	106	1					
Control Delay (s)	8.8	0.0	9.5	0.0	18.1	135.2	12.3					
Lane LOS	A		A		C	F	B					
Approach Delay (s)	0.0	0.0		18.1		124.1						
Approach LOS					C	F						
Intersection Summary												
Average Delay			7.1									
Intersection Capacity Utilization	55.2%		ICU Level of Service				B					
Analysis Period (min)	15											

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

Existing PM

									
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	SBR2	SEL	SER
Lane Configurations									
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	250			50		50	0
Storage Lanes	1	0	0			1		1	0
Turning Speed (mph)	15	9	25			9	9	15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.907					0.850			0.850
Flt Protected	0.985		0.950					0.950	
Satd. Flow (prot)	1664	0	1770	1863	1863	1583	0	1770	1583
Flt Permitted	0.985		0.950					0.950	
Satd. Flow (perm)	1664	0	1770	1863	1863	1583	0	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	25			25	25			25	
Link Distance (ft)	293			418	283			215	
Travel Time (s)	8.0			11.4	7.7			5.9	
Volume (vph)	5	11	516	14	2	0	1	22	440
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	11	516	14	2	0	1	22	440
Lane Group Flow (vph)	16	0	516	14	2	1	0	22	440
Sign Control	Stop			Free	Stop			Free	
Intersection Summary									
Area Type:	Other								
Control Type:	Unsignalized								
Intersection Capacity Utilization	69.2%			ICU Level of Service C					
Analysis Period (min)	15								

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
145: La Plaza & West Sierra Ave

Existing PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.958			0.865			0.998			0.996	
Flt Protected		0.969						0.999			0.998	
Satd. Flow (prot)	0	1729	0	0	1611	0	0	1857	0	0	1852	0
Flt Permitted		0.969						0.999			0.998	
Satd. Flow (perm)	0	1729	0	0	1611	0	0	1857	0	0	1852	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		298			293			433			253	
Travel Time (s)		8.1			8.0			11.8			6.9	
Volume (vph)	29	2	14	0	0	1	4	345	5	18	331	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	2	14	0	0	1	4	345	5	18	331	12
Lane Group Flow (vph)	0	45	0	0	1	0	0	354	0	0	361	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	45.2%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

145: La Plaza & West Sierra Ave

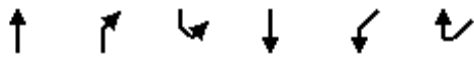
Existing PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	29	2	14	0	0	1	4	345	5	18	331	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	2	14	0	0	1	4	345	5	18	331	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											253	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	730	731	337	744	734	348	343			350		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	699	700	262	714	704	348	268			350		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	91	99	98	100	100	100	100			99		
cM capacity (veh/h)	314	320	698	299	319	696	1163			1209		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	45	1	354	361								
Volume Left	29	0	4	18								
Volume Right	14	1	5	12								
cSH	379	696	1163	1209								
Volume to Capacity	0.12	0.00	0.00	0.01								
Queue Length 95th (ft)	10	0	0	1								
Control Delay (s)	15.8	10.2	0.1	0.5								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.8	10.2	0.1	0.5								
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			45.2%	ICU Level of Service		A						
Analysis Period (min)			15									

No Project 2025 AM
Conditions
Synchro

Lanes, Volumes, Timings
3: Old Redwood Highway & Commerce Boulevard

No Project AM

						
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		100	0		0	0
Storage Lanes		1	0		1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50
Trailing Detector (ft)	0	0			0	0
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected					0.950	
Satd. Flow (prot)	1863	1583	0	0	1770	1583
Flt Permitted					0.950	
Satd. Flow (perm)	1863	1583	0	0	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		100				149
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	463			451	127	
Travel Time (s)	10.5			10.3	2.9	
Volume (vph)	944	420	0	0	436	176
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	944	420	0	0	436	176
Lane Group Flow (vph)	944	420	0	0	436	176
Turn Type		Free				Perm
Protected Phases	2				1	
Permitted Phases		Free				1
Detector Phases	2				1	1
Minimum Initial (s)	4.0				4.0	4.0
Minimum Split (s)	20.0				20.0	20.0
Total Split (s)	54.0	0.0	0.0	0.0	26.0	26.0
Total Split (%)	67.5%	0.0%	0.0%	0.0%	32.5%	32.5%
Maximum Green (s)	50.0				22.0	22.0
Yellow Time (s)	3.5				3.5	3.5
All-Red Time (s)	0.5				0.5	0.5
Lead/Lag	Lead				Lag	Lag
Lead-Lag Optimize?	Yes				Yes	Yes
Vehicle Extension (s)	3.0				3.0	3.0
Recall Mode	Min				Min	Min
Walk Time (s)	5.0				5.0	5.0
Flash Dont Walk (s)	11.0				11.0	11.0
Pedestrian Calls (#/hr)	0				0	0
Act Effct Green (s)	49.5	80.0			22.5	22.5
Actuated g/C Ratio	0.62	1.00			0.28	0.28
v/c Ratio	0.82	0.27			0.88	0.32
Control Delay	14.0	0.3			45.4	7.6
Queue Delay	0.0	0.0			0.0	0.0
Total Delay	14.1	0.3			45.4	7.6
LOS	B	A			D	A

Lanes, Volumes, Timings
 3: Old Redwood Highway & Commerce Boulevard

No Project AM

	↑	↗	↖	↓	↙	↘
Lane Group	NBT	NBR	SBL	SBT	SWL	SWR
Approach Delay	9.8				34.5	
Approach LOS	A				C	
Stops (vph)	472	0			369	38
Fuel Used(gal)	9	2			9	2
CO Emissions (g/hr)	609	108			653	126
NOx Emissions (g/hr)	119	21			127	25
VOC Emissions (g/hr)	141	25			151	29
Dilemma Vehicles (#)	0	0			0	0

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 37 (46%), Referenced to phase 6:, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 17.5

Intersection LOS: B

Intersection Capacity Utilization 80.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Old Redwood Highway & Commerce Boulevard



7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.852	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			502								75	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	808	502	164	1131	0	0	0	0	534	4	368
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	808	502	164	1131	0	0	0	0	534	4	368
Lane Group Flow (vph)	0	808	502	164	1131	0	0	0	0	534	372	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	32.0	32.0	17.0	49.0	0.0	0.0	0.0	0.0	31.0	31.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	21.3%	61.3%	0.0%	0.0%	0.0%	0.0%	38.8%	38.8%	0.0%
Maximum Green (s)		28.0	28.0	13.0	45.0					27.0	27.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		35.5	35.5	11.6	51.1					20.9	20.9	
Actuated g/C Ratio		0.44	0.44	0.14	0.64					0.26	0.26	
v/c Ratio		0.51	0.51	0.64	0.50					0.60	0.79	
Control Delay		10.1	2.2	45.1	6.8					26.3	26.2	
Queue Delay		0.0	0.4	0.0	0.2					0.0	0.0	
Total Delay		10.1	2.6	45.1	7.0					26.3	26.2	
LOS		B	A	D	A					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		7.2			11.8						26.3	
Approach LOS		A			B						C	
Stops (vph)		400	45	146	420					437	271	
Fuel Used(gal)		7	2	3	8					8	5	
CO Emissions (g/hr)		509	153	220	593					550	373	
NOx Emissions (g/hr)		99	30	43	115					107	73	
VOC Emissions (g/hr)		118	36	51	137					127	86	
Dilemma Vehicles (#)		52	0	0	81					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 45 (56%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
17 s	32 s	31 s
 ø6		
49 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

No Project AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.91	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	5085	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	5085	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						51
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1342	0	0	771	524	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1342	0	0	771	524	111
Lane Group Flow (vph)	1342	0	0	771	524	111
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	51.0	0.0	0.0	51.0	29.0	29.0
Total Split (%)	63.8%	0.0%	0.0%	63.8%	36.3%	36.3%
Maximum Green (s)	47.0			47.0	25.0	25.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	54.7			54.7	17.3	17.3
Actuated g/C Ratio	0.68			0.68	0.22	0.22
v/c Ratio	0.55			0.22	0.71	0.29
Control Delay	2.4			2.4	30.0	15.2
Queue Delay	0.1			0.0	0.0	0.0
Total Delay	2.5			2.4	30.0	15.2
LOS	A			A	C	B
Approach Delay	2.5			2.4	27.4	
Approach LOS	A			A	C	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

No Project AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	127			225	460	51
Fuel Used(gal)	6			4	7	1
CO Emissions (g/hr)	425			295	511	72
NOx Emissions (g/hr)	83			57	99	14
VOC Emissions (g/hr)	99			68	118	17
Dilemma Vehicles (#)	73			4	0	0

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 51 (64%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 8.3

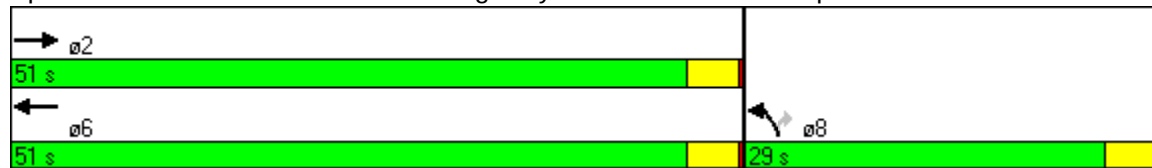
Intersection LOS: A

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	300		0	150		0
Storage Lanes	2		1	1		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Turning Speed (mph)	15		15	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	0.95	0.95
Frt		0.863	0.850		0.939			0.998			0.904	
Flt Protected	0.950			0.950			0.950	0.998		0.950		
Satd. Flow (prot)	3433	1527	1504	1770	1749	0	1610	3377	0	1770	3199	0
Flt Permitted	0.950			0.950			0.950	0.998		0.950		
Satd. Flow (perm)	3433	1527	1504	1770	1749	0	1610	3377	0	1770	3199	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		328	390		33			1			277	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		384			249			1268			463	
Travel Time (s)		7.5			4.9			28.8			10.5	
Volume (vph)	518	31	904	51	50	34	444	812	10	1	158	277
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	518	31	904	51	50	34	444	812	10	1	158	277
Lane Group Flow (vph)	518	359	576	51	84	0	408	858	0	1	435	0
Turn Type	Split		pm+ov	Split			Split			Split		
Protected Phases	5	5	8	1	1		8	8		4	4	
Permitted Phases			5									
Detector Phases	5	5	8	1	1		8	8		4	4	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	8.0	20.0	8.0	8.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	31.0	9.0	9.0	0.0	31.0	31.0	0.0	20.0	20.0	0.0
Total Split (%)	25.0%	25.0%	38.8%	11.3%	11.3%	0.0%	38.8%	38.8%	0.0%	25.0%	25.0%	0.0%
Maximum Green (s)	16.0	16.0	27.0	5.0	5.0		27.0	27.0		16.0	16.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	Min	None	None		Min	Min		Min	Min	
Walk Time (s)			5.0				5.0	5.0		5.0	5.0	
Flash Dont Walk (s)			11.0				11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)			0				0	0		0	0	
Act Effct Green (s)	19.6	19.6	47.3	5.5	5.5		26.9	26.9		14.0	14.0	
Actuated g/C Ratio	0.24	0.24	0.59	0.07	0.07		0.34	0.34		0.18	0.18	
v/c Ratio	0.61	0.58	0.55	0.42	0.56		0.75	0.76		0.00	0.55	
Control Delay	22.8	10.9	2.5	47.2	40.3		33.4	28.2		1.0	6.8	
Queue Delay	0.0	0.3	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.8	11.2	2.5	47.2	40.3		33.4	28.2		1.0	6.8	
LOS	C	B	A	D	D		C	C		A	A	

Lanes, Volumes, Timings
 9: Gravenstein Highway & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		11.9			42.9			29.9			6.8	
Approach LOS		B			D			C			A	
Stops (vph)	392	140	40	49	50		346	735		0	270	
Fuel Used(gal)	7	3	2	1	1		9	17		0	4	
CO Emissions (g/hr)	474	199	153	66	85		610	1222		0	256	
NOx Emissions (g/hr)	92	39	30	13	17		119	238		0	50	
VOC Emissions (g/hr)	110	46	36	15	20		141	283		0	59	
Dilemma Vehicles (#)	0	22	0	0	5		0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 74.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

 ø1	 ø5	 ø4	 ø8
9 s	20 s	20 s	31 s

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	0		0	1		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.894						0.996	
Flt Protected		0.964			0.991							
Satd. Flow (prot)	0	1740	0	0	1650	0	0	3539	0	0	3525	0
Flt Permitted		0.964			0.991							
Satd. Flow (perm)	0	1740	0	0	1650	0	0	3539	0	0	3525	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		695			729			409			1268	
Travel Time (s)		19.0			19.9			11.2			28.8	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Lane Group Flow (vph)	0	70	0	0	28	0	0	1205	0	0	1107	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 58.0% ICU Level of Service B												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
10: William Street & Old Redwood Highway

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	70	28	607	599	542	566						
Volume Left (vph)	53	5	11	0	4	0						
Volume Right (vph)	16	22	0	3	0	28						
Hadj (s)	0.05	-0.40	0.04	0.03	0.04	0.00						
Departure Headway (s)	7.2	6.9	6.5	6.5	6.5	6.5						
Degree Utilization, x	0.14	0.05	1.10	1.08	0.98	1.02						
Capacity (veh/h)	493	498	567	566	542	566						
Control Delay (s)	11.3	10.3	90.6	85.1	58.3	67.6						
Approach Delay (s)	11.3	10.3	87.9		63.0							
Approach LOS	B	B	F		F							
Intersection Summary												
Delay			73.3									
HCM Level of Service			F									
Intersection Capacity Utilization			58.0%	ICU Level of Service					B			
Analysis Period (min)			15									

Lanes, Volumes, Timings
14: East Cotati Avenue & West Sierra Avenue

No Project AM

												
Lane Group	WBL2	WBL	WBR	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0	100	0		200		0	100		0
Storage Lanes		1	1	1	1		1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15	15	9	15	9	9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.850	0.850		0.981			0.990	
Flt Protected	0.950	0.950		0.950			0.950			0.950		
Satd. Flow (prot)	1770	1770	1583	1770	1583	1583	1770	1827	0	1770	3504	0
Flt Permitted	0.950	0.950		0.950			0.950			0.950		
Satd. Flow (perm)	1770	1770	1583	1770	1583	1583	1770	1827	0	1770	3504	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113			6		12			9	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25		25				25			25	
Link Distance (ft)		266		277				337			247	
Travel Time (s)		7.3		7.6				9.2			6.7	
Volume (vph)	37	226	581	159	235	6	559	464	69	8	467	32
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	37	226	581	159	235	6	559	464	69	8	467	32
Lane Group Flow (vph)	37	226	581	159	235	6	559	533	0	8	499	0
Turn Type	Prot		pm+ov		custom	custom	Prot			Prot		
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6			2						
Detector Phases	1	6	7	5	2	2	7	4		3	8	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	20.0	8.0	8.0	8.0	8.0	8.0	20.0		8.0	20.0	
Total Split (s)	8.0	20.0	18.0	12.0	24.0	24.0	18.0	30.0	0.0	8.0	20.0	0.0
Total Split (%)	11.4%	28.6%	25.7%	17.1%	34.3%	34.3%	25.7%	42.9%	0.0%	11.4%	28.6%	0.0%
Maximum Green (s)	4.0	16.0	14.0	8.0	20.0	20.0	14.0	26.0		4.0	16.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lead	Lag	Lag	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Min	None	None	None	None	None	Max		None	None	
Walk Time (s)		5.0						5.0			5.0	
Flash Dont Walk (s)		11.0						11.0			11.0	
Pedestrian Calls (#/hr)		0						0			0	
Act Effct Green (s)	4.0	13.2	34.9	9.1	21.5	21.5	17.7	34.1		4.6	14.1	
Actuated g/C Ratio	0.06	0.19	0.50	0.13	0.31	0.31	0.25	0.49		0.07	0.20	
v/c Ratio	0.37	0.68	0.69	0.69	0.48	0.01	1.25	0.59		0.07	0.70	
Control Delay	42.3	31.5	16.1	48.4	24.3	11.7	159.0	18.1		32.8	28.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	42.3	31.5	16.1	48.4	24.3	11.7	159.0	18.1		32.8	28.9	
LOS	D	C	B	D	C	B	F	B		C	C	

Lanes, Volumes, Timings
14: East Cotati Avenue & West Sierra Avenue

No Project AM

												
Lane Group	WBL2	WBL	WBR	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR
Approach Delay	21.4			33.7			90.2			29.0		
Approach LOS	C			C			F			C		
Stops (vph)	39	202	366	133	188	4	394	363		10	434	
Fuel Used(gal)	1	3	5	2	2	0	21	5		0	6	
CO Emissions (g/hr)	39	191	324	171	171	3	1483	342		8	395	
NOx Emissions (g/hr)	8	37	63	33	33	1	288	67		1	77	
VOC Emissions (g/hr)	9	44	75	40	40	1	344	79		2	92	
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 19 (27%), Referenced to phase 6:WBL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.25

Intersection Signal Delay: 50.9

Intersection LOS: D

Intersection Capacity Utilization 79.6%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: East Cotati Avenue & West Sierra Avenue

 ø1	 ø2	 ø3	 ø4
8 s	24 s	8 s	30 s
 ø6	 ø5	 ø8	 ø7
20 s	12 s	20 s	18 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

No Project AM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	15
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	406			1208	705	
Travel Time (s)	9.2			27.5	19.2	
Volume (vph)	823	3	245	843	1	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	823	3	245	843	1	140
Lane Group Flow (vph)	826	0	245	843	1	140
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

No Project AM

Movement							
Lane Configurations							
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	823	3	245	843	1	140	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	823	3	245	843	1	140	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type							
Median storage (veh)							
Upstream signal (ft)	672						
pX, platoon unblocked							
vC, conflicting volume			826	1736		413	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			826	1736		413	
tC, single (s)			4.1	6.8		6.9	
tC, 2 stage (s)							
tF (s)			2.2	3.5		3.3	
p0 queue free %			69	98		76	
cM capacity (veh/h)			800	54		588	
Direction, Lane #							
	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	549	277	245	422	422	1	140
Volume Left	0	0	245	0	0	1	0
Volume Right	0	3	0	0	0	0	140
cSH	1700	1700	800	1700	1700	54	588
Volume to Capacity	0.32	0.16	0.31	0.25	0.25	0.02	0.24
Queue Length 95th (ft)	0	0	32	0	0	1	23
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	72.3	13.0
Lane LOS			B			F	B
Approach Delay (s)	0.0		2.6		13.4		
Approach LOS					B		
Intersection Summary							
Average Delay			2.3				
Intersection Capacity Utilization			49.8%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	50		0	50		0
Storage Lanes	0		0	0		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.950			0.991			0.973			0.998	
Flt Protected		0.986			0.958			0.999			0.999	
Satd. Flow (prot)	0	1745	0	0	1768	0	0	1811	0	0	1857	0
Flt Permitted		0.986			0.958			0.999			0.999	
Satd. Flow (perm)	0	1745	0	0	1768	0	0	1811	0	0	1857	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		703			705			1468			422	
Travel Time (s)		19.2			19.2			33.4			11.5	
Volume (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Lane Group Flow (vph)	0	43	0	0	240	0	0	607	0	0	500	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 68.0% ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	43	240	607	500								
Volume Left (vph)	12	212	15	6								
Volume Right (vph)	16	16	122	9								
Hadj (s)	-0.13	0.17	-0.08	0.03								
Departure Headway (s)	7.9	7.3	5.9	6.1								
Degree Utilization, x	0.09	0.49	0.99	0.85								
Capacity (veh/h)	419	478	607	584								
Control Delay (s)	11.8	17.0	57.1	34.4								
Approach Delay (s)	11.8	17.0	57.1	34.4								
Approach LOS	B	C	F	D								
Intersection Summary												
Delay			40.6									
HCM Level of Service			E									
Intersection Capacity Utilization			68.0%	ICU Level of Service					C			
Analysis Period (min)			15									

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Turning Speed (mph)	15		9	15		25	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.865									0.999	
Flt Protected					0.950		0.950			0.950		
Satd. Flow (prot)	0	1611	0	0	1770	0	1770	3539	0	1770	3536	0
Flt Permitted					0.950		0.950			0.950		
Satd. Flow (perm)	0	1611	0	0	1770	0	1770	3539	0	1770	3536	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		293			307			337			409	
Travel Time (s)		8.0			7.0			9.2			11.2	
Volume (vph)	0	0	16	1	0	0	7	1208	0	10	1096	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	16	1	0	0	7	1208	0	10	1096	6
Lane Group Flow (vph)	0	16	0	0	1	0	7	1208	0	10	1102	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 43.4% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

141: La Plaza & Old Redwood Highway

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	16	1	0	0	7	1208	0	10	1096	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	16	1	0	0	7	1208	0	10	1096	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)	337											
pX, platoon unblocked	0.89	0.89		0.89	0.89	0.89				0.89		
vC, conflicting volume	1737	2341	551	1806	2344	604	1102			1208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1704	2383	551	1782	2387	431	1102			1110		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	98	100	100	99			98		
cM capacity (veh/h)	51	29	478	43	29	509	629			556		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	16	1	7	805	403	10	731	371				
Volume Left	0	1	7	0	0	10	0	0				
Volume Right	16	0	0	0	0	0	0	6				
cSH	478	43	629	1700	1700	556	1700	1700				
Volume to Capacity	0.03	0.02	0.01	0.47	0.24	0.02	0.43	0.22				
Queue Length 95th (ft)	3	2	1	0	0	1	0	0				
Control Delay (s)	12.8	89.7	10.8	0.0	0.0	11.6	0.0	0.0				
Lane LOS	B	F	B			B						
Approach Delay (s)	12.8	89.7	0.1			0.1						
Approach LOS	B	F										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			43.4%	ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	50		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		1
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.95	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.997			0.890				0.850
Flt Protected								0.991		0.950		
Satd. Flow (prot)	0	3539	0	0	3529	0	0	1643	0	1770	0	1583
Flt Permitted								0.991		0.950		
Satd. Flow (perm)	0	3539	0	0	3529	0	0	1643	0	1770	0	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25				25
Link Distance (ft)		266			406			265				313
Travel Time (s)		7.3			9.2			7.2				8.5
Volume (vph)	1	826	0	0	844	18	2	0	9	16	0	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1	826	0	0	844	18	2	0	9	16	0	4
Lane Group Flow (vph)	0	827	0	0	862	0	0	11	0	16	0	4
Sign Control		Free			Free			Stop				Stop
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 40.6% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

143: East Cotati Avenue & La Plaza

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	826	0	0	844	18	2	0	9	16	0	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	826	0	0	844	18	2	0	9	16	0	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None								None			
Median storage veh												
Upstream signal (ft)	266											
pX, platoon unblocked												
vC, conflicting volume	862			826			1254	1690	413	1277	1681	431
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	862			826			1254	1690	413	1277	1681	431
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			98	100	98	87	100	99
cM capacity (veh/h)	776			800			127	92	588	121	94	573
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1	SB 2					
Volume Total	276	551	563	299	11	16	4					
Volume Left	1	0	0	0	2	16	0					
Volume Right	0	0	0	18	9	0	4					
cSH	776	1700	1700	1700	355	121	573					
Volume to Capacity	0.00	0.32	0.33	0.18	0.03	0.13	0.01					
Queue Length 95th (ft)	0	0	0	0	2	11	1					
Control Delay (s)	0.0	0.0	0.0	0.0	15.5	39.1	11.3					
Lane LOS	A				C	E	B					
Approach Delay (s)	0.0		0.0		15.5	33.5						
Approach LOS					C	D						
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			40.6%	ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.887						0.999				
Flt Protected											0.999	
Satd. Flow (prot)	0	1652	0	0	1863	0	0	1861	0	0	1861	0
Flt Permitted											0.999	
Satd. Flow (perm)	0	1652	0	0	1863	0	0	1861	0	0	1861	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			265			422			247	
Travel Time (s)		8.2			7.2			11.5			6.7	
Volume (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Lane Group Flow (vph)	0	6	0	0	0	0	0	505	0	0	515	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	43.1%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

144: La Plaza & Old Redwood Highway

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	1	5	0	0	0	0	500	5	8	507	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												247
pX, platoon unblocked	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	1026	1028	507	1031	1026	502	507			505		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1032	1035	383	1039	1032	502	383			505		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	99	99	100	100	100	100			99		
cM capacity (veh/h)	168	184	531	164	185	569	939			1060		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	0	505	515								
Volume Left	0	0	0	8								
Volume Right	5	0	5	0								
cSH	404	1700	1700	1060								
Volume to Capacity	0.01	0.00	0.30	0.01								
Queue Length 95th (ft)	1	0	0	1								
Control Delay (s)	14.0	0.0	0.0	0.2								
Lane LOS	B	A		A								
Approach Delay (s)	14.0	0.0	0.0	0.2								
Approach LOS	B	A										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			43.1%	ICU Level of Service		A						
Analysis Period (min)			15									

Lanes, Volumes, Timings
145: La Plaza & West Sierra Avenue

No Project AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.983						0.999			0.996	
Flt Protected		0.970									0.999	
Satd. Flow (prot)	0	1776	0	0	1863	0	0	1861	0	0	1853	0
Flt Permitted		0.970									0.999	
Satd. Flow (perm)	0	1776	0	0	1863	0	0	1861	0	0	1853	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			301			414			277	
Travel Time (s)		8.2			8.2			11.3			7.6	
Volume (vph)	5	2	1	0	0	0	2	400	3	4	303	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	2	1	0	0	0	2	400	3	4	303	9
Lane Group Flow (vph)	0	8	0	0	0	0	0	405	0	0	316	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	32.4%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

145: La Plaza & West Sierra Avenue

No Project AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	2	1	0	0	0	2	400	3	4	303	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	2	1	0	0	0	2	400	3	4	303	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											277	
pX, platoon unblocked												
vC, conflicting volume	721	722	308	723	726	402	312			403		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721	722	308	723	726	402	312			403		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	100	100	100	100	100			100		
cM capacity (veh/h)	341	351	732	338	350	649	1248			1156		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	0	405	316								
Volume Left	5	0	2	4								
Volume Right	1	0	3	9								
cSH	368	1700	1248	1156								
Volume to Capacity	0.02	0.00	0.00	0.00								
Queue Length 95th (ft)	2	0	0	0								
Control Delay (s)	15.0	0.0	0.1	0.1								
Lane LOS	B	A	A	A								
Approach Delay (s)	15.0	0.0	0.1	0.1								
Approach LOS	B	A										
Intersection Summary												
Average Delay			0.3									
Intersection Capacity Utilization			32.4%				ICU Level of Service			A		
Analysis Period (min)			15									

No Project 2025 AM
Mitigated Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

No Project AM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100		0	0	
Storage Lanes	1	1		1	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		61		220		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	191		463			451
Travel Time (s)	4.3		10.5			10.3
Volume (vph)	436	176	944	420	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	436	176	944	420	0	0
Lane Group Flow (vph)	436	176	944	420	0	0
Turn Type		Perm		Free		
Protected Phases	3		2			
Permitted Phases		3		Free		
Detector Phases	3	3	2			
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	20.0	20.0	20.0			
Total Split (s)	41.0	41.0	39.0	0.0	0.0	0.0
Total Split (%)	51.3%	51.3%	48.8%	0.0%	0.0%	0.0%
Maximum Green (s)	37.0	37.0	35.0			
Yellow Time (s)	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5	0.5			
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	Min	Min	C-Min			
Walk Time (s)	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	23.9	23.9	48.1	80.0		
Actuated g/C Ratio	0.30	0.30	0.60	1.00		
v/c Ratio	0.83	0.34	0.84	0.27		
Control Delay	27.7	13.1	18.5	0.3		
Queue Delay	0.0	0.0	0.2	0.0		
Total Delay	27.7	13.1	18.7	0.3		
LOS	C	B	B	A		

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

No Project AM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach Delay	23.5		13.0			
Approach LOS	C		B			
Stops (vph)	382	80	439	0		
Fuel Used(gal)	8	2	9	2		
CO Emissions (g/hr)	568	164	656	108		
NOx Emissions (g/hr)	110	32	128	21		
VOC Emissions (g/hr)	132	38	152	25		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 56 (70%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 80.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

	
ø2	ø3
39 s	41 s

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.852	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			502								75	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	808	502	164	1131	0	0	0	0	534	4	368
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	808	502	164	1131	0	0	0	0	534	4	368
Lane Group Flow (vph)	0	808	502	164	1131	0	0	0	0	534	372	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	32.0	32.0	17.0	49.0	0.0	0.0	0.0	0.0	31.0	31.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	21.3%	61.3%	0.0%	0.0%	0.0%	0.0%	38.8%	38.8%	0.0%
Maximum Green (s)		28.0	28.0	13.0	45.0					27.0	27.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		35.6	35.6	11.5	51.1					20.9	20.9	
Actuated g/C Ratio		0.44	0.44	0.14	0.64					0.26	0.26	
v/c Ratio		0.51	0.51	0.64	0.50					0.60	0.79	
Control Delay		12.6	4.2	42.8	4.6					26.3	26.2	
Queue Delay		0.0	0.3	0.0	0.2					0.0	0.0	
Total Delay		12.6	4.5	42.8	4.8					26.3	26.2	
LOS		B	A	D	A					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		9.5			9.6						26.3	
Approach LOS		A			A						C	
Stops (vph)		591	189	150	502					437	271	
Fuel Used(gal)		9	3	3	9					8	5	
CO Emissions (g/hr)		638	243	217	601					550	373	
NOx Emissions (g/hr)		124	47	42	117					107	73	
VOC Emissions (g/hr)		148	56	50	139					127	86	
Dilemma Vehicles (#)		4	0	0	13					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 76 (95%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 13.8

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
17 s	32 s	31 s
 ø6		
49 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

No Project AM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						51
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1342	0	0	771	524	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1342	0	0	771	524	111
Lane Group Flow (vph)	1342	0	0	771	524	111
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	51.0	0.0	0.0	51.0	29.0	29.0
Total Split (%)	63.8%	0.0%	0.0%	63.8%	36.3%	36.3%
Maximum Green (s)	47.0			47.0	25.0	25.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	54.7			54.7	17.3	17.3
Actuated g/C Ratio	0.68			0.68	0.22	0.22
v/c Ratio	0.55			0.32	0.71	0.29
Control Delay	8.4			5.5	30.0	15.2
Queue Delay	0.0			0.3	0.0	0.0
Total Delay	8.4			5.9	30.0	15.2
LOS	A			A	C	B
Approach Delay	8.4			5.9	27.4	
Approach LOS	A			A	C	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

No Project AM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	545			333	460	51
Fuel Used(gal)	11			6	7	1
CO Emissions (g/hr)	760			385	511	72
NOx Emissions (g/hr)	148			75	99	14
VOC Emissions (g/hr)	176			89	118	17
Dilemma Vehicles (#)	8			5	0	0

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 64 (80%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 12.1

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



9: Gravenstein Highway & Old Redwood Highway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	300		0	150		0
Storage Lanes	2		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		15	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.862	0.850		0.939			0.998				0.850
Flt Protected	0.950			0.950			0.950	0.998		0.950		
Satd. Flow (prot)	3433	1525	1504	1770	1749	0	1610	3377	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950	0.998		0.950		
Satd. Flow (perm)	3433	1525	1504	1770	1749	0	1610	3377	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		345	391		33			1				277
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		384			249			1268			463	
Travel Time (s)		7.5			4.9			28.8			10.5	
Volume (vph)	518	31	904	51	50	34	444	812	10	1	158	277
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	518	31	904	51	50	34	444	812	10	1	158	277
Lane Group Flow (vph)	518	376	559	51	84	0	408	858	0	1	158	277
Turn Type	Split		pm+ov	Split			Split			Split		Perm
Protected Phases	5	5	8	1	1		8	8		4	4	
Permitted Phases			5									4
Detector Phases	5	5	8	1	1		8	8		4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	20.0	8.0	8.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	22.0	22.0	29.0	9.0	9.0	0.0	29.0	29.0	0.0	20.0	20.0	20.0
Total Split (%)	27.5%	27.5%	36.3%	11.3%	11.3%	0.0%	36.3%	36.3%	0.0%	25.0%	25.0%	25.0%
Maximum Green (s)	18.0	18.0	25.0	5.0	5.0		25.0	25.0		16.0	16.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Min	None	None		Min	Min		Min	Min	Min
Walk Time (s)			5.0				5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)			11.0				11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)			0				0	0		0	0	0
Act Effct Green (s)	20.1	20.1	45.8	5.1	5.1		24.8	24.8		15.8	15.8	15.8
Actuated g/C Ratio	0.25	0.25	0.57	0.06	0.06		0.31	0.31		0.20	0.20	0.20
v/c Ratio	0.60	0.59	0.54	0.45	0.59		0.82	0.82		0.00	0.43	0.52
Control Delay	20.5	8.5	3.5	49.1	42.6		29.3	22.5		6.0	8.1	6.9
Queue Delay	0.0	0.4	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	20.5	9.0	3.5	49.1	42.6		29.3	22.5		6.0	8.1	6.9
LOS	C	A	A	D	D		C	C		A	A	A

Lanes, Volumes, Timings
 9: Gravenstein Highway & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	11.0			45.1			24.7			7.3		
Approach LOS	B			D			C			A		
Stops (vph)	418	188	105	49	50		330	707		1	89	167
Fuel Used(gal)	7	3	3	1	1		8	16		0	1	2
CO Emissions (g/hr)	472	217	191	68	88		580	1141		1	92	161
NOx Emissions (g/hr)	92	42	37	13	17		113	222		0	18	31
VOC Emissions (g/hr)	109	50	44	16	20		134	264		0	21	37
Dilemma Vehicles (#)	0	27	0	0	5		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 4 (5%), Referenced to phase 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 17.2

Intersection LOS: B

Intersection Capacity Utilization 69.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

			
ø1	ø5	ø4	ø8
9 s	22 s	20 s	29 s

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project AM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969			0.894						0.996	
Flt Protected		0.964			0.991		0.950			0.950		
Satd. Flow (prot)	0	1740	0	0	1650	0	1770	3539	0	1770	3525	0
Flt Permitted		0.793			0.965		0.950			0.950		
Satd. Flow (perm)	0	1431	0	0	1607	0	1770	3539	0	1770	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22						6	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		695			729			409			1268	
Travel Time (s)		19.0			16.6			11.2			28.8	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1	16	5	1	22	11	1191	3	4	1075	28
Lane Group Flow (vph)	0	70	0	0	28	0	11	1194	0	4	1103	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		2			6		7	4		3	8	
Permitted Phases	2			6								
Detector Phases	2	2		6	6		7	4		3	8	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		8.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	8.0	40.0	0.0	20.0	52.0	0.0
Total Split (%)	25.0%	25.0%	0.0%	25.0%	25.0%	0.0%	10.0%	50.0%	0.0%	25.0%	65.0%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	36.0		16.0	48.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	None		None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		8.4			8.4		6.1	59.6		7.7	61.3	
Actuated g/C Ratio		0.10			0.10		0.08	0.74		0.10	0.77	
v/c Ratio		0.42			0.15		0.08	0.45		0.02	0.41	
Control Delay		28.4			16.5		47.9	3.6		21.0	1.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		28.4			16.5		47.9	3.6		21.0	1.6	
LOS		C			B		D	A		C	A	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.4			16.5			4.0			1.6	
Approach LOS		C			B			A			A	
Stops (vph)		52			14		15	242		6	95	
Fuel Used(gal)		1			0		0	6		0	12	
CO Emissions (g/hr)		71			23		14	417		6	823	
NOx Emissions (g/hr)		14			4		3	81		1	160	
VOC Emissions (g/hr)		17			5		3	97		1	191	
Dilemma Vehicles (#)		0			0		0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 28 (35%), Referenced to phase 4:NBT and 8:SBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 3.8

Intersection LOS: A

Intersection Capacity Utilization 50.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: William Street & Old Redwood Highway

 ø2	 ø4	 ø3
20 s	40 s	20 s
 ø6	 ø7	 ø8
20 s	8 s	52 s

Lanes, Volumes, Timings
14: West Sierra Avenue & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	0		0	100		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Frt			0.850			0.850		0.990			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3504	0	3433	3472	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3504	0	3433	3472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			6			578		8			23	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		277			266			247			337	
Travel Time (s)		7.6			7.3			6.7			9.2	
Volume (vph)	159	235	6	37	226	581	8	467	32	559	464	69
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	159	235	6	37	226	581	8	467	32	559	464	69
Lane Group Flow (vph)	159	235	6	37	226	581	8	499	0	559	533	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6						
Detector Phases	5	2	2	1	6	6	3	8		7	4	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	8.0	8.0	8.0	20.0	20.0	8.0	20.0		8.0	20.0	
Total Split (s)	15.0	29.0	29.0	10.0	24.0	24.0	8.0	20.0	0.0	21.0	33.0	0.0
Total Split (%)	18.8%	36.3%	36.3%	12.5%	30.0%	30.0%	10.0%	25.0%	0.0%	26.3%	41.3%	0.0%
Maximum Green (s)	11.0	25.0	25.0	6.0	20.0	20.0	4.0	16.0		17.0	29.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	None		None	Max	
Walk Time (s)					5.0	5.0		5.0			5.0	
Flash Dont Walk (s)					11.0	11.0		11.0			11.0	
Pedestrian Calls (#/hr)					0	0		0			0	
Act Effct Green (s)	10.7	27.9	27.9	6.1	19.5	19.5	4.0	17.4		16.4	36.2	
Actuated g/C Ratio	0.13	0.35	0.35	0.08	0.24	0.24	0.05	0.22		0.20	0.45	
v/c Ratio	0.67	0.36	0.01	0.27	0.50	0.71	0.09	0.65		0.79	0.34	
Control Delay	45.5	22.5	12.0	43.1	26.7	12.1	27.8	24.7		29.9	8.5	
Queue Delay	0.0	0.0	0.0	0.0	0.5	5.9	0.0	0.0		0.0	0.0	
Total Delay	45.5	22.5	12.0	43.1	27.2	18.0	27.8	24.7		29.9	8.5	
LOS	D	C	B	D	C	B	C	C		C	A	

Lanes, Volumes, Timings
14: West Sierra Avenue & Old Redwood Highway

No Project AM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	31.5			21.5			24.7			19.5		
Approach LOS	C			C			C			B		
Stops (vph)	143	173	4	40	182	263	10	440		473	278	
Fuel Used(gal)	2	2	0	1	2	4	0	5		7	4	
CO Emissions (g/hr)	168	161	3	39	170	262	7	367		477	246	
NOx Emissions (g/hr)	33	31	1	8	33	51	1	71		93	48	
VOC Emissions (g/hr)	39	37	1	9	40	61	2	85		111	57	
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 40 (50%), Referenced to phase 6:WBT, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 14: West Sierra Avenue & Old Redwood Highway

Ø1	Ø2	Ø4	Ø3
10 s	29 s	33 s	8 s
Ø5	Ø6	Ø7	Ø8
15 s	24 s	21 s	20 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

No Project AM - Mitigated

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	15
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	406			1208	705	
Travel Time (s)	9.2			27.5	16.0	
Volume (vph)	823	3	245	843	1	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	823	3	245	843	1	140
Lane Group Flow (vph)	826	0	245	843	1	140
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

No Project AM - Mitigated

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↱	↑↑	↱	↱	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	823	3	245	843	1	140	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	823	3	245	843	1	140	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	406			1208			
pX, platoon unblocked			0.95		0.95	0.95	
vC, conflicting volume			826		1736	413	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			761		1721	325	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			69		98	78	
cM capacity (veh/h)			802		53	635	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	549	277	245	422	422	1	140
Volume Left	0	0	245	0	0	1	0
Volume Right	0	3	0	0	0	0	140
cSH	1700	1700	802	1700	1700	53	635
Volume to Capacity	0.32	0.16	0.31	0.25	0.25	0.02	0.22
Queue Length 95th (ft)	0	0	32	0	0	1	21
Control Delay (s)	0.0	0.0	11.4	0.0	0.0	74.4	12.3
Lane LOS			B			F	B
Approach Delay (s)	0.0		2.6			12.7	
Approach LOS						B	
Intersection Summary							
Average Delay			2.2				
Intersection Capacity Utilization			49.8%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.950			0.991			0.973			0.998	
Flt Protected		0.986			0.958			0.999			0.999	
Satd. Flow (prot)	0	1745	0	0	1768	0	0	1811	0	0	1857	0
Flt Permitted		0.922			0.720			0.986			0.994	
Satd. Flow (perm)	0	1632	0	0	1329	0	0	1787	0	0	1848	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			5			23			2	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			30			25	
Link Distance (ft)		703			705			1468			422	
Travel Time (s)		19.2			16.0			33.4			11.5	
Volume (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	15	16	212	12	16	15	470	122	6	485	9
Lane Group Flow (vph)	0	43	0	0	240	0	0	607	0	0	500	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	35.0	35.0	0.0	35.0	35.0	0.0	45.0	45.0	0.0	45.0	45.0	0.0
Total Split (%)	43.8%	43.8%	0.0%	43.8%	43.8%	0.0%	56.3%	56.3%	0.0%	56.3%	56.3%	0.0%
Maximum Green (s)	31.0	31.0		31.0	31.0		41.0	41.0		41.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		18.2			18.2			53.8			53.8	
Actuated g/C Ratio		0.23			0.23			0.67			0.67	
v/c Ratio		0.11			0.78			0.50			0.40	
Control Delay		13.4			30.1			5.3			13.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.4			30.1			5.3			13.5	
LOS		B			C			A			B	

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		13.4			30.1			5.3			13.5	
Approach LOS		B			C			A			B	
Stops (vph)		24			209			142			345	
Fuel Used(gal)		0			4			8			4	
CO Emissions (g/hr)		33			276			586			314	
NOx Emissions (g/hr)		6			54			114			61	
VOC Emissions (g/hr)		8			64			136			73	
Dilemma Vehicles (#)		0			0			0			0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 55 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 12.8

Intersection LOS: B

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 21: Henry Street & Old Redwood Highway

	
ø2	ø4
45 s	35 s
	
ø6	ø8
45 s	35 s

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

No Project AM - Mitigated

Lane Group	 EBL	 EBT	 EBR	 WBL	 WBT	 WBR	 NBL	 NBT	 NBR	 SBL	 SBT	 SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Turning Speed (mph)	15		9	15		25	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt	0.865											
Flt Protected	0.950											
Satd. Flow (prot)	0	1611	0	0	1770	0	1863	3539	0	1863	3539	0
Flt Permitted	0.950											
Satd. Flow (perm)	0	1611	0	0	1770	0	1863	3539	0	1863	3539	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	25											
Link Distance (ft)	293											
Travel Time (s)	8.0											
Volume (vph)	0	0	16	1	0	0	0	1208	0	0	1096	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	16	1	0	0	0	1208	0	0	1096	0
Lane Group Flow (vph)	0	16	0	0	1	0	0	1208	0	0	1096	0
Sign Control	Stop											
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 43.4%												
ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

141: La Plaza & Old Redwood Highway

No Project AM - Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	0	16	1	0	0	0	1208	0	0	1096	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	16	1	0	0	0	1208	0	0	1096	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)								337			409	
pX, platoon unblocked	0.93	0.93	0.88	0.93	0.93	0.89	0.88			0.89		
vC, conflicting volume	1700	2304	548	1772	2304	604	1096			1208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1340	1988	349	1417	1988	440	972			1115		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	99	100	100	100			100		
cM capacity (veh/h)	103	56	569	88	56	505	620			557		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	16	1	0	805	403	0	731	365				
Volume Left	0	1	0	0	0	0	0	0				
Volume Right	16	0	0	0	0	0	0	0				
cSH	569	88	1700	1700	1700	1700	1700	1700				
Volume to Capacity	0.03	0.01	0.00	0.47	0.24	0.00	0.43	0.21				
Queue Length 95th (ft)	2	1	0	0	0	0	0	0				
Control Delay (s)	11.5	46.4	0.0	0.0	0.0	0.0	0.0	0.0				
Lane LOS	B	E										
Approach Delay (s)	11.5	46.4	0.0			0.0						
Approach LOS	B	E										
Intersection Summary												
Average Delay			0.1									
Intersection Capacity Utilization			43.4%			ICU Level of Service				A		
Analysis Period (min)			15									

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50		50	50		50	50	
Trailing Detector (ft)	0	0			0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.890			0.973	
Flt Protected								0.991			0.962	
Satd. Flow (prot)	1863	3539	0	0	3539	0	0	1643	0	0	1744	0
Flt Permitted								0.978			0.880	
Satd. Flow (perm)	1863	3539	0	0	3539	0	0	1621	0	0	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								9			4	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		266			406			265			313	
Travel Time (s)		7.3			9.2			7.2			8.5	
Volume (vph)	0	826	0	0	844	0	2	0	9	16	0	4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	826	0	0	844	0	2	0	9	16	0	4
Lane Group Flow (vph)	0	826	0	0	844	0	0	11	0	0	20	0
Turn Type	Perm						Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		
Detector Phases	2	2			6		8	8		4	4	
Minimum Initial (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0			20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Maximum Green (s)	16.0	16.0			16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5			0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Min	C-Min			Min		Min	Min		None	None	
Walk Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)		26.2			26.2			5.8			5.8	
Actuated g/C Ratio		0.66			0.66			0.14			0.14	
v/c Ratio		0.36			0.36			0.04			0.08	
Control Delay		1.9			3.8			10.5			13.4	
Queue Delay		0.2			0.0			0.0			0.0	
Total Delay		2.1			3.8			10.5			13.4	
LOS		A			A			B			B	

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		2.1			3.8			10.5			13.4	
Approach LOS		A			A			B			B	
Stops (vph)		277			319			9			20	
Fuel Used(gal)		3			5			0			0	
CO Emissions (g/hr)		228			355			6			13	
NOx Emissions (g/hr)		44			69			1			3	
VOC Emissions (g/hr)		53			82			1			3	
Dilemma Vehicles (#)		0			0			0			0	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 40

Control Type: Actuated-Coordinated

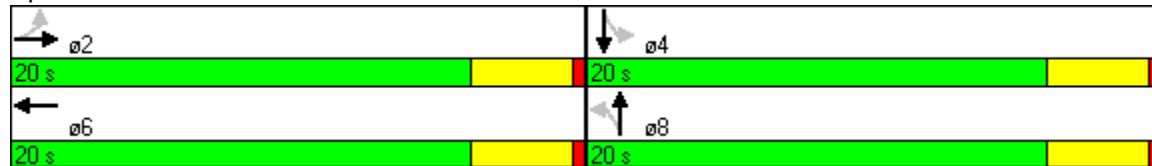
Maximum v/c Ratio: 0.36

Intersection Signal Delay: 3.1 Intersection LOS: A

Intersection Capacity Utilization 33.8% ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 143: East Cotati Avenue & La Plaza



Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.887						0.999				
Flt Protected											0.999	
Satd. Flow (prot)	0	1652	0	0	1863	0	0	1861	0	0	1861	0
Flt Permitted											0.999	
Satd. Flow (perm)	0	1652	0	0	1863	0	0	1861	0	0	1861	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			265			422			247	
Travel Time (s)		8.2			7.2			11.5			6.7	
Volume (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Lane Group Flow (vph)	0	6	0	0	0	0	0	505	0	0	515	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	43.1%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

144: La Plaza & Old Redwood Highway

No Project AM - Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	1	5	0	0	0	0	500	5	8	507	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	5	0	0	0	0	500	5	8	507	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)	422								247			
pX, platoon unblocked	0.92	0.92	0.86	0.92	0.92	0.88	0.86			0.88		
vC, conflicting volume	1026	1028	507	1031	1026	502	507			505		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	831	833	428	837	831	434	428			437		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	99	100	100	100	100			99		
cM capacity (veh/h)	265	278	540	259	279	547	975			987		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	6	0	505	515								
Volume Left	0	0	0	8								
Volume Right	5	0	5	0								
cSH	467	1700	1700	987								
Volume to Capacity	0.01	0.00	0.30	0.01								
Queue Length 95th (ft)	1	0	0	1								
Control Delay (s)	12.8	0.0	0.0	0.2								
Lane LOS	B	A		A								
Approach Delay (s)	12.8	0.0	0.0	0.2								
Approach LOS	B	A										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization			43.1%	ICU Level of Service				A				
Analysis Period (min)			15									

Lanes, Volumes, Timings
145: La Plaza & West Sierra Avenue

No Project AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.983										
Flt Protected		0.970										
Satd. Flow (prot)	0	1776	0	0	1863	0	0	1863	0	0	1863	0
Flt Permitted		0.970										
Satd. Flow (perm)	0	1776	0	0	1863	0	0	1863	0	0	1863	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			301			414			277	
Travel Time (s)		8.2			8.2			11.3			7.6	
Volume (vph)	5	2	1	0	0	0	0	400	0	0	303	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	2	1	0	0	0	0	400	0	0	303	0
Lane Group Flow (vph)	0	8	0	0	0	0	0	400	0	0	303	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	31.1%				ICU Level of Service A							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 145: La Plaza & West Sierra Avenue

No Project AM - Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	2	1	0	0	0	0	400	0	0	303	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	2	1	0	0	0	0	400	0	0	303	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												277
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	703	703	303	705	703	400	303	400				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	668	668	220	670	668	400	220	400				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	98	99	100	100	100	100	100	100				
cM capacity (veh/h)	332	339	732	329	339	650	1206	1159				
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	8	0	400	303								
Volume Left	5	0	0	0								
Volume Right	1	0	0	0								
cSH	359	1700	1206	1159								
Volume to Capacity	0.02	0.00	0.00	0.00								
Queue Length 95th (ft)	2	0	0	0								
Control Delay (s)	15.3	0.0	0.0	0.0								
Lane LOS	C	A										
Approach Delay (s)	15.3	0.0	0.0	0.0								
Approach LOS	C	A										
Intersection Summary												
Average Delay			0.2									
Intersection Capacity Utilization	31.1%		ICU Level of Service				A					
Analysis Period (min)	15											

No Project 2025 PM
Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

No Project PM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		100	0	
Storage Lanes	1	1		1	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		57		163		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	90		463			451
Travel Time (s)	2.0		10.5			10.3
Volume (vph)	555	75	908	740	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	555	75	908	740	0	0
Lane Group Flow (vph)	555	75	908	740	0	0
Turn Type		Perm		Free		
Protected Phases	1		2			
Permitted Phases		1		Free		
Detector Phases	1	1	2			
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	20.0	20.0	20.0			
Total Split (s)	49.0	49.0	41.0	0.0	0.0	0.0
Total Split (%)	54.4%	54.4%	45.6%	0.0%	0.0%	0.0%
Maximum Green (s)	45.0	45.0	37.0			
Yellow Time (s)	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5	0.5			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	Min	Min	C-Min			
Walk Time (s)	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	31.7	31.7	50.3	90.0		
Actuated g/C Ratio	0.35	0.35	0.56	1.00		
v/c Ratio	0.89	0.13	0.87	0.47		
Control Delay	29.9	6.4	31.1	1.0		
Queue Delay	0.0	0.0	29.2	0.0		
Total Delay	29.9	6.4	60.3	1.0		
LOS	C	A	E	A		

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

No Project PM



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach Delay	27.1		33.7			
Approach LOS	C		C			
Stops (vph)	494	17	647	0		
Fuel Used(gal)	10	1	13	3		
CO Emissions (g/hr)	723	53	881	197		
NOx Emissions (g/hr)	141	10	171	38		
VOC Emissions (g/hr)	168	12	204	46		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 49 (54%), Referenced to phase 2:NBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 31.8

Intersection LOS: C

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

 ø1	 ø2
49 s	41 s

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.850	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			556								55	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	1130	556	122	1340	0	0	0	0	779	0	310
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1130	556	122	1340	0	0	0	0	779	0	310
Lane Group Flow (vph)	0	1130	556	122	1340	0	0	0	0	779	310	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	34.0	34.0	12.0	46.0	0.0	0.0	0.0	0.0	24.0	24.0	0.0
Total Split (%)	0.0%	48.6%	48.6%	17.1%	65.7%	0.0%	0.0%	0.0%	0.0%	34.3%	34.3%	0.0%
Maximum Green (s)		30.0	30.0	8.0	42.0					20.0	20.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		33.2	33.2	7.7	42.8					19.2	19.2	
Actuated g/C Ratio		0.47	0.47	0.11	0.61					0.27	0.27	
v/c Ratio		0.67	0.53	0.63	0.62					0.83	0.65	
Control Delay		18.0	3.5	47.5	6.2					30.9	24.6	
Queue Delay		0.1	0.0	0.0	0.3					0.0	0.9	
Total Delay		18.1	3.5	47.5	6.5					30.9	25.5	
LOS		B	A	D	A					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		13.3			9.9						29.4	
Approach LOS		B			A						C	
Stops (vph)		855	49	113	414					685	223	
Fuel Used(gal)		14	3	2	9					12	4	
CO Emissions (g/hr)		995	179	170	648					866	303	
NOx Emissions (g/hr)		194	35	33	126					168	59	
VOC Emissions (g/hr)		231	42	39	150					201	70	
Dilemma Vehicles (#)		81	0	0	114					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 28 (40%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 95.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
12 s	34 s	24 s
 ø6		
46 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

No Project PM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						21
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1909	0	0	904	558	202
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1909	0	0	904	558	202
Lane Group Flow (vph)	1909	0	0	904	558	202
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	50.0	0.0	0.0	50.0	20.0	20.0
Total Split (%)	71.4%	0.0%	0.0%	71.4%	28.6%	28.6%
Maximum Green (s)	46.0			46.0	16.0	16.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	46.9			46.9	15.1	15.1
Actuated g/C Ratio	0.67			0.67	0.22	0.22
v/c Ratio	0.80			0.38	0.76	0.57
Control Delay	6.6			5.8	31.2	27.4
Queue Delay	0.3			0.3	0.0	0.2
Total Delay	6.9			6.1	31.2	27.6
LOS	A			A	C	C
Approach Delay	6.9			6.1	30.2	
Approach LOS	A			A	C	

8: Gravenstein Highway & NB US 101 Off-ramp

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	1140			363	501	158
Fuel Used(gal)	17			6	8	3
CO Emissions (g/hr)	1223			441	556	184
NOx Emissions (g/hr)	238			86	108	36
VOC Emissions (g/hr)	283			102	129	43
Dilemma Vehicles (#)	129			65	0	0

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 70

Offset: 40 (57%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 11.7

Intersection LOS: B

Intersection Capacity Utilization 95.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	300		0	150		0
Storage Lanes	2		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		15	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.871	0.850		0.928			0.993				0.850
Flt Protected	0.950			0.950			0.950	0.994		0.950		
Satd. Flow (prot)	3433	1541	1504	1770	1729	0	1610	3346	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950	0.994		0.950		
Satd. Flow (perm)	3433	1541	1504	1770	1729	0	1610	3346	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		267	154		32			5				253
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30				30
Link Distance (ft)		384			249			1268				463
Travel Time (s)		7.5			4.9			28.8				10.5
Volume (vph)	741	78	1292	56	42	39	609	868	47	17	285	253
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	741	78	1292	56	42	39	609	868	47	17	285	253
Lane Group Flow (vph)	741	546	824	56	81	0	492	1032	0	17	285	253
Turn Type	Split		pt+ov	Split			Split			Split		Perm
Protected Phases	5	5	5 8	1	1		8	8		4	4	
Permitted Phases												4
Detector Phases	5	5	5 8	1	1		8	8		4	4	4
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0		8.0	8.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	33.0	33.0	77.0	9.0	9.0	0.0	44.0	44.0	0.0	24.0	24.0	24.0
Total Split (%)	30.0%	30.0%	70.0%	8.2%	8.2%	0.0%	40.0%	40.0%	0.0%	21.8%	21.8%	21.8%
Maximum Green (s)	29.0	29.0		5.0	5.0		40.0	40.0		20.0	20.0	20.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None		Min	Min		Min	Min	Min
Walk Time (s)							5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)							11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)							0	0		0	0	0
Act Effct Green (s)	27.9	27.9	66.4	5.0	5.0		38.5	38.5		18.7	18.7	18.7
Actuated g/C Ratio	0.26	0.26	0.63	0.05	0.05		0.36	0.36		0.18	0.18	0.18
v/c Ratio	0.82	0.91	0.83	0.67	0.72		0.84	0.85		0.05	0.87	0.52
Control Delay	44.7	38.2	15.3	88.5	68.0		44.6	38.2		37.8	62.9	8.8
Queue Delay	10.9	0.8	1.3	0.0	24.1		0.1	3.6		0.0	0.0	0.0
Total Delay	55.6	39.0	16.6	88.5	92.1		44.7	41.8		37.8	62.9	8.8
LOS	E	D	B	F	F		D	D		D	E	A

9: Gravenstein Highway & Old Redwood Highway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		36.1			90.6			42.7			37.5	
Approach LOS		D			F			D			D	
Stops (vph)	667	271	503	49	44		421	904		17	254	30
Fuel Used(gal)	14	8	9	1	2		12	23		0	6	2
CO Emissions (g/hr)	966	545	603	103	112		815	1623		20	425	107
NOx Emissions (g/hr)	188	106	117	20	22		159	316		4	83	21
VOC Emissions (g/hr)	224	126	140	24	26		189	376		5	99	25
Dilemma Vehicles (#)	0	24	0	0	3		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 106.2

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 40.3

Intersection LOS: D

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

	ø1		ø5		ø4		ø8
9 s		33 s		24 s		44 s	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	0		0	1		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.963			0.889			0.999			0.995	
Flt Protected		0.966			0.995			0.999			0.999	
Satd. Flow (prot)	0	1733	0	0	1648	0	0	3532	0	0	3518	0
Flt Permitted		0.966			0.995			0.999			0.999	
Satd. Flow (perm)	0	1733	0	0	1648	0	0	3532	0	0	3518	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		695			729			409			1268	
Travel Time (s)		19.0			19.9			11.2			28.8	
Volume (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Lane Group Flow (vph)	0	95	0	0	28	0	0	1457	0	0	1627	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 79.0% ICU Level of Service D												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis
10: William Street & Old Redwood Highway

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	95	28	734	723	796	831						
Volume Left (vph)	67	3	17	0	22	0						
Volume Right (vph)	26	23	0	6	0	57						
Hadj (s)	0.01	-0.44	0.05	0.03	0.05	-0.01						
Departure Headway (s)	7.1	7.0	6.6	6.6	6.6	6.6						
Degree Utilization, x	0.19	0.05	1.35	1.33	1.46	1.51						
Capacity (veh/h)	496	490	556	556	547	553						
Control Delay (s)	11.8	10.4	188.4	178.5	236.7	258.0						
Approach Delay (s)	11.8	10.4	183.5		247.6							
Approach LOS	B	B	F		F							
Intersection Summary												
Delay			209.4									
HCM Level of Service			F									
Intersection Capacity Utilization			79.0%		ICU Level of Service				D			
Analysis Period (min)			15									

Lanes, Volumes, Timings
14: W Sierra Ave & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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			0.850			0.850			0.988		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	1840	0	1770	1811	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	1840	0	1770	1811	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			6			120			4			16
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		277			266			247			337	
Travel Time (s)		7.6			7.3			6.7			9.2	
Volume (vph)	109	336	6	61	302	732	17	616	53	806	629	142
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	336	6	61	302	732	17	616	53	806	629	142
Lane Group Flow (vph)	109	336	6	61	302	732	17	669	0	806	771	0
Turn Type	Prot		Perm	Prot		pm+ov	Prot			Prot		
Protected Phases	5	2		1	6	7	3	8		7	4	
Permitted Phases			2			6						
Detector Phases	5	2	2	1	6	7	3	8		7	4	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	8.0	8.0	8.0	20.0	8.0	8.0	20.0		8.0	20.0	
Total Split (s)	12.0	30.0	30.0	9.0	27.0	33.0	8.0	48.0	0.0	33.0	73.0	0.0
Total Split (%)	10.0%	25.0%	25.0%	7.5%	22.5%	27.5%	6.7%	40.0%	0.0%	27.5%	60.8%	0.0%
Maximum Green (s)	8.0	26.0	26.0	5.0	23.0	29.0	4.0	44.0		29.0	69.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	C-Min	None	None	None		None	Max	
Walk Time (s)					5.0			5.0			5.0	
Flash Dont Walk (s)					11.0			11.0			11.0	
Pedestrian Calls (#/hr)					0			0			0	
Act Effct Green (s)	8.0	24.2	24.2	5.8	22.0	51.4	4.3	44.6		29.4	74.8	
Actuated g/C Ratio	0.07	0.20	0.20	0.05	0.18	0.43	0.04	0.37		0.24	0.62	
v/c Ratio	0.92	0.89	0.02	0.71	0.88	0.98	0.27	0.98		1.86	0.68	
Control Delay	120.5	64.6	21.3	96.0	69.2	49.8	67.2	66.7		422.9	19.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	120.5	64.6	21.3	96.0	69.2	49.8	67.2	66.7		422.9	19.4	
LOS	F	E	C	F	E	D	E	E		F	B	

Lanes, Volumes, Timings
14: W Sierra Ave & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	77.5			57.7			66.7			225.6		
Approach LOS	E			E			E			F		
Stops (vph)	92	307	4	50	275	613	19	577		543	499	
Fuel Used(gal)	3	6	0	2	6	11	0	13		74	7	
CO Emissions (g/hr)	230	447	4	106	419	799	24	888		5158	501	
NOx Emissions (g/hr)	45	87	1	21	82	155	5	173		1004	98	
VOC Emissions (g/hr)	53	103	1	25	97	185	6	206		1195	116	
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 106 (88%), Referenced to phase 6:WBT, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.86

Intersection Signal Delay: 131.2

Intersection LOS: F

Intersection Capacity Utilization 115.6%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 14: W Sierra Ave & Old Redwood Highway

												
ø2	ø1	ø3	ø4	ø5	ø6	ø8	ø7					
30 s	9 s	8 s	73 s	12 s	27 s	48 s	33 s					

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

No Project PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	15
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	406			1208	705	
Travel Time (s)	9.2			27.5	19.2	
Volume (vph)	1187	6	166	1090	5	260
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1187	6	166	1090	5	260
Lane Group Flow (vph)	1193	0	166	1090	5	260
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	55.8%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
15: East Cotati Avenue & Charles Street

No Project PM

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↱	↑↑	↱	↱	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	1187	6	166	1090	5	260	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1187	6	166	1090	5	260	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	672						
pX, platoon unblocked							
vC, conflicting volume			1193		2067	596	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1193		2067	596	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			71		85	42	
cM capacity (veh/h)			581		34	446	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	791	402	166	545	545	5	260
Volume Left	0	0	166	0	0	5	0
Volume Right	0	6	0	0	0	0	260
cSH	1700	1700	581	1700	1700	34	446
Volume to Capacity	0.47	0.24	0.29	0.32	0.32	0.15	0.58
Queue Length 95th (ft)	0	0	29	0	0	12	91
Control Delay (s)	0.0	0.0	13.7	0.0	0.0	130.4	23.7
Lane LOS			B			F	C
Approach Delay (s)	0.0		1.8			25.7	
Approach LOS						D	
Intersection Summary							
Average Delay			3.3				
Intersection Capacity Utilization			55.8%		ICU Level of Service		B
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.954			0.978			0.967			0.996	
Flt Protected		0.986			0.965			0.999			0.998	
Satd. Flow (prot)	0	1752	0	0	1758	0	0	1799	0	0	1852	0
Flt Permitted		0.986			0.965			0.999			0.998	
Satd. Flow (perm)	0	1752	0	0	1758	0	0	1799	0	0	1852	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		703			705			1468			422	
Travel Time (s)		19.2			19.2			33.4			11.5	
Volume (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Lane Group Flow (vph)	0	64	0	0	171	0	0	863	0	0	696	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 74.6% ICU Level of Service D

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	64	171	863	696								
Volume Left (vph)	18	125	12	28								
Volume Right (vph)	22	28	211	23								
Hadj (s)	-0.12	0.08	-0.11	0.02								
Departure Headway (s)	7.8	7.4	5.7	5.9								
Degree Utilization, x	0.14	0.35	1.37	1.13								
Capacity (veh/h)	443	471	633	619								
Control Delay (s)	12.0	14.4	195.2	100.8								
Approach Delay (s)	12.0	14.4	195.2	100.8								
Approach LOS	B	B	F	F								
Intersection Summary												
Delay			134.8									
HCM Level of Service			F									
Intersection Capacity Utilization			74.6%		ICU Level of Service					D		
Analysis Period (min)			15									

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	50		0	50		0
Storage Lanes	0		0	0		0	1		0	1		0
Turning Speed (mph)	15		9	15		25	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.925			0.865			0.999			0.998	
Flt Protected		0.984					0.950			0.950		
Satd. Flow (prot)	0	1695	0	0	1611	0	1770	3536	0	1770	3532	0
Flt Permitted		0.984					0.950			0.950		
Satd. Flow (perm)	0	1695	0	0	1611	0	1770	3536	0	1770	3532	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			25	
Link Distance (ft)		293			307			337			409	
Travel Time (s)		8.0			7.0			9.2			11.2	
Volume (vph)	3	1	5	0	0	43	4	1457	11	75	1577	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	1	5	0	0	43	4	1457	11	75	1577	26
Lane Group Flow (vph)	0	9	0	0	43	0	4	1468	0	75	1603	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 61.1%												
ICU Level of Service B												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

141: La Plaza & Old Redwood Highway

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	3	1	5	0	0	43	4	1457	11	75	1577	26
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	3	1	5	0	0	43	4	1457	11	75	1577	26
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)								337				
pX, platoon unblocked												
vC, conflicting volume	2520	3216	802	2414	3224	734	1603			1468		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2520	3216	802	2414	3224	734	1603			1468		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	72	87	98	100	100	88	99			84		
cM capacity (veh/h)	11	8	327	13	8	363	404			456		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3				
Volume Total	9	43	4	971	497	75	1051	552				
Volume Left	3	0	4	0	0	75	0	0				
Volume Right	5	43	0	0	11	0	0	26				
cSH	21	363	404	1700	1700	456	1700	1700				
Volume to Capacity	0.42	0.12	0.01	0.57	0.29	0.16	0.62	0.32				
Queue Length 95th (ft)	30	10	1	0	0	15	0	0				
Control Delay (s)	263.6	16.3	14.0	0.0	0.0	14.5	0.0	0.0				
Lane LOS	F	C	B			B						
Approach Delay (s)	263.6	16.3	0.0			0.6						
Approach LOS	F	C										
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			61.1%			ICU Level of Service				B		
Analysis Period (min)			15									

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	50		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	1		1
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994			0.878				0.850
Flt Protected	0.950							0.998		0.950		
Satd. Flow (prot)	1770	3539	0	0	3518	0	0	1632	0	1770	0	1583
Flt Permitted	0.950							0.998		0.950		
Satd. Flow (perm)	1770	3539	0	0	3518	0	0	1632	0	1770	0	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		266			406			265			313	
Travel Time (s)		7.3			9.2			7.2			7.1	
Volume (vph)	4	1195	0	1	1095	42	2	2	37	71	0	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	1195	0	1	1095	42	2	2	37	71	0	7
Lane Group Flow (vph)	4	1195	0	0	1138	0	0	41	0	71	0	7
Sign Control		Free			Free			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 50.3% ICU Level of Service A												
Analysis Period (min) 15												

HCM Unsignalized Intersection Capacity Analysis

143: East Cotati Avenue & La Plaza

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			0%		
Volume (veh/h)	4	1195	0	1	1095	42	2	2	37	71	0	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	1195	0	1	1095	42	2	2	37	71	0	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None						None					
Median storage veh												
Upstream signal (ft)	266											
pX, platoon unblocked												
vC, conflicting volume	1137			1195			1760	2342	598	1762	2321	568
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1137			1195			1760	2342	598	1762	2321	568
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			96	94	92	0	100	98
cM capacity (veh/h)	610			580			53	36	446	47	37	466
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1	SB 1	SB 2				
Volume Total	4	598	598	548	590	41	71	7				
Volume Left	4	0	0	1	0	2	71	0				
Volume Right	0	0	0	0	42	37	0	7				
cSH	610	1700	1700	580	1700	231	47	466				
Volume to Capacity	0.01	0.35	0.35	0.00	0.35	0.18	1.52	0.02				
Queue Length 95th (ft)	0	0	0	0	0	16	172	1				
Control Delay (s)	10.9	0.0	0.0	0.0	0.0	23.9	456.3	12.8				
Lane LOS	B			A		C	F	B				
Approach Delay (s)	0.0			0.0		23.9	416.5					
Approach LOS						C	F					
Intersection Summary												
Average Delay	13.7											
Intersection Capacity Utilization	50.3%			ICU Level of Service				A				
Analysis Period (min)	15											

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Hwy

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.907			0.955			0.997				
Flt Protected					0.968						0.998	
Satd. Flow (prot)	0	1690	0	0	1722	0	0	1857	0	0	1859	0
Flt Permitted					0.968						0.998	
Satd. Flow (perm)	0	1690	0	0	1722	0	0	1857	0	0	1859	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			265			422			247	
Travel Time (s)		8.2			7.2			11.5			6.7	
Volume (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Lane Group Flow (vph)	0	16	0	0	3	0	0	699	0	0	718	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	64.4%				ICU Level of Service C							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
144: La Plaza & Old Redwood Hwy

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	5	11	2	0	1	0	685	14	22	696	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)											247	
pX, platoon unblocked	0.73	0.73	0.73	0.73	0.73		0.73					
vC, conflicting volume	1433	1439	696	1446	1432	692	696			699		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1595	1603	582	1612	1593	692	582			699		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	93	97	96	100	100	100			98		
cM capacity (veh/h)	61	75	373	55	76	444	722			898		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	16	3	699	718								
Volume Left	0	2	0	22								
Volume Right	11	1	14	0								
cSH	166	78	722	898								
Volume to Capacity	0.10	0.04	0.00	0.02								
Queue Length 95th (ft)	8	3	0	2								
Control Delay (s)	28.9	53.0	0.0	0.6								
Lane LOS	D	F		A								
Approach Delay (s)	28.9	53.0	0.0	0.6								
Approach LOS	D	F										
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			64.4%	ICU Level of Service						C		
Analysis Period (min)			15									

Lanes, Volumes, Timings
145: La Plaza & W Sierra Ave

No Project PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.958			0.865			0.999			0.997	
Flt Protected		0.969									0.998	
Satd. Flow (prot)	0	1729	0	0	1611	0	0	1861	0	0	1853	0
Flt Permitted		0.969									0.998	
Satd. Flow (perm)	0	1729	0	0	1611	0	0	1861	0	0	1853	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			301			414			277	
Travel Time (s)		8.2			8.2			11.3			7.6	
Volume (vph)	29	2	14	0	0	1	4	451	5	18	461	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	2	14	0	0	1	4	451	5	18	461	12
Lane Group Flow (vph)	0	45	0	0	1	0	0	460	0	0	491	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 52.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

145: La Plaza & W Sierra Ave

No Project PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	29	2	14	0	0	1	4	451	5	18	461	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	2	14	0	0	1	4	451	5	18	461	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												277
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	966	967	467	980	970	454	473			456		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	959	961	367	976	965	454	374			456		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	99	98	100	100	100	100			98		
cM capacity (veh/h)	196	211	571	185	210	606	997			1105		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	45	1	460	491								
Volume Left	29	0	4	18								
Volume Right	14	1	5	12								
cSH	247	606	997	1105								
Volume to Capacity	0.18	0.00	0.00	0.02								
Queue Length 95th (ft)	16	0	0	1								
Control Delay (s)	22.8	10.9	0.1	0.5								
Lane LOS	C	B	A	A								
Approach Delay (s)	22.8	10.9	0.1	0.5								
Approach LOS	C	B										
Intersection Summary												
Average Delay				1.3								
Intersection Capacity Utilization				52.6%	ICU Level of Service			A				
Analysis Period (min)				15								

No Project 2025 PM
Mitigated Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

No Project PM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		100	0	
Storage Lanes	1	1		1	0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		9	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		57		163		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	146		463			451
Travel Time (s)	3.3		10.5			10.3
Volume (vph)	555	75	908	740	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	555	75	908	740	0	0
Lane Group Flow (vph)	555	75	908	740	0	0
Turn Type		Perm		Free		
Protected Phases	1		2			
Permitted Phases		1		Free		
Detector Phases	1	1	2			
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	20.0	20.0	20.0			
Total Split (s)	49.0	49.0	41.0	0.0	0.0	0.0
Total Split (%)	54.4%	54.4%	45.6%	0.0%	0.0%	0.0%
Maximum Green (s)	45.0	45.0	37.0			
Yellow Time (s)	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5	0.5			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	Min	Min	C-Min			
Walk Time (s)	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	31.7	31.7	50.3	90.0		
Actuated g/C Ratio	0.35	0.35	0.56	1.00		
v/c Ratio	0.89	0.13	0.87	0.47		
Control Delay	29.9	6.4	23.6	0.6		
Queue Delay	0.0	0.0	3.0	0.0		
Total Delay	29.9	6.4	26.6	0.6		
LOS	C	A	C	A		

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

No Project PM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Approach Delay	27.1		14.9			
Approach LOS	C		B			
Stops (vph)	494	17	500	3		
Fuel Used(gal)	10	1	10	3		
CO Emissions (g/hr)	727	54	727	194		
NOx Emissions (g/hr)	141	10	141	38		
VOC Emissions (g/hr)	169	12	169	45		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 42 (47%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 85.2%

ICU Level of Service E

Analysis Period (min) 15

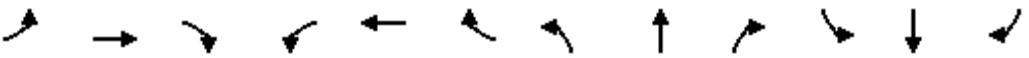
Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

 ø1	 ø2
49 s	41 s

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.850	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			462								55	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	1130	556	122	1340	0	0	0	0	779	0	310
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1130	556	122	1340	0	0	0	0	779	0	310
Lane Group Flow (vph)	0	1130	556	122	1340	0	0	0	0	779	310	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	43.0	43.0	15.0	58.0	0.0	0.0	0.0	0.0	32.0	32.0	0.0
Total Split (%)	0.0%	47.8%	47.8%	16.7%	64.4%	0.0%	0.0%	0.0%	0.0%	35.6%	35.6%	0.0%
Maximum Green (s)		39.0	39.0	11.0	54.0					28.0	28.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		41.6	41.6	11.0	56.6					25.4	25.4	
Actuated g/C Ratio		0.46	0.46	0.12	0.63					0.28	0.28	
v/c Ratio		0.69	0.57	0.56	0.60					0.80	0.64	
Control Delay		15.7	4.7	50.2	13.7					34.2	27.5	
Queue Delay		0.5	0.5	0.0	0.3					0.0	0.0	
Total Delay		16.2	5.2	50.2	14.0					34.2	27.5	
LOS		B	A	D	B					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		12.6			17.0						32.2	
Approach LOS		B			B						C	
Stops (vph)		743	114	121	824					696	219	
Fuel Used(gal)		13	3	3	14					13	5	
CO Emissions (g/hr)		900	223	179	1007					904	315	
NOx Emissions (g/hr)		175	43	35	196					176	61	
VOC Emissions (g/hr)		209	52	42	233					210	73	
Dilemma Vehicles (#)		71	0	0	2					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 40 (44%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 95.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø2	 ø1	 ø4
43 s	15 s	32 s
 ø6		
58 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

No Project PM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						25
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1909	0	0	904	558	202
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1909	0	0	904	558	202
Lane Group Flow (vph)	1909	0	0	904	558	202
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	66.0	0.0	0.0	66.0	24.0	24.0
Total Split (%)	73.3%	0.0%	0.0%	73.3%	26.7%	26.7%
Maximum Green (s)	62.0			62.0	20.0	20.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	63.5			63.5	18.5	18.5
Actuated g/C Ratio	0.71			0.71	0.21	0.21
v/c Ratio	0.77			0.36	0.79	0.58
Control Delay	4.6			0.7	40.0	33.8
Queue Delay	0.1			0.2	0.0	0.3
Total Delay	4.6			0.9	40.0	34.1
LOS	A			A	D	C
Approach Delay	4.6			0.9	38.4	
Approach LOS	A			A	D	

8: Gravenstein Highway & NB US 101 Off-ramp

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	756			45	511	156
Fuel Used(gal)	14			3	9	3
CO Emissions (g/hr)	966			208	628	202
NOx Emissions (g/hr)	188			40	122	39
VOC Emissions (g/hr)	224			48	146	47
Dilemma Vehicles (#)	32			1	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 26 (29%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 10.9

Intersection LOS: B

Intersection Capacity Utilization 95.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	300		0	150		0
Storage Lanes	1		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		15	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.869	0.850		0.928			0.993				0.850
Flt Protected	0.950			0.950			0.950	0.994		0.950		
Satd. Flow (prot)	3433	1538	1504	1770	1729	0	1610	3346	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950	0.994		0.950		
Satd. Flow (perm)	3433	1538	1504	1770	1729	0	1610	3346	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		389	147		39			5				253
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		384			249			1268			463	
Travel Time (s)		7.5			4.9			28.8			10.5	
Volume (vph)	741	78	1292	56	42	39	609	868	47	17	285	253
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	741	78	1292	56	42	39	609	868	47	17	285	253
Lane Group Flow (vph)	741	617	753	56	81	0	492	1032	0	17	285	253
Turn Type	Split		pm+ov	Split			Split			Split		Perm
Protected Phases	5	5	8	1	1		8	8		4	4	
Permitted Phases			5									4
Detector Phases	5	5	8	1	1		8	8		4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	20.0	8.0	8.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	30.0	30.0	32.0	8.0	8.0	0.0	32.0	32.0	0.0	20.0	20.0	20.0
Total Split (%)	33.3%	33.3%	35.6%	8.9%	8.9%	0.0%	35.6%	35.6%	0.0%	22.2%	22.2%	22.2%
Maximum Green (s)	26.0	26.0	28.0	4.0	4.0		28.0	28.0		16.0	16.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	Min	None	None		Min	Min		Min	Min	Min
Walk Time (s)			5.0				5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)			11.0				11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)			0				0	0		0	0	0
Act Effct Green (s)	23.9	23.9	53.5	4.0	4.0		29.6	29.6		16.5	16.5	16.5
Actuated g/C Ratio	0.27	0.27	0.59	0.04	0.04		0.33	0.33		0.18	0.18	0.18
v/c Ratio	0.81	0.89	0.79	0.71	0.71		0.93	0.93		0.05	0.83	0.51
Control Delay	34.4	26.8	9.9	87.2	58.4		56.9	46.3		10.4	31.4	7.9
Queue Delay	0.2	0.8	0.1	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	34.7	27.6	9.9	87.2	58.4		56.9	46.3		10.4	31.4	7.9
LOS	C	C	A	F	E		E	D		B	C	A

Lanes, Volumes, Timings
 9: Gravenstein Highway & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		23.8			70.1			49.7			20.0	
Approach LOS		C			E			D			C	
Stops (vph)	710	468	407	48	40		408	879		11	234	142
Fuel Used(gal)	13	9	7	1	1		13	25		0	4	2
CO Emissions (g/hr)	880	601	466	102	98		896	1733		11	289	147
NOx Emissions (g/hr)	171	117	91	20	19		174	337		2	56	29
VOC Emissions (g/hr)	204	139	108	24	23		208	402		3	67	34
Dilemma Vehicles (#)	0	21	0	0	4		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 72 (80%), Referenced to phase 6:, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 33.9

Intersection LOS: C

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

			
ø1	ø5	ø4	ø8
8 s	30 s	20 s	32 s

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project PM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	150		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.963			0.889			0.999			0.995	
Flt Protected		0.966			0.995		0.950			0.950		
Satd. Flow (prot)	0	1733	0	0	1648	0	1770	3536	0	1770	3522	0
Flt Permitted		0.791			0.979		0.950			0.950		
Satd. Flow (perm)	0	1419	0	0	1621	0	1770	3536	0	1770	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			23			1			8	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		695			729			409			1268	
Travel Time (s)		19.0			16.6			11.2			28.8	
Volume (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	67	2	26	3	2	23	17	1434	6	22	1548	57
Lane Group Flow (vph)	0	95	0	0	28	0	17	1440	0	22	1605	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phases	4	4		8	8		5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		8.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	8.0	40.0	0.0	20.0	52.0	0.0
Total Split (%)	25.0%	25.0%	0.0%	25.0%	25.0%	0.0%	10.0%	50.0%	0.0%	25.0%	65.0%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	36.0		16.0	48.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Min	Min		None	None		None	C-Max		None	C-Max	
Walk Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0		0	0	
Act Effct Green (s)		9.5			9.5		4.0	57.9		6.4	59.3	
Actuated g/C Ratio		0.12			0.12		0.05	0.72		0.08	0.74	
v/c Ratio		0.51			0.13		0.19	0.56		0.15	0.61	
Control Delay		28.2			15.1		38.2	6.5		34.2	7.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		28.2			15.1		38.2	6.5		34.2	7.5	
LOS		C			B		D	A		C	A	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		28.2			15.1			6.8			7.9	
Approach LOS		C			B			A			A	
Stops (vph)		67			13		19	637		23	740	
Fuel Used(gal)		1			0		0	9		0	22	
CO Emissions (g/hr)		95			22		18	654		35	1567	
NOx Emissions (g/hr)		19			4		4	127		7	305	
VOC Emissions (g/hr)		22			5		4	152		8	363	
Dilemma Vehicles (#)		0			0		0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 52 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 8.1

Intersection LOS: A

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: William Street & Old Redwood Highway

 ø1	 ø2	 ø4
20 s	40 s	20 s
 ø6	 ø5	 ø8
52 s	8 s	20 s

Lanes, Volumes, Timings
14: West Sierra Avenue & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		0	100		0	100		0	200		0
Storage Lanes	1		1	1		1	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50	50	50	50		50	50	
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Frt			0.850			0.850		0.988			0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3497	0	3433	3440	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3497	0	3433	3440	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			6			61		10			46	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		277			266			247			337	
Travel Time (s)		7.6			7.3			6.7			9.2	
Volume (vph)	109	336	6	61	302	732	17	616	53	806	629	142
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	109	336	6	61	302	732	17	616	53	806	629	142
Lane Group Flow (vph)	109	336	6	61	302	732	17	669	0	806	771	0
Turn Type	Prot		Perm	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases			4			8						
Detector Phases	7	4	4	3	8	1	5	2		1	6	
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Minimum Split (s)	8.0	8.0	8.0	8.0	20.0	8.0	8.0	20.0		8.0	20.0	
Total Split (s)	10.0	19.0	19.0	11.0	20.0	28.0	8.0	22.0	0.0	28.0	42.0	0.0
Total Split (%)	12.5%	23.8%	23.8%	13.8%	25.0%	35.0%	10.0%	27.5%	0.0%	35.0%	52.5%	0.0%
Maximum Green (s)	6.0	15.0	15.0	7.0	16.0	24.0	4.0	18.0		24.0	38.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5		0.5	0.5	
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	Min	None	None	None		None	C-Max	
Walk Time (s)					5.0			5.0			5.0	
Flash Dont Walk (s)					11.0			11.0			11.0	
Pedestrian Calls (#/hr)					0			0			0	
Act Effct Green (s)	6.3	16.7	16.7	6.7	15.2	38.0	4.3	19.7		22.8	43.3	
Actuated g/C Ratio	0.08	0.21	0.21	0.08	0.19	0.48	0.05	0.25		0.28	0.54	
v/c Ratio	0.78	0.86	0.02	0.41	0.85	0.93	0.18	0.77		0.82	0.41	
Control Delay	74.0	55.8	16.8	34.8	34.8	26.2	39.8	32.1		25.4	16.6	
Queue Delay	0.0	0.0	0.0	0.0	3.5	1.1	0.0	0.0		5.7	0.0	
Total Delay	74.0	55.8	16.8	34.8	38.3	27.3	39.8	32.1		31.1	16.6	
LOS	E	E	B	C	D	C	D	C		C	B	

Lanes, Volumes, Timings
14: West Sierra Avenue & Old Redwood Highway

No Project PM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay	59.7			30.7			32.3			24.0		
Approach LOS	E			C			C			C		
Stops (vph)	91	277	4	61	209	412	19	564		718	595	
Fuel Used(gal)	2	6	0	1	4	7	0	8		9	7	
CO Emissions (g/hr)	157	396	3	56	254	499	17	555		646	497	
NOx Emissions (g/hr)	31	77	1	11	49	97	3	108		126	97	
VOC Emissions (g/hr)	36	92	1	13	59	116	4	129		150	115	
Dilemma Vehicles (#)	0	0	0	0	0	0	0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 2 (3%), Referenced to phase 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 31.7

Intersection LOS: C

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 14: West Sierra Avenue & Old Redwood Highway

ø1	ø2	ø4	ø3
28 s	22 s	19 s	11 s
ø5	ø6	ø8	ø7
8 s	42 s	20 s	10 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles St

No Project PM - Mitigated

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	150		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	15
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	406			1208	705	
Travel Time (s)	9.2			27.5	16.0	
Volume (vph)	1187	6	166	1090	5	260
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1187	6	166	1090	5	260
Lane Group Flow (vph)	1193	0	166	1090	5	260
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	76.5%			ICU Level of Service D		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles St

No Project PM - Mitigated

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↔↔		↔	↔↔	↔	↔	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	1187	6	166	1090	5	260	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1187	6	166	1090	5	260	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	406			1208			
pX, platoon unblocked			0.71		0.76	0.71	
vC, conflicting volume			1193		2067	596	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			859		1701	15	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			70		89	65	
cM capacity (veh/h)			550		44	750	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	791	402	166	545	545	5	260
Volume Left	0	0	166	0	0	5	0
Volume Right	0	6	0	0	0	0	260
cSH	1700	1700	550	1700	1700	44	750
Volume to Capacity	0.47	0.24	0.30	0.32	0.32	0.11	0.35
Queue Length 95th (ft)	0	0	32	0	0	9	39
Control Delay (s)	0.0	0.0	14.3	0.0	0.0	97.6	12.3
Lane LOS			B			F	B
Approach Delay (s)	0.0		1.9			13.9	
Approach LOS						B	
Intersection Summary							
Average Delay			2.2				
Intersection Capacity Utilization			76.5%		ICU Level of Service		D
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	1		0	0		1	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50	50	50	50	
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.954			0.909				0.850		0.996	
Flt Protected		0.986		0.950				0.999			0.998	
Satd. Flow (prot)	0	1752	0	1770	1693	0	0	1861	1583	0	1852	0
Flt Permitted		0.936		0.778				0.988			0.965	
Satd. Flow (perm)	0	1663	0	1449	1693	0	0	1840	1583	0	1790	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			28				201		4	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30				30		25	
Link Distance (ft)		703			705				1468		422	
Travel Time (s)		19.2			16.0				33.4		11.5	
Volume (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	18	24	22	125	18	28	12	640	211	28	645	23
Lane Group Flow (vph)	0	64	0	125	46	0	0	652	211	0	696	0
Turn Type	Perm			Perm			Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2	6		
Detector Phases	4	4		8	8		2	2	2	6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	
Total Split (s)	25.0	25.0	0.0	25.0	25.0	0.0	55.0	55.0	55.0	55.0	55.0	0.0
Total Split (%)	31.3%	31.3%	0.0%	31.3%	31.3%	0.0%	68.8%	68.8%	68.8%	68.8%	68.8%	0.0%
Maximum Green (s)	21.0	21.0		21.0	21.0		51.0	51.0	51.0	51.0	51.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min	C-Min	Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	
Act Effct Green (s)		11.1		11.4	11.4			63.6	63.6		63.6	
Actuated g/C Ratio		0.14		0.14	0.14			0.80	0.80		0.80	
v/c Ratio		0.26		0.61	0.17			0.45	0.16		0.49	
Control Delay		21.5		33.5	15.9			5.1	1.0		4.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		21.5		33.5	15.9			5.1	1.0		4.7	
LOS		C		C	B			A	A		A	

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		21.5			28.8			4.1			4.7	
Approach LOS		C			C			A			A	
Stops (vph)		39		110	22			216	11		200	
Fuel Used(gal)		1		2	1			9	3		4	
CO Emissions (g/hr)		57		150	37			653	176		275	
NOx Emissions (g/hr)		11		29	7			127	34		53	
VOC Emissions (g/hr)		13		35	8			151	41		64	
Dilemma Vehicles (#)		0		0	0			0	0		0	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 6 (8%), Referenced to phase 2:NBTL, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 7.3

Intersection LOS: A

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 21: Henry Street & Old Redwood Highway

 ø2	 ø4
55 s	25 s
 ø6	 ø8
55 s	25 s

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

No Project PM - Mitigated

											
Lane Group	WBL2	WBL	WBR	NBL	NBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations											
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0	50	0	50		0	50		0
Storage Lanes		1	0	1	0	1		0	1		0
Turning Speed (mph)	15	15	25	15	9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.925		0.865							
Flt Protected		0.978									
Satd. Flow (prot)	0	1685	0	1611	0	1863	3539	0	1863	3539	0
Flt Permitted		0.978									
Satd. Flow (perm)	0	1685	0	1611	0	1863	3539	0	1863	3539	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		30		25			25			25	
Link Distance (ft)		307		293			409			337	
Travel Time (s)		7.0		8.0			11.2			9.2	
Volume (vph)	3	1	5	0	43	0	1577	0	0	1457	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	1	5	0	43	0	1577	0	0	1457	0
Lane Group Flow (vph)	0	9	0	43	0	0	1577	0	0	1457	0
Sign Control		Stop		Stop			Free			Free	
Intersection Summary											
Area Type:	Other										
Control Type:	Unsignalized										
Intersection Capacity Utilization	60.3%			ICU Level of Service B							
Analysis Period (min)	15										

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project PM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50		50	50		50	50	
Trailing Detector (ft)	0	0			0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994			0.878			0.988	
Flt Protected	0.950							0.998			0.956	
Satd. Flow (prot)	1770	3539	0	0	3518	0	0	1632	0	0	1759	0
Flt Permitted	0.250							0.992			0.780	
Satd. Flow (perm)	466	3539	0	0	3518	0	0	1622	0	0	1436	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					11			19			7	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			30			25			30	
Link Distance (ft)		266			406			265			313	
Travel Time (s)		7.3			9.2			7.2			7.1	
Volume (vph)	4	1195	0	0	1095	42	2	2	37	71	0	7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	4	1195	0	0	1095	42	2	2	37	71	0	7
Lane Group Flow (vph)	4	1195	0	0	1137	0	0	41	0	0	78	0
Turn Type	Perm						Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2						8			4		
Detector Phases	2	2			6		8	8		4	4	
Minimum Initial (s)	4.0	4.0			4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0			20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	0.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	0.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Maximum Green (s)	16.0	16.0			16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5			3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5			0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max			Max		Max	Max		None	None	
Walk Time (s)	5.0	5.0			5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0			0		0	0		0	0	
Act Effct Green (s)	16.0	16.0			16.0			16.0			16.0	
Actuated g/C Ratio	0.40	0.40			0.40			0.40			0.40	
v/c Ratio	0.02	0.84			0.80			0.06			0.13	
Control Delay	8.5	16.9			16.8			3.3			7.9	
Queue Delay	0.0	0.5			0.4			0.0			0.0	
Total Delay	8.5	17.5			17.2			3.3			7.9	
LOS	A	B			B			A			A	

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		17.5			17.2			3.3			7.9	
Approach LOS		B			B			A			A	
Stops (vph)	3	1091			880			11			45	
Fuel Used(gal)	0	11			12			0			1	
CO Emissions (g/hr)	2	770			864			11			39	
NOx Emissions (g/hr)	0	150			168			2			8	
VOC Emissions (g/hr)	0	178			200			3			9	
Dilemma Vehicles (#)	0	0			0			0			0	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 45

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 16.8

Intersection LOS: B

Intersection Capacity Utilization 50.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 143: East Cotati Avenue & La Plaza

 ø2	 ø4
20 s	20 s
 ø6	 ø8
20 s	20 s

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.907				0.850		0.997				
Flt Protected				0.950							0.998	
Satd. Flow (prot)	0	1690	0	1770	0	1583	0	1857	0	0	1859	0
Flt Permitted				0.950							0.998	
Satd. Flow (perm)	0	1690	0	1770	0	1583	0	1857	0	0	1859	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			265			422			247	
Travel Time (s)		8.2			7.2			11.5			6.7	
Volume (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Lane Group Flow (vph)	0	16	0	2	0	1	0	699	0	0	718	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	64.4%						ICU Level of Service C					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 144: La Plaza & Old Redwood Highway

No Project PM - Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	5	11	2	0	1	0	685	14	22	696	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	11	2	0	1	0	685	14	22	696	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)								422			247	
pX, platoon unblocked	0.88	0.88	0.81	0.88	0.88	0.87	0.81			0.87		
vC, conflicting volume	1433	1439	696	1446	1432	692	696			699		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1267	1274	624	1282	1266	645	624			653		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	96	97	98	100	100	100			97		
cM capacity (veh/h)	125	142	393	115	144	410	774			810		
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	16	2	1	699	718							
Volume Left	0	2	0	0	22							
Volume Right	11	0	1	14	0							
cSH	253	115	410	774	810							
Volume to Capacity	0.06	0.02	0.00	0.00	0.03							
Queue Length 95th (ft)	5	1	0	0	2							
Control Delay (s)	20.2	36.7	13.8	0.0	0.7							
Lane LOS	C	E	B		A							
Approach Delay (s)	20.2	29.1		0.0	0.7							
Approach LOS	C	D										
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization		64.4%		ICU Level of Service					C			
Analysis Period (min)		15										

Lanes, Volumes, Timings
145: La Plaza & West Sierra Avenue

No Project PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.958						0.999			0.997	
Flt Protected		0.969									0.998	
Satd. Flow (prot)	0	1729	0	0	0	0	0	1861	0	0	1853	0
Flt Permitted		0.969									0.998	
Satd. Flow (perm)	0	1729	0	0	0	0	0	1861	0	0	1853	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			25	
Link Distance (ft)		301			301			414			277	
Travel Time (s)		8.2			8.2			11.3			7.6	
Volume (vph)	29	2	14	0	0	0	4	451	5	18	461	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	29	2	14	0	0	0	4	451	5	18	461	12
Lane Group Flow (vph)	0	45	0	0	0	0	0	460	0	0	491	0
Sign Control		Stop			Stop			Free			Free	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	46.7%						ICU Level of Service A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis 145: La Plaza & West Sierra Avenue

No Project PM - Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	29	2	14	0	0	0	4	451	5	18	461	12
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	29	2	14	0	0	0	4	451	5	18	461	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												277
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	964	967	467	980	970	454	473	456				
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	958	961	368	976	965	454	375	456				
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1	4.1				
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2	2.2				
p0 queue free %	85	99	98	100	100	100	100	98				
cM capacity (veh/h)	197	212	571	185	210	606	998	1105				
Direction, Lane #	EB 1	NB 1	SB 1									
Volume Total	45	460	491									
Volume Left	29	4	18									
Volume Right	14	5	12									
cSH	248	998	1105									
Volume to Capacity	0.18	0.00	0.02									
Queue Length 95th (ft)	16	0	1									
Control Delay (s)	22.7	0.1	0.5									
Lane LOS	C	A	A									
Approach Delay (s)	22.7	0.1	0.5									
Approach LOS	C											
Intersection Summary												
Average Delay	1.3											
Intersection Capacity Utilization	46.7%			ICU Level of Service				A				
Analysis Period (min)	15											

Specific Plan 2025 AM
Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

Specific Plan AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		25	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		143		174		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	148		463			451
Travel Time (s)	3.4		10.5			10.3
Volume (vph)	436	176	958	420	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	436	176	958	420	0	0
Lane Group Flow (vph)	436	176	958	420	0	0
Turn Type		Perm		Free		
Protected Phases	1		2			
Permitted Phases		1		Free		
Detector Phases	1	1	2			
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	20.0	20.0	20.0			
Total Split (s)	34.0	34.0	66.0	0.0	0.0	0.0
Total Split (%)	34.0%	34.0%	66.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	30.0	62.0			
Yellow Time (s)	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5	0.5			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	Min	Min	C-Min			
Walk Time (s)	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	27.7	27.7	64.3	100.0		
Actuated g/C Ratio	0.28	0.28	0.64	1.00		
v/c Ratio	0.89	0.32	0.80	0.27		
Control Delay	47.7	8.6	20.2	0.3		
Queue Delay	0.0	0.0	0.3	0.0		
Total Delay	47.7	8.6	20.5	0.3		
LOS	D	A	C	A		
Approach Delay	36.4		14.3			
Approach LOS	D		B			

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

Specific Plan AM

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Stops (vph)	390	36	646	0		
Fuel Used(gal)	10	2	11	2		
CO Emissions (g/hr)	686	132	766	108		
NOx Emissions (g/hr)	133	26	149	21		
VOC Emissions (g/hr)	159	31	178	25		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 64 (64%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 21.1

Intersection LOS: C

Intersection Capacity Utilization 81.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway



Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	150		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.852	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			448								80	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	837	502	164	1117	0	0	0	0	534	4	368
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	837	502	164	1117	0	0	0	0	534	4	368
Lane Group Flow (vph)	0	837	502	164	1117	0	0	0	0	534	372	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	40.0	40.0	21.0	61.0	0.0	0.0	0.0	0.0	39.0	39.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	21.0%	61.0%	0.0%	0.0%	0.0%	0.0%	39.0%	39.0%	0.0%
Maximum Green (s)		36.0	36.0	17.0	57.0					35.0	35.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		49.3	49.3	13.4	66.7					25.3	25.3	
Actuated g/C Ratio		0.49	0.49	0.13	0.67					0.25	0.25	
v/c Ratio		0.48	0.50	0.69	0.47					0.61	0.81	
Control Delay		11.0	2.5	52.5	2.3					33.2	30.8	
Queue Delay		0.2	0.3	0.0	0.3					0.0	0.0	
Total Delay		11.2	2.9	52.5	2.6					33.2	30.8	
LOS		B	A	D	A					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.1			9.0						32.2	
Approach LOS		A			A						C	
Stops (vph)		344	40	141	234					448	271	
Fuel Used(gal)		7	2	3	6					9	6	
CO Emissions (g/hr)		502	153	235	420					605	398	
NOx Emissions (g/hr)		98	30	46	82					118	77	
VOC Emissions (g/hr)		116	35	54	97					140	92	
Dilemma Vehicles (#)		36	0	0	2					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 96 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
21 s	40 s	39 s
 ø6		
61 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						51
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1371	0	0	757	524	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1371	0	0	757	524	111
Lane Group Flow (vph)	1371	0	0	757	524	111
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	64.0	0.0	0.0	64.0	36.0	36.0
Total Split (%)	64.0%	0.0%	0.0%	64.0%	36.0%	36.0%
Maximum Green (s)	60.0			60.0	32.0	32.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	71.8			71.8	20.2	20.2
Actuated g/C Ratio	0.72			0.72	0.20	0.20
v/c Ratio	0.54			0.30	0.76	0.31
Control Delay	2.5			6.6	38.5	19.1
Queue Delay	0.1			0.5	0.0	0.0
Total Delay	2.6			7.1	38.5	19.1
LOS	A			A	D	B
Approach Delay	2.6			7.1	35.1	
Approach LOS	A			A	D	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan AM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	195			403	474	51
Fuel Used(gal)	7			6	8	1
CO Emissions (g/hr)	470			430	578	78
NOx Emissions (g/hr)	91			84	112	15
VOC Emissions (g/hr)	109			100	134	18
Dilemma Vehicles (#)	60			56	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 11.3

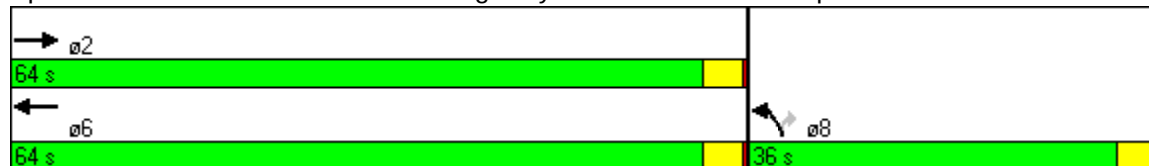
Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	300		0	150		0
Storage Lanes	1		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.862	0.850		0.939			0.998				0.850
Flt Protected	0.950			0.950			0.950	0.999		0.950		
Satd. Flow (prot)	3433	1525	1504	1770	1749	0	1610	3380	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950	0.999		0.950		
Satd. Flow (perm)	3433	1525	1504	1770	1749	0	1610	3380	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		360	573		26			1				277
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		384			249			1270			463	
Travel Time (s)		7.5			4.9			28.9			10.5	
Volume (vph)	518	31	933	51	50	34	430	826	10	1	158	277
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	518	31	933	51	50	34	430	826	10	1	158	277
Lane Group Flow (vph)	518	391	573	51	84	0	408	858	0	1	158	277
Turn Type	Split		custom	Split			Split			Split		Perm
Protected Phases	2	2	2	6	6		8	8		4	4	
Permitted Phases			3									4
Detector Phases	2	2	2	6	6		8	8		4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	8.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	21.0	21.0	21.0	8.0	8.0	0.0	31.0	31.0	0.0	20.0	20.0	20.0
Total Split (%)	21.0%	21.0%	21.0%	8.0%	8.0%	0.0%	31.0%	31.0%	0.0%	20.0%	20.0%	20.0%
Maximum Green (s)	17.0	17.0	17.0	4.0	4.0		27.0	27.0		16.0	16.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?										Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None		Min	Min		Min	Min	Min
Walk Time (s)							5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)							11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)							0	0		0	0	0
Act Effct Green (s)	20.6	20.6	26.1	4.0	4.0		34.9	34.9		15.0	15.0	15.0
Actuated g/C Ratio	0.21	0.21	0.26	0.04	0.04		0.35	0.35		0.15	0.15	0.15
v/c Ratio	0.73	0.65	0.70	0.72	0.88		0.73	0.73		0.00	0.57	0.59
Control Delay	43.7	12.0	8.9	96.6	101.2		36.3	32.1		28.0	25.4	9.4
Queue Delay	0.0	0.9	0.3	0.0	0.0		0.0	0.2		0.0	0.0	0.0
Total Delay	43.7	12.9	9.2	96.6	101.2		36.3	32.3		28.0	25.4	9.4
LOS	D	B	A	F	F		D	C		C	C	A

Lane Group	ø3
Lane Configurations	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Peak Hour Factor	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phases	
Minimum Initial (s)	4.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	3.5
All-Red Time (s)	0.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	Min
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.2			99.5			33.6			15.3	
Approach LOS		C			F			C			B	
Stops (vph)	463	211	275	44	46		346	718		1	117	129
Fuel Used(gal)	10	4	5	1	2		9	18		0	2	2
CO Emissions (g/hr)	666	254	328	100	156		627	1263		1	142	157
NOx Emissions (g/hr)	130	49	64	19	30		122	246		0	28	31
VOC Emissions (g/hr)	154	59	76	23	36		145	293		0	33	36
Dilemma Vehicles (#)	0	26	0	0	4		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 14 (14%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

				
ø2	ø6	ø4	ø3	ø8
21 s	8 s	20 s	20 s	31 s

Lane Group	ø3
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Intersection Summary	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

Specific Plan AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	250		0
Storage Lanes	0		0	0		0	0		0	1		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.969			0.894						0.996	
Flt Protected		0.964			0.991							
Satd. Flow (prot)	0	1740	0	0	1650	0	0	3539	0	0	3525	0
Flt Permitted		0.964			0.991							
Satd. Flow (perm)	0	1740	0	0	1650	0	0	3539	0	0	3525	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		696			714			401			1270	
Travel Time (s)		19.0			19.5			10.9			28.9	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Lane Group Flow (vph)	0	70	0	0	28	0	0	1205	0	0	1142	0
Sign Control		Stop			Stop			Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	58.0%				ICU Level of Service B							
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
10: William Street & Old Redwood Highway

Specific Plan AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total (vph)	70	28	607	599	559	583						
Volume Left (vph)	53	5	11	0	4	0						
Volume Right (vph)	16	22	0	3	0	28						
Hadj (s)	0.05	-0.40	0.04	0.03	0.04	0.00						
Departure Headway (s)	7.2	6.9	6.5	6.5	6.5	6.5						
Degree Utilization, x	0.14	0.05	1.10	1.08	1.01	1.05						
Capacity (veh/h)	493	498	554	563	559	561						
Control Delay (s)	11.3	10.3	92.5	87.0	66.3	76.7						
Approach Delay (s)	11.3	10.3	89.8		71.6							
Approach LOS	B	B	F		F							
Intersection Summary												
Delay			78.1									
HCM Level of Service			F									
Intersection Capacity Utilization			58.0%	ICU Level of Service				B				
Analysis Period (min)			15									

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Specific Plan AM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	350		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	416			1192	704	
Travel Time (s)	9.5			27.1	19.2	
Volume (vph)	823	3	245	843	1	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	823	3	245	843	1	140
Lane Group Flow (vph)	826	0	245	843	1	140
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	49.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

Specific Plan AM

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↱	↑↑	↱	↱	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	823	3	245	843	1	140	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	823	3	245	843	1	140	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	416			1192			
pX, platoon unblocked							
vC, conflicting volume			826		1736	413	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			826		1736	413	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			69		98	76	
cM capacity (veh/h)			800		54	588	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	549	277	245	422	422	1	140
Volume Left	0	0	245	0	0	1	0
Volume Right	0	3	0	0	0	0	140
cSH	1700	1700	800	1700	1700	54	588
Volume to Capacity	0.32	0.16	0.31	0.25	0.25	0.02	0.24
Queue Length 95th (ft)	0	0	32	0	0	1	23
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	72.3	13.0
Lane LOS			B			F	B
Approach Delay (s)	0.0		2.6			13.4	
Approach LOS						B	
Intersection Summary							
Average Delay			2.3				
Intersection Capacity Utilization			49.8%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Specific Plan AM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.969			0.991			0.971			0.998	
Flt Protected		0.983			0.958			0.999			0.999	
Satd. Flow (prot)	0	1774	0	0	1768	0	0	1807	0	0	1857	0
Flt Permitted		0.983			0.958			0.999			0.999	
Satd. Flow (perm)	0	1774	0	0	1768	0	0	1807	0	0	1857	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		713			704			1515			429	
Travel Time (s)		19.4			19.2			34.4			11.7	
Volume (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Lane Group Flow (vph)	0	35	0	0	240	0	0	565	0	0	500	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 65.8% ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

Specific Plan AM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Yield			Yield			Yield			Yield	
Volume (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	35	240	565	500								
Volume Left (vph)	12	212	15	6								
Volume Right (vph)	8	16	122	9								
Hadj (s)	-0.03	0.17	-0.09	0.03								
Departure Headway (s)	7.8	7.1	5.7	6.0								
Degree Utilization, x	0.08	0.47	0.90	0.83								
Capacity (veh/h)	414	479	611	591								
Control Delay (s)	11.4	16.3	39.8	31.0								
Approach Delay (s)	11.4	16.3	39.8	31.0								
Approach LOS	B	C	E	D								
Intersection Summary												
Delay			31.6									
HCM Level of Service			D									
Intersection Capacity Utilization			65.8%	ICU Level of Service		C						
Analysis Period (min)			15									

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø4
Lane Configurations	W	W				W		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50	50				50		
Trailing Detector (ft)	0	0				0		
Turning Speed (mph)	20	15		9	15			
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.95		
Frt	0.910	0.850						
Flt Protected	0.980							
Satd. Flow (prot)	1495	1185	0	0	0	3185		
Flt Permitted	0.980							
Satd. Flow (perm)	1495	1185	0	0	0	3185		
Right Turn on Red	Yes	Yes		Yes				
Satd. Flow (RTOR)	191	800						
Headway Factor	1.14	1.35	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		20			25		
Link Distance (ft)	295		298			401		
Travel Time (s)	10.1		10.2			10.9		
Volume (vph)	271	1205	0	0	0	1131		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)		5						
Adj. Flow (vph)	271	1205	0	0	0	1131		
Lane Group Flow (vph)	676	800	0	0	0	1131		
Turn Type	Perm							
Protected Phases	8						2	4
Permitted Phases		8				6		
Detector Phases	8	8				6		
Minimum Initial (s)	4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	29.0	29.0				20.0	20.0	29.0
Total Split (s)	31.0	31.0	0.0	0.0	0.0	29.0	29.0	31.0
Total Split (%)	51.7%	51.7%	0.0%	0.0%	0.0%	48.3%	48%	52%
Maximum Green (s)	27.0	27.0				25.0	25.0	27.0
Yellow Time (s)	3.5	3.5				3.5	3.5	3.5
All-Red Time (s)	0.5	0.5				0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None				C-Max	C-Max	None
Walk Time (s)	10.0	10.0					5.0	10.0
Flash Dont Walk (s)	15.0	15.0					11.0	15.0
Pedestrian Calls (#/hr)	10	10					10	10
Act Effct Green (s)	25.6	25.6				26.4		
Actuated g/C Ratio	0.43	0.43				0.44		
v/c Ratio	0.90	0.83				0.81		
Control Delay	25.8	10.5				21.4		
Queue Delay	0.0	0.0				0.0		
Total Delay	25.8	10.5				21.4		
LOS	C	B				C		
Approach Delay	17.5					21.4		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø4
Approach LOS	B					C		
Stops (vph)	426	91				902		
Fuel Used(gal)	6	4				12		
CO Emissions (g/hr)	452	290				856		
NOx Emissions (g/hr)	88	56				167		
VOC Emissions (g/hr)	105	67				198		
Dilemma Vehicles (#)	0	0				0		
Intersection Summary								
Area Type:	CBD							
Cycle Length: 60								
Actuated Cycle Length: 60								
Offset: 0 (0%), Referenced to phase 2:Ped and 6:SBT, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.90								
Intersection Signal Delay: 19.2					Intersection LOS: B			
Intersection Capacity Utilization 85.5%					ICU Level of Service E			
Analysis Period (min) 15								

Splits and Phases: 141: La Plaza &

 ø2	 ø4
29 s	31 s
 ø6	 ø8
29 s	31 s

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Lane Configurations		↗↗	↘↘	↗				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)		50	50	50				
Trailing Detector (ft)		0	0	0				
Turning Speed (mph)	15	9	20	15	15	9		
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00		
Frt		0.850		0.850				
Flt Protected			0.950					
Satd. Flow (prot)	0	2508	1593	1185	0	0		
Flt Permitted			0.950					
Satd. Flow (perm)	0	2508	1593	1185	0	0		
Right Turn on Red		Yes	Yes	Yes		Yes		
Satd. Flow (RTOR)		304	73	826				
Headway Factor	1.14	1.14	1.14	1.35	1.14	1.14		
Link Speed (mph)	30		20		20			
Link Distance (ft)	416		293		294			
Travel Time (s)	9.5		10.0		10.0			
Volume (vph)	0	844	632	826	0	0		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)				5				
Adj. Flow (vph)	0	844	632	826	0	0		
Lane Group Flow (vph)	0	844	632	826	0	0		
Turn Type	custom		Perm					
Protected Phases			2				4	6
Permitted Phases		8		2				
Detector Phases		8	2	2				
Minimum Initial (s)		4.0	4.0	4.0			4.0	4.0
Minimum Split (s)		29.0	29.0	29.0			20.0	29.0
Total Split (s)	0.0	29.0	31.0	31.0	0.0	0.0	29.0	31.0
Total Split (%)	0.0%	48.3%	51.7%	51.7%	0.0%	0.0%	48%	52%
Maximum Green (s)		25.0	27.0	27.0			25.0	27.0
Yellow Time (s)		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)		0.5	0.5	0.5			0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)		3.0	3.0	3.0			3.0	3.0
Recall Mode		None	Max	Max			None	Max
Walk Time (s)			10.0	10.0			5.0	10.0
Flash Dont Walk (s)			15.0	15.0			11.0	15.0
Pedestrian Calls (#/hr)			10	10			10	10
Act Effct Green (s)		18.1	27.3	27.3				
Actuated g/C Ratio		0.34	0.51	0.51				
v/c Ratio		0.81	0.74	0.82				
Control Delay		13.0	18.5	10.2				
Queue Delay		0.0	3.7	0.2				
Total Delay		13.0	22.2	10.4				
LOS		B	C	B				
Approach Delay			15.5					



Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Approach LOS			B					
Stops (vph)		465	409	91				
Fuel Used(gal)		8	5	4				
CO Emissions (g/hr)		527	358	294				
NOx Emissions (g/hr)		103	70	57				
VOC Emissions (g/hr)		122	83	68				
Dilemma Vehicles (#)		0	0	0				

Intersection Summary

Area Type:	CBD
Cycle Length: 60	
Actuated Cycle Length: 53.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 60.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 143: East Cotati Avenue &

ø2	ø4
31 s	29 s
ø6	ø8
31 s	29 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	2	0	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50		
Trailing Detector (ft)	0			0		
Turning Speed (mph)	20	15	15			9
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00
Frt	0.950					
Flt Protected	0.968					
Satd. Flow (prot)	2991	0	0	1676	0	0
Flt Permitted	0.968					
Satd. Flow (perm)	2991	0	0	1676	0	0
Right Turn on Red	Yes	Yes				Yes
Satd. Flow (RTOR)	751					
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)	20			25	20	
Link Distance (ft)	279			429	293	
Travel Time (s)	9.5			11.7	10.0	
Volume (vph)	1001	500	0	457	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)		0				
Adj. Flow (vph)	1001	500	0	457	0	0
Lane Group Flow (vph)	1501	0	0	457	0	0
Turn Type						
Protected Phases	4			2		
Permitted Phases						
Detector Phases	4			2		
Minimum Initial (s)	4.0			4.0		
Minimum Split (s)	20.0			20.0		
Total Split (s)	20.0	0.0	0.0	20.0	0.0	0.0
Total Split (%)	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%
Maximum Green (s)	16.0			16.0		
Yellow Time (s)	3.5			3.5		
All-Red Time (s)	0.5			0.5		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Min		
Walk Time (s)	5.0			5.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	16.6			15.4		
Actuated g/C Ratio	0.42			0.38		
v/c Ratio	0.89			0.71		
Control Delay	15.3			17.4		
Queue Delay	1.8			0.4		
Total Delay	17.1			17.8		

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B			B		
Approach Delay	17.1			17.8		
Approach LOS	B			B		
Stops (vph)	636			354		
Fuel Used(gal)	10			5		
CO Emissions (g/hr)	711			325		
NOx Emissions (g/hr)	138			63		
VOC Emissions (g/hr)	165			75		
Dilemma Vehicles (#)	0			0		

Intersection Summary

Area Type: CBD

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 17.2

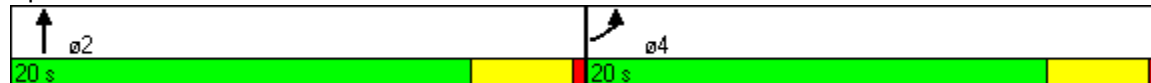
Intersection LOS: B

Intersection Capacity Utilization 82.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 144: La Plaza &



								
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø8
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0	0		100	0			
Storage Lanes	0	0		1	1			
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)				50	50	50		
Trailing Detector (ft)				0	0	0		
Turning Speed (mph)	15	9		15	20			
Lane Util. Factor	1.00	1.00	1.00	0.88	0.95	0.95		
Frt				0.850				
Flt Protected					0.950	0.979		
Satd. Flow (prot)	0	0	0	2508	1513	1364		
Flt Permitted					0.950	0.979		
Satd. Flow (perm)	0	0	0	2508	1513	1364		
Right Turn on Red		Yes		Yes	Yes			
Satd. Flow (RTOR)				617	519	51		
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.35		
Link Speed (mph)	20		25			20		
Link Distance (ft)	279		433			301		
Travel Time (s)	9.5		11.8			10.3		
Volume (vph)	0	0	0	414	1087	315		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)						5		
Adj. Flow (vph)	0	0	0	414	1087	315		
Lane Group Flow (vph)	0	0	0	414	850	552		
Turn Type			custom		Split			
Protected Phases					6	6	2	8
Permitted Phases				4				
Detector Phases				4	6	6		
Minimum Initial (s)				4.0	4.0	4.0	4.0	4.0
Minimum Split (s)				29.0	20.0	20.0	20.0	20.0
Total Split (s)	0.0	0.0	0.0	29.0	41.0	41.0	20.0	29.0
Total Split (%)	0.0%	0.0%	0.0%	32.2%	45.6%	45.6%	22%	32%
Maximum Green (s)				25.0	37.0	37.0	16.0	25.0
Yellow Time (s)				3.5	3.5	3.5	3.5	3.5
All-Red Time (s)				0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0
Recall Mode				None	Max	Max	None	None
Walk Time (s)				10.0			5.0	5.0
Flash Dont Walk (s)				15.0			11.0	11.0
Pedestrian Calls (#/hr)				10			10	10
Act Effct Green (s)				8.3	39.0	39.0		
Actuated g/C Ratio				0.14	0.67	0.67		
v/c Ratio				0.47	0.72	0.59		
Control Delay				0.7	9.3	13.3		
Queue Delay				0.0	0.3	0.1		
Total Delay				0.7	9.6	13.5		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø8
LOS				A	A	B		
Approach Delay						11.2		
Approach LOS						B		
Stops (vph)				0	188	226		
Fuel Used(gal)				2	4	4		
CO Emissions (g/hr)				111	313	253		
NOx Emissions (g/hr)				22	61	49		
VOC Emissions (g/hr)				26	73	59		
Dilemma Vehicles (#)				0	0	0		

Intersection Summary

Area Type:	CBD
Cycle Length:	90
Actuated Cycle Length:	58.4
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	8.8
Intersection LOS:	A
Intersection Capacity Utilization	65.4%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 145: La Plaza & West Sierra Avenue

ø2	ø6	ø4
20 s	41 s	29 s
		ø8
		29 s

Specific Plan 2025 AM
Mitigated Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

Specific Plan AM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50		
Trailing Detector (ft)	0	0	0	0		
Turning Speed (mph)	15	9		25	15	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850		0.850		
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	1863	1583	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	1863	1583	0	0
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		143		174		
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30		30			30
Link Distance (ft)	148		463			451
Travel Time (s)	3.4		10.5			10.3
Volume (vph)	436	176	958	420	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	436	176	958	420	0	0
Lane Group Flow (vph)	436	176	958	420	0	0
Turn Type		Perm		Free		
Protected Phases	1		2			
Permitted Phases		1		Free		
Detector Phases	1	1	2			
Minimum Initial (s)	4.0	4.0	4.0			
Minimum Split (s)	20.0	20.0	20.0			
Total Split (s)	34.0	34.0	66.0	0.0	0.0	0.0
Total Split (%)	34.0%	34.0%	66.0%	0.0%	0.0%	0.0%
Maximum Green (s)	30.0	30.0	62.0			
Yellow Time (s)	3.5	3.5	3.5			
All-Red Time (s)	0.5	0.5	0.5			
Lead/Lag	Lead	Lead	Lag			
Lead-Lag Optimize?	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0			
Recall Mode	Min	Min	C-Min			
Walk Time (s)	5.0	5.0	5.0			
Flash Dont Walk (s)	11.0	11.0	11.0			
Pedestrian Calls (#/hr)	0	0	0			
Act Effct Green (s)	27.7	27.7	64.3	100.0		
Actuated g/C Ratio	0.28	0.28	0.64	1.00		
v/c Ratio	0.89	0.32	0.80	0.27		
Control Delay	47.7	8.6	20.2	0.3		
Queue Delay	0.0	0.0	0.3	0.0		
Total Delay	47.7	8.6	20.5	0.3		
LOS	D	A	C	A		
Approach Delay	36.4		14.3			
Approach LOS	D		B			

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

Specific Plan AM - Mitigated

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Stops (vph)	390	36	646	0		
Fuel Used(gal)	10	2	11	2		
CO Emissions (g/hr)	686	132	766	108		
NOx Emissions (g/hr)	133	26	149	21		
VOC Emissions (g/hr)	159	31	178	25		
Dilemma Vehicles (#)	0	0	0	0		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 64 (64%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 21.1

Intersection LOS: C

Intersection Capacity Utilization 81.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway



Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		150	150		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.852	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1587	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			448								80	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	837	502	164	1117	0	0	0	0	534	4	368
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	837	502	164	1117	0	0	0	0	534	4	368
Lane Group Flow (vph)	0	837	502	164	1117	0	0	0	0	534	372	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	40.0	40.0	21.0	61.0	0.0	0.0	0.0	0.0	39.0	39.0	0.0
Total Split (%)	0.0%	40.0%	40.0%	21.0%	61.0%	0.0%	0.0%	0.0%	0.0%	39.0%	39.0%	0.0%
Maximum Green (s)		36.0	36.0	17.0	57.0					35.0	35.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		49.3	49.3	13.4	66.7					25.3	25.3	
Actuated g/C Ratio		0.49	0.49	0.13	0.67					0.25	0.25	
v/c Ratio		0.48	0.50	0.69	0.47					0.61	0.81	
Control Delay		11.0	2.5	52.5	2.3					33.2	30.8	
Queue Delay		0.2	0.3	0.0	0.3					0.0	0.0	
Total Delay		11.2	2.9	52.5	2.6					33.2	30.8	
LOS		B	A	D	A					C	C	

Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		8.1			9.0						32.2	
Approach LOS		A			A						C	
Stops (vph)		344	40	141	234					448	271	
Fuel Used(gal)		7	2	3	6					9	6	
CO Emissions (g/hr)		502	153	235	420					605	398	
NOx Emissions (g/hr)		98	30	46	82					118	77	
VOC Emissions (g/hr)		116	35	54	97					140	92	
Dilemma Vehicles (#)		36	0	0	2					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 96 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 14.6

Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
21 s	40 s	39 s
 ø6		
61 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan AM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						51
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1371	0	0	757	524	111
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1371	0	0	757	524	111
Lane Group Flow (vph)	1371	0	0	757	524	111
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	64.0	0.0	0.0	64.0	36.0	36.0
Total Split (%)	64.0%	0.0%	0.0%	64.0%	36.0%	36.0%
Maximum Green (s)	60.0			60.0	32.0	32.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	71.8			71.8	20.2	20.2
Actuated g/C Ratio	0.72			0.72	0.20	0.20
v/c Ratio	0.54			0.30	0.76	0.31
Control Delay	2.5			6.6	38.5	19.1
Queue Delay	0.1			0.5	0.0	0.0
Total Delay	2.6			7.1	38.5	19.1
LOS	A			A	D	B
Approach Delay	2.6			7.1	35.1	
Approach LOS	A			A	D	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan AM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	195			403	474	51
Fuel Used(gal)	7			6	8	1
CO Emissions (g/hr)	470			430	578	78
NOx Emissions (g/hr)	91			84	112	15
VOC Emissions (g/hr)	109			100	134	18
Dilemma Vehicles (#)	60			56	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 11.3

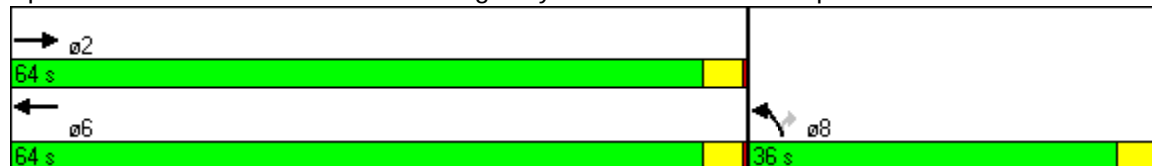
Intersection LOS: B

Intersection Capacity Utilization 73.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		0	0		0	300		0	150		0
Storage Lanes	1		1	1		0	1		0	1		1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	0.97	0.95	0.95	1.00	1.00	1.00	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.862	0.850		0.939			0.998				0.850
Flt Protected	0.950			0.950			0.950	0.999		0.950		
Satd. Flow (prot)	3433	1525	1504	1770	1749	0	1610	3380	0	1770	1863	1583
Flt Permitted	0.950			0.950			0.950	0.999		0.950		
Satd. Flow (perm)	3433	1525	1504	1770	1749	0	1610	3380	0	1770	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		360	573		26			1				277
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		384			249			1270			463	
Travel Time (s)		7.5			4.9			28.9			10.5	
Volume (vph)	518	31	933	51	50	34	430	826	10	1	158	277
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	518	31	933	51	50	34	430	826	10	1	158	277
Lane Group Flow (vph)	518	391	573	51	84	0	408	858	0	1	158	277
Turn Type	Split		custom	Split			Split			Split		Perm
Protected Phases	2	2	2	6	6		8	8		4	4	
Permitted Phases			3									4
Detector Phases	2	2	2	6	6		8	8		4	4	4
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	8.0	8.0	8.0	8.0	8.0		20.0	20.0		20.0	20.0	20.0
Total Split (s)	21.0	21.0	21.0	8.0	8.0	0.0	31.0	31.0	0.0	20.0	20.0	20.0
Total Split (%)	21.0%	21.0%	21.0%	8.0%	8.0%	0.0%	31.0%	31.0%	0.0%	20.0%	20.0%	20.0%
Maximum Green (s)	17.0	17.0	17.0	4.0	4.0		27.0	27.0		16.0	16.0	16.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag										Lead	Lead	Lead
Lead-Lag Optimize?										Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	None	None		Min	Min		Min	Min	Min
Walk Time (s)							5.0	5.0		5.0	5.0	5.0
Flash Dont Walk (s)							11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)							0	0		0	0	0
Act Effct Green (s)	20.6	20.6	26.1	4.0	4.0		34.9	34.9		15.0	15.0	15.0
Actuated g/C Ratio	0.21	0.21	0.26	0.04	0.04		0.35	0.35		0.15	0.15	0.15
v/c Ratio	0.73	0.65	0.70	0.72	0.88		0.73	0.73		0.00	0.57	0.59
Control Delay	43.7	12.0	8.9	96.6	101.2		36.3	32.1		28.0	25.4	9.4
Queue Delay	0.0	0.9	0.3	0.0	0.0		0.0	0.2		0.0	0.0	0.0
Total Delay	43.7	12.9	9.2	96.6	101.2		36.3	32.3		28.0	25.4	9.4
LOS	D	B	A	F	F		D	C		C	C	A

Lane Group	ø3
Lane Configurations	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Total Lost Time (s)	
Leading Detector (ft)	
Trailing Detector (ft)	
Turning Speed (mph)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Headway Factor	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Volume (vph)	
Peak Hour Factor	
Adj. Flow (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phases	
Minimum Initial (s)	4.0
Minimum Split (s)	20.0
Total Split (s)	20.0
Total Split (%)	20%
Maximum Green (s)	16.0
Yellow Time (s)	3.5
All-Red Time (s)	0.5
Lead/Lag	Lag
Lead-Lag Optimize?	Yes
Vehicle Extension (s)	3.0
Recall Mode	Min
Walk Time (s)	5.0
Flash Dont Walk (s)	11.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	

Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.2			99.5			33.6			15.3	
Approach LOS		C			F			C			B	
Stops (vph)	463	211	275	44	46		346	718		1	117	129
Fuel Used(gal)	10	4	5	1	2		9	18		0	2	2
CO Emissions (g/hr)	666	254	328	100	156		627	1263		1	142	157
NOx Emissions (g/hr)	130	49	64	19	30		122	246		0	28	31
VOC Emissions (g/hr)	154	59	76	23	36		145	293		0	33	36
Dilemma Vehicles (#)	0	26	0	0	4		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 14 (14%), Referenced to phase 2:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 28.8

Intersection LOS: C

Intersection Capacity Utilization 69.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

				
ø2	ø6	ø4	ø3	ø8
21 s	8 s	20 s	20 s	31 s

Lane Group	ø3
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Intersection Summary	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	150		0	250		0
Storage Lanes	0		0	0		0	1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.969			0.894						0.996	
Flt Protected		0.964			0.991		0.950			0.950		
Satd. Flow (prot)	0	1740	0	0	1650	0	1770	3539	0	1770	3525	0
Flt Permitted		0.820			0.969		0.950			0.950		
Satd. Flow (perm)	0	1480	0	0	1614	0	1770	3539	0	1770	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			22			1			6	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			25			30	
Link Distance (ft)		696			714			401			1270	
Travel Time (s)		19.0			19.5			10.9			28.9	
Volume (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	53	1	16	5	1	22	11	1191	3	4	1110	28
Lane Group Flow (vph)	0	70	0	0	28	0	11	1194	0	4	1138	0
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phases	4	4		8	8		5	2		1	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		8.0	20.0		8.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	8.0	20.0	0.0	8.0	20.0	0.0
Total Split (%)	41.7%	41.7%	0.0%	41.7%	41.7%	0.0%	16.7%	41.7%	0.0%	16.7%	41.7%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	16.0		4.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)		6.9			6.8		5.8	39.2		5.6	39.1	
Actuated g/C Ratio		0.14			0.14		0.12	0.82		0.12	0.81	
v/c Ratio		0.31			0.11		0.05	0.41		0.02	0.40	
Control Delay		15.2			9.9		19.0	5.8		18.8	5.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		15.2			9.9		19.0	5.8		18.8	5.7	
LOS		B			A		B	A		B	A	

Lanes, Volumes, Timings
10: William Street & Old Redwood Highway

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		15.2			9.9			5.9			5.7	
Approach LOS		B			A			A			A	
Stops (vph)		51			16		14	386		7	370	
Fuel Used(gal)		1			0		0	7		0	15	
CO Emissions (g/hr)		58			20		9	486		7	1023	
NOx Emissions (g/hr)		11			4		2	95		1	199	
VOC Emissions (g/hr)		13			5		2	113		2	237	
Dilemma Vehicles (#)		0			0		0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 48

Actuated Cycle Length: 48

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 6.1

Intersection LOS: A

Intersection Capacity Utilization 50.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: William Street & Old Redwood Highway

 ø1	 ø2	 ø4
8 s	20 s	20 s
 ø5	 ø6	 ø8
8 s	20 s	20 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Specific Plan AM - Mitigated

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	350		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950			
Satd. Flow (prot)	3536	0	1770	3539	1863	1583
Flt Permitted			0.950			
Satd. Flow (perm)	3536	0	1770	3539	1863	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	416			1192	704	
Travel Time (s)	9.5			27.1	19.2	
Volume (vph)	823	3	245	843	0	140
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	823	3	245	843	0	140
Lane Group Flow (vph)	826	0	245	843	0	140
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

Specific Plan AM - Mitigated

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↰	↑↑	↰	↰	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	823	3	245	843	0	140	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	823	3	245	843	0	140	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	416			1192			
pX, platoon unblocked							
vC, conflicting volume			826		1736	413	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			826		1736	413	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			69		100	76	
cM capacity (veh/h)			800		54	588	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	549	277	245	422	422	0	140
Volume Left	0	0	245	0	0	0	0
Volume Right	0	3	0	0	0	0	140
cSH	1700	1700	800	1700	1700	1700	588
Volume to Capacity	0.32	0.16	0.31	0.25	0.25	0.00	0.24
Queue Length 95th (ft)	0	0	32	0	0	0	23
Control Delay (s)	0.0	0.0	11.5	0.0	0.0	0.0	13.0
Lane LOS			B			A	B
Approach Delay (s)	0.0		2.6			13.0	
Approach LOS						B	
Intersection Summary							
Average Delay			2.3				
Intersection Capacity Utilization			43.1%		ICU Level of Service		A
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Specific Plan AM - Mitigated

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.969			0.991			0.971			0.998	
Flt Protected		0.983			0.958			0.999			0.999	
Satd. Flow (prot)	0	1774	0	0	1768	0	0	1807	0	0	1857	0
Flt Permitted		0.903			0.726			0.984			0.993	
Satd. Flow (perm)	0	1630	0	0	1340	0	0	1780	0	0	1846	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			11			41			3	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		713			704			1515			429	
Travel Time (s)		19.4			19.2			34.4			11.7	
Volume (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	12	15	8	212	12	16	15	428	122	6	485	9
Lane Group Flow (vph)	0	35	0	0	240	0	0	565	0	0	500	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		12.1			12.3			22.7			22.7	
Actuated g/C Ratio		0.28			0.29			0.56			0.56	
v/c Ratio		0.07			0.61			0.56			0.49	
Control Delay		6.9			12.7			11.9			10.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.9			12.7			11.9			10.2	
LOS		A			B			B			B	

Lanes, Volumes, Timings
 21: Henry Street & Old Redwood Highway

Specific Plan AM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		6.9			12.7			11.9			10.2	
Approach LOS		A			B			B			B	
Stops (vph)		21			172			342			324	
Fuel Used(gal)		0			3			10			4	
CO Emissions (g/hr)		24			190			694			287	
NOx Emissions (g/hr)		5			37			135			56	
VOC Emissions (g/hr)		6			44			161			67	
Dilemma Vehicles (#)		0			0			0			0	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40.7

Natural Cycle: 45

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 11.3

Intersection LOS: B

Intersection Capacity Utilization 65.8%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 21: Henry Street & Old Redwood Highway

 	 
20 s	20 s
20 s	20 s

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø4
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50	50				50		
Trailing Detector (ft)	0	0				0		
Turning Speed (mph)	20	15		9	15			
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.95		
Frt	0.910	0.850						
Flt Protected	0.980							
Satd. Flow (prot)	1495	1185	0	0	0	3185		
Flt Permitted	0.980							
Satd. Flow (perm)	1495	1185	0	0	0	3185		
Right Turn on Red	Yes	Yes		Yes				
Satd. Flow (RTOR)	191	800						
Headway Factor	1.14	1.35	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		20			25		
Link Distance (ft)	295		298			401		
Travel Time (s)	10.1		10.2			10.9		
Volume (vph)	271	1205	0	0	0	1131		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)		5						
Adj. Flow (vph)	271	1205	0	0	0	1131		
Lane Group Flow (vph)	676	800	0	0	0	1131		
Turn Type	Perm							
Protected Phases	8						2	4
Permitted Phases		8				6		
Detector Phases	8	8				6		
Minimum Initial (s)	4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	29.0	29.0				20.0	20.0	29.0
Total Split (s)	31.0	31.0	0.0	0.0	0.0	29.0	29.0	31.0
Total Split (%)	51.7%	51.7%	0.0%	0.0%	0.0%	48.3%	48%	52%
Maximum Green (s)	27.0	27.0				25.0	25.0	27.0
Yellow Time (s)	3.5	3.5				3.5	3.5	3.5
All-Red Time (s)	0.5	0.5				0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None				C-Max	C-Max	None
Walk Time (s)	10.0	10.0					5.0	10.0
Flash Dont Walk (s)	15.0	15.0					11.0	15.0
Pedestrian Calls (#/hr)	10	10					10	10
Act Effct Green (s)	25.6	25.6				26.4		
Actuated g/C Ratio	0.43	0.43				0.44		
v/c Ratio	0.90	0.83				0.81		
Control Delay	25.8	10.5				21.4		
Queue Delay	0.0	0.0				0.0		
Total Delay	25.8	10.5				21.4		
LOS	C	B				C		
Approach Delay	17.5					21.4		

												
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø4				
Approach LOS	B					C						
Stops (vph)	426	91				902						
Fuel Used(gal)	6	4				12						
CO Emissions (g/hr)	452	290				856						
NOx Emissions (g/hr)	88	56				167						
VOC Emissions (g/hr)	105	67				198						
Dilemma Vehicles (#)	0	0				0						

Intersection Summary

Area Type: CBD

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 0 (0%), Referenced to phase 2:Ped and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 85.5%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 141: La Plaza &

 ø2		 ø4	
29 s		31 s	
 ø6		 ø8	
29 s		31 s	

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Lane Configurations		↗↗	↖↖	↗				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)		50	50	50				
Trailing Detector (ft)		0	0	0				
Turning Speed (mph)	15	9	20	15	15	9		
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00		
Frt		0.850		0.850				
Flt Protected			0.950					
Satd. Flow (prot)	0	2508	1593	1185	0	0		
Flt Permitted			0.950					
Satd. Flow (perm)	0	2508	1593	1185	0	0		
Right Turn on Red		Yes	Yes	Yes		Yes		
Satd. Flow (RTOR)		304	73	826				
Headway Factor	1.14	1.14	1.14	1.35	1.14	1.14		
Link Speed (mph)	30		20		20			
Link Distance (ft)	416		293		294			
Travel Time (s)	9.5		10.0		10.0			
Volume (vph)	0	844	632	826	0	0		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)				5				
Adj. Flow (vph)	0	844	632	826	0	0		
Lane Group Flow (vph)	0	844	632	826	0	0		
Turn Type	custom		Perm					
Protected Phases			2				4	6
Permitted Phases		8		2				
Detector Phases		8	2	2				
Minimum Initial (s)		4.0	4.0	4.0			4.0	4.0
Minimum Split (s)		29.0	29.0	29.0			20.0	29.0
Total Split (s)	0.0	29.0	31.0	31.0	0.0	0.0	29.0	31.0
Total Split (%)	0.0%	48.3%	51.7%	51.7%	0.0%	0.0%	48%	52%
Maximum Green (s)		25.0	27.0	27.0			25.0	27.0
Yellow Time (s)		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)		0.5	0.5	0.5			0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)		3.0	3.0	3.0			3.0	3.0
Recall Mode		None	Max	Max			None	Max
Walk Time (s)			10.0	10.0			5.0	10.0
Flash Dont Walk (s)			15.0	15.0			11.0	15.0
Pedestrian Calls (#/hr)			10	10			10	10
Act Effct Green (s)		18.1	27.3	27.3				
Actuated g/C Ratio		0.34	0.51	0.51				
v/c Ratio		0.81	0.74	0.82				
Control Delay		13.0	18.5	10.2				
Queue Delay		0.0	3.7	0.2				
Total Delay		13.0	22.2	10.4				
LOS		B	C	B				
Approach Delay			15.5					

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Approach LOS	B							
Stops (vph)		465	409	91				
Fuel Used(gal)		8	5	4				
CO Emissions (g/hr)		527	358	294				
NOx Emissions (g/hr)		103	70	57				
VOC Emissions (g/hr)		122	83	68				
Dilemma Vehicles (#)		0	0	0				
Intersection Summary								
Area Type:	CBD							
Cycle Length: 60								
Actuated Cycle Length: 53.5								
Natural Cycle: 60								
Control Type: Semi Act-Uncoord								
Maximum v/c Ratio: 0.82								
Intersection Signal Delay: 14.6				Intersection LOS: B				
Intersection Capacity Utilization 60.9%				ICU Level of Service B				
Analysis Period (min) 15								

Splits and Phases: 143: East Cotati Avenue &

 ø2	 ø4
31 s	29 s
 ø6	 ø8
31 s	29 s

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	RT			LT		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	200			0
Storage Lanes	2	0	1			0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50		
Trailing Detector (ft)	0			0		
Turning Speed (mph)	20	15	15			9
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00
Frt	0.950					
Flt Protected	0.968					
Satd. Flow (prot)	2991	0	0	1676	0	0
Flt Permitted	0.968					
Satd. Flow (perm)	2991	0	0	1676	0	0
Right Turn on Red	Yes	Yes				Yes
Satd. Flow (RTOR)	751					
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14
Link Speed (mph)	20			25	20	
Link Distance (ft)	279			429	293	
Travel Time (s)	9.5			11.7	10.0	
Volume (vph)	1001	500	0	457	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)		0				
Adj. Flow (vph)	1001	500	0	457	0	0
Lane Group Flow (vph)	1501	0	0	457	0	0
Turn Type						
Protected Phases	4			2		
Permitted Phases						
Detector Phases	4			2		
Minimum Initial (s)	4.0			4.0		
Minimum Split (s)	20.0			20.0		
Total Split (s)	20.0	0.0	0.0	20.0	0.0	0.0
Total Split (%)	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%
Maximum Green (s)	16.0			16.0		
Yellow Time (s)	3.5			3.5		
All-Red Time (s)	0.5			0.5		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Min		
Walk Time (s)	5.0			5.0		
Flash Dont Walk (s)	11.0			11.0		
Pedestrian Calls (#/hr)	0			0		
Act Effct Green (s)	16.6			15.4		
Actuated g/C Ratio	0.42			0.38		
v/c Ratio	0.89			0.71		
Control Delay	15.3			17.4		
Queue Delay	1.8			0.4		
Total Delay	17.1			17.8		

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
LOS	B		B		B	
Approach Delay	17.1		17.8			
Approach LOS	B		B			
Stops (vph)	636		354			
Fuel Used(gal)	10		5			
CO Emissions (g/hr)	711		325			
NOx Emissions (g/hr)	138		63			
VOC Emissions (g/hr)	165		75			
Dilemma Vehicles (#)	0		0			

Intersection Summary

Area Type: CBD

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 17.2

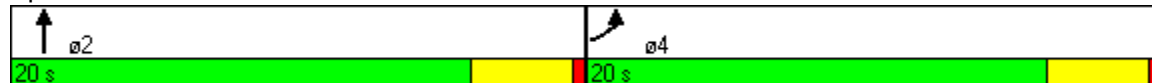
Intersection LOS: B

Intersection Capacity Utilization 82.6%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 144: La Plaza &



								
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø8
Lane Configurations				↗↗	↖↖	↖↖		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0	0		100	0			
Storage Lanes	0	0		1	1			
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)				50	50	50		
Trailing Detector (ft)				0	0	0		
Turning Speed (mph)	15	9		15	20			
Lane Util. Factor	1.00	1.00	1.00	0.88	0.95	0.95		
Frt				0.850				
Flt Protected					0.950	0.979		
Satd. Flow (prot)	0	0	0	2508	1513	1364		
Flt Permitted					0.950	0.979		
Satd. Flow (perm)	0	0	0	2508	1513	1364		
Right Turn on Red		Yes		Yes	Yes			
Satd. Flow (RTOR)				617	519	51		
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.35		
Link Speed (mph)	20		25			20		
Link Distance (ft)	279		433			301		
Travel Time (s)	9.5		11.8			10.3		
Volume (vph)	0	0	0	414	1087	315		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)						5		
Adj. Flow (vph)	0	0	0	414	1087	315		
Lane Group Flow (vph)	0	0	0	414	850	552		
Turn Type			custom		Split			
Protected Phases					6	6	2	8
Permitted Phases				4				
Detector Phases				4	6	6		
Minimum Initial (s)				4.0	4.0	4.0	4.0	4.0
Minimum Split (s)				29.0	20.0	20.0	20.0	20.0
Total Split (s)	0.0	0.0	0.0	29.0	41.0	41.0	20.0	29.0
Total Split (%)	0.0%	0.0%	0.0%	32.2%	45.6%	45.6%	22%	32%
Maximum Green (s)				25.0	37.0	37.0	16.0	25.0
Yellow Time (s)				3.5	3.5	3.5	3.5	3.5
All-Red Time (s)				0.5	0.5	0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0
Recall Mode				None	Max	Max	None	None
Walk Time (s)				10.0			5.0	5.0
Flash Dont Walk (s)				15.0			11.0	11.0
Pedestrian Calls (#/hr)				10			10	10
Act Effct Green (s)				8.3	39.0	39.0		
Actuated g/C Ratio				0.14	0.67	0.67		
v/c Ratio				0.47	0.72	0.59		
Control Delay				0.7	9.3	13.3		
Queue Delay				0.0	0.3	0.1		
Total Delay				0.7	9.6	13.5		



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ø2	ø8
LOS				A	A	B		
Approach Delay						11.2		
Approach LOS						B		
Stops (vph)				0	188	226		
Fuel Used(gal)				2	4	4		
CO Emissions (g/hr)				111	313	253		
NOx Emissions (g/hr)				22	61	49		
VOC Emissions (g/hr)				26	73	59		
Dilemma Vehicles (#)				0	0	0		

Intersection Summary

Area Type:	CBD
Cycle Length: 90	
Actuated Cycle Length: 58.4	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

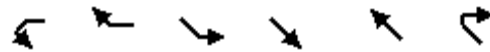
Splits and Phases: 145: La Plaza & West Sierra Avenue

ø2	ø6	ø4
20 s	41 s	29 s
		ø8
		29 s

Specific Plan 2025 PM
Conditions
Synchro

Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

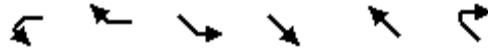
Specific Plan PM



Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	0			0
Storage Lanes	1	1	0			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50
Trailing Detector (ft)	0	0			0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	0	1863	1583
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	0	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		44				370
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	128			458	463	
Travel Time (s)	2.9			10.4	10.5	
Volume (vph)	522	75	0	0	908	764
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	522	75	0	0	908	764
Lane Group Flow (vph)	522	75	0	0	908	764
Turn Type		Perm				Free
Protected Phases	1				2	
Permitted Phases		1				Free
Detector Phases	1	1			2	
Minimum Initial (s)	4.0	4.0			4.0	
Minimum Split (s)	20.0	20.0			20.0	
Total Split (s)	35.0	35.0	0.0	0.0	55.0	0.0
Total Split (%)	38.9%	38.9%	0.0%	0.0%	61.1%	0.0%
Maximum Green (s)	31.0	31.0			51.0	
Yellow Time (s)	3.5	3.5			3.5	
All-Red Time (s)	0.5	0.5			0.5	
Lead/Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	
Vehicle Extension (s)	3.0	3.0			3.0	
Recall Mode	Min	Min			C-Min	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	29.1	29.1			52.9	90.0
Actuated g/C Ratio	0.32	0.32			0.59	1.00
v/c Ratio	0.91	0.14			0.83	0.48
Control Delay	43.3	10.9			20.4	0.7
Queue Delay	0.0	0.0			1.3	0.0
Total Delay	43.3	10.9			21.7	0.7
LOS	D	B			C	A

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

Specific Plan PM



Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Approach Delay	39.2				12.1	
Approach LOS	D				B	
Stops (vph)	459	26			484	7
Fuel Used(gal)	11	1			10	3
CO Emissions (g/hr)	783	62			680	203
NOx Emissions (g/hr)	152	12			132	39
VOC Emissions (g/hr)	181	14			158	47
Dilemma Vehicles (#)	0	0			0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 62 (69%), Referenced to phase 2:NWT and 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

 ø1	 ø2
35 s	55 s

Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.850	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			556								60	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	1124	556	122	1304	0	0	0	0	779	0	310
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1124	556	122	1304	0	0	0	0	779	0	310
Lane Group Flow (vph)	0	1124	556	122	1304	0	0	0	0	779	310	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	43.0	43.0	15.0	58.0	0.0	0.0	0.0	0.0	32.0	32.0	0.0
Total Split (%)	0.0%	47.8%	47.8%	16.7%	64.4%	0.0%	0.0%	0.0%	0.0%	35.6%	35.6%	0.0%
Maximum Green (s)		39.0	39.0	11.0	54.0					28.0	28.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		44.7	44.7	10.1	56.6					25.4	25.4	
Actuated g/C Ratio		0.50	0.50	0.11	0.63					0.28	0.28	
v/c Ratio		0.64	0.52	0.62	0.59					0.80	0.63	
Control Delay		14.2	3.2	48.2	6.9					34.2	26.8	
Queue Delay		0.2	0.4	0.0	0.3					0.0	0.0	
Total Delay		14.5	3.7	48.2	7.2					34.2	26.8	
LOS		B	A	D	A					C	C	

7: Gravenstein Highway & SB US 101 Off-ramp

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		10.9			10.7						32.1	
Approach LOS		B			B						C	
Stops (vph)		718	78	116	708					696	216	
Fuel Used(gal)		12	3	2	12					13	4	
CO Emissions (g/hr)		860	193	173	805					904	311	
NOx Emissions (g/hr)		167	37	34	157					176	61	
VOC Emissions (g/hr)		199	45	40	186					210	72	
Dilemma Vehicles (#)		65	0	0	0					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 86 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
15 s	43 s	32 s
 ø6		
58 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan PM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						26
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1903	0	0	868	558	202
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1903	0	0	868	558	202
Lane Group Flow (vph)	1903	0	0	868	558	202
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	66.0	0.0	0.0	66.0	24.0	24.0
Total Split (%)	73.3%	0.0%	0.0%	73.3%	26.7%	26.7%
Maximum Green (s)	62.0			62.0	20.0	20.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	63.5			63.5	18.5	18.5
Actuated g/C Ratio	0.71			0.71	0.21	0.21
v/c Ratio	0.76			0.35	0.79	0.58
Control Delay	10.9			2.8	40.0	33.6
Queue Delay	0.0			0.5	0.0	0.0
Total Delay	10.9			3.3	40.0	33.6
LOS	B			A	D	C
Approach Delay	10.9			3.3	38.3	
Approach LOS	B			A	D	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan PM

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	877			222	511	156
Fuel Used(gal)	17			5	9	3
CO Emissions (g/hr)	1200			319	628	201
NOx Emissions (g/hr)	233			62	122	39
VOC Emissions (g/hr)	278			74	146	47
Dilemma Vehicles (#)	56			3	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 70 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.9

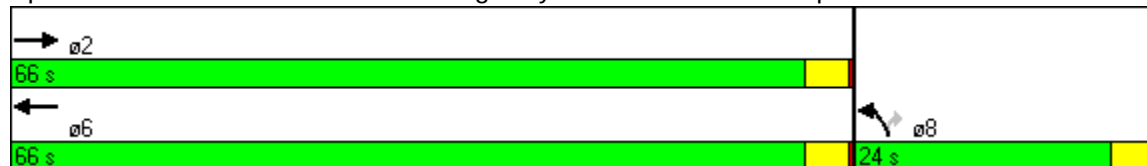
Intersection LOS: B

Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan PM

												
Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	0	150		0	300		0	0	0	
Storage Lanes		1	1	1		0	1		0	1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15	25	9	15		9	15		9	15	30	9
Lane Util. Factor	0.97	1.00	0.95	1.00	0.95	0.95	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.871	0.850		0.936			0.993			0.850	0.850
Flt Protected	0.950	0.993		0.950			0.950	0.995		0.950		
Satd. Flow (prot)	3433	1611	1504	1770	3313	0	1610	3350	0	1770	1583	1583
Flt Permitted	0.950	0.993		0.950			0.950	0.995		0.950		
Satd. Flow (perm)	3433	1611	1504	1770	3313	0	1610	3350	0	1770	1583	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		327	145		185			5				39
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			30			30		35		
Link Distance (ft)		384			463			1270		249		
Travel Time (s)		7.5			10.5			28.9		4.9		
Volume (vph)	741	78	1283	17	288	217	609	892	47	56	42	39
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	741	78	1283	17	288	217	609	892	47	56	42	39
Lane Group Flow (vph)	741	552	809	17	505	0	500	1048	0	56	42	39
Turn Type	Split		custom	Split			Split			Split		Perm
Protected Phases	2	2	2	4	4		8	8		6	6	
Permitted Phases			8									6
Detector Phases	2	2	2	4	4		8	8		6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		20.0	20.0		8.0	8.0	8.0
Total Split (s)	27.0	27.0	27.0	20.0	20.0	0.0	35.0	35.0	0.0	8.0	8.0	8.0
Total Split (%)	30.0%	30.0%	30.0%	22.2%	22.2%	0.0%	38.9%	38.9%	0.0%	8.9%	8.9%	8.9%
Maximum Green (s)	23.0	23.0	23.0	16.0	16.0		31.0	31.0		4.0	4.0	4.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	Min	Min		Min	Min		None	None	None
Walk Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0				
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	25.6	25.6	60.2	15.4	15.4		30.6	30.6		4.0	4.0	4.0
Actuated g/C Ratio	0.28	0.28	0.67	0.17	0.17		0.34	0.34		0.04	0.04	0.04
v/c Ratio	0.76	0.80	0.77	0.06	0.70		0.91	0.92		0.71	0.60	0.36
Control Delay	27.4	16.5	6.7	4.8	12.9		50.2	40.8		87.2	77.2	23.8
Queue Delay	0.0	0.9	0.4	0.0	0.0		0.0	1.6		0.0	0.0	0.0
Total Delay	27.4	17.4	7.1	4.8	12.9		50.2	42.3		87.2	77.2	23.8
LOS	C	B	A	A	B		D	D		F	E	C

Lanes, Volumes, Timings
 9: Gravenstein Highway & Old Redwood Highway

Specific Plan PM

												
Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Approach Delay	16.9			12.6			44.9			66.1		
Approach LOS	B			B			D			E		
Stops (vph)	655	271	117	10	422		430	927		48	39	14
Fuel Used(gal)	11	5	4	0	5		12	24		1	1	0
CO Emissions (g/hr)	776	379	296	9	383		869	1691		102	72	25
NOx Emissions (g/hr)	151	74	58	2	74		169	329		20	14	5
VOC Emissions (g/hr)	180	88	69	2	89		201	392		24	17	6
Dilemma Vehicles (#)	0	0	0	0	0		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 18 (20%), Referenced to phase 2:EBL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.0

Intersection LOS: C

Intersection Capacity Utilization 91.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

			
ø2	ø6	ø4	ø8
27 s	8 s	20 s	35 s

Lanes, Volumes, Timings
10: George Street & William Street

Specific Plan PM

												
Lane Group	WBL2	WBL	WBR	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0	100	0		250		0	150		0
Storage Lanes		1	0	1	0		1		0	0		0
Turning Speed (mph)	15	30	9	15	30	9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.887		0.960				0.995			0.999	
Flt Protected		0.992		0.966				0.999			0.999	
Satd. Flow (prot)	0	1639	0	1727	0	0	0	3518	0	0	3532	0
Flt Permitted		0.992		0.966				0.999			0.999	
Satd. Flow (perm)	0	1639	0	1727	0	0	0	3518	0	0	3532	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25		25				30			25	
Link Distance (ft)		714		696				1270			401	
Travel Time (s)		19.5		19.0				28.9			10.9	
Volume (vph)	3	2	25	67	2	26	22	1548	57	17	1451	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	2	25	67	2	26	22	1548	57	17	1451	6
Lane Group Flow (vph)	0	30	0	95	0	0	0	1627	0	0	1474	0
Sign Control		Stop		Stop				Stop			Stop	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilization 79.0% ICU Level of Service D												
Analysis Period (min) 15												

Intersection has too many legs for HCM analysis.

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Specific Plan PM

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	350		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3536	0	1770	3539	1770	1583
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3536	0	1770	3539	1770	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	416			1192	704	
Travel Time (s)	9.5			27.1	19.2	
Volume (vph)	1212	6	166	1086	21	260
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1212	6	166	1086	21	260
Lane Group Flow (vph)	1218	0	166	1086	21	260
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	56.5%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
15: East Cotati Avenue & Charles Street

Specific Plan PM

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↱	↑↑	↱	↱	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	1212	6	166	1086	21	260	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1212	6	166	1086	21	260	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	416			1192			
pX, platoon unblocked					0.93		
vC, conflicting volume			1218		2090	609	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1218		2097	609	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			71		29	41	
cM capacity (veh/h)			568		29	438	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	808	410	166	543	543	21	260
Volume Left	0	0	166	0	0	21	0
Volume Right	0	6	0	0	0	0	260
cSH	1700	1700	568	1700	1700	29	438
Volume to Capacity	0.48	0.24	0.29	0.32	0.32	0.71	0.59
Queue Length 95th (ft)	0	0	30	0	0	58	94
Control Delay (s)	0.0	0.0	13.9	0.0	0.0	271.7	24.5
Lane LOS			B			F	C
Approach Delay (s)	0.0		1.8			43.0	
Approach LOS						E	
Intersection Summary							
Average Delay			5.2				
Intersection Capacity Utilization			56.5%		ICU Level of Service		B
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Specific Plan PM

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.965			0.980			0.965			0.995	
Flt Protected		0.977			0.962			0.999			0.998	
Satd. Flow (prot)	0	1756	0	0	1756	0	0	1796	0	0	1850	0
Flt Permitted		0.977			0.962			0.999			0.998	
Satd. Flow (perm)	0	1756	0	0	1756	0	0	1796	0	0	1850	0
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		713			704			1515			429	
Travel Time (s)		19.4			19.2			34.4			11.7	
Volume (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Lane Group Flow (vph)	0	86	0	0	188	0	0	818	0	0	635	0
Sign Control		Yield			Yield			Yield			Yield	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 72.4% ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Henry Street & Old Redwood Highway

Specific Plan PM

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Yield			Yield			Yield			Yield	
Volume (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	86	188	818	635								
Volume Left (vph)	40	150	12	28								
Volume Right (vph)	22	28	211	23								
Hadj (s)	-0.03	0.10	-0.12	0.02								
Departure Headway (s)	8.0	7.6	5.9	6.1								
Degree Utilization, x	0.19	0.40	1.35	1.07								
Capacity (veh/h)	432	461	609	602								
Control Delay (s)	12.8	15.5	186.9	82.1								
Approach Delay (s)	12.8	15.5	186.9	82.1								
Approach LOS	B	C	F	F								
Intersection Summary												
Delay			121.0									
HCM Level of Service			F									
Intersection Capacity Utilization			72.4%	ICU Level of Service				C				
Analysis Period (min)			15									

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

Specific Plan PM

Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø4
Lane Configurations	W	W	N	N	S	S		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50	50				50		
Trailing Detector (ft)	0	0				0		
Turning Speed (mph)	20	15	15	9	5	9		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.88		
Frt	0.922	0.850				0.850		
Flt Protected	0.976							
Satd. Flow (prot)	1509	1185	0	0	0	2508		
Flt Permitted	0.976							
Satd. Flow (perm)	1509	1185	0	0	0	2508		
Right Turn on Red	Yes	Yes		Yes		Yes		
Satd. Flow (RTOR)	88	1089				693		
Headway Factor	1.14	1.35	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		20		25			
Link Distance (ft)	295		298		401			
Travel Time (s)	10.1		10.2		10.9			
Volume (vph)	359	1474	0	0	0	1577		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)		5						
Adj. Flow (vph)	359	1474	0	0	0	1577		
Lane Group Flow (vph)	744	1089	0	0	0	1577		
Turn Type	Perm							
Protected Phases	8						2	4
Permitted Phases		8				6		
Detector Phases	8	8				6		
Minimum Initial (s)	4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	29.0	29.0				29.0	20.0	29.0
Total Split (s)	45.0	45.0	0.0	0.0	0.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	0.0%	0.0%	0.0%	50.0%	50%	50%
Maximum Green (s)	41.0	41.0				41.0	41.0	41.0
Yellow Time (s)	3.5	3.5				3.5	3.5	3.5
All-Red Time (s)	0.5	0.5				0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None				C-Max	C-Max	None
Walk Time (s)	10.0	10.0				10.0	5.0	10.0
Flash Dont Walk (s)	15.0	15.0				15.0	11.0	15.0
Pedestrian Calls (#/hr)	10	10				10	10	10
Act Effct Green (s)	41.0	41.0				41.0		
Actuated g/C Ratio	0.46	0.46				0.46		
v/c Ratio	1.01	0.96				1.04		
Control Delay	48.4	17.2				48.9		
Queue Delay	0.0	0.9				0.0		
Total Delay	48.4	18.1				48.9		
LOS	D	B				D		
Approach Delay	30.4							



Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø4
Approach LOS	C							
Stops (vph)	569	391				916		
Fuel Used(gal)	11	8				25		
CO Emissions (g/hr)	754	545				1719		
NOx Emissions (g/hr)	147	106				334		
VOC Emissions (g/hr)	175	126				398		
Dilemma Vehicles (#)	0	0				0		

Intersection Summary

Area Type: CBD
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 86 (96%), Referenced to phase 2:Ped and 6:SER, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 38.9 Intersection LOS: D
Intersection Capacity Utilization 70.9% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 141: La Plaza & Old Redwood Highway

ø2	ø4
45 s	45 s
ø6	ø8
45 s	45 s

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)		50	50	50				
Trailing Detector (ft)		0	0	0				
Turning Speed (mph)	15	9	20	15	15	9		
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00		
Frt		0.850	0.979	0.850				
Flt Protected			0.959					
Satd. Flow (prot)	0	2508	1574	1185	0	0		
Flt Permitted			0.959					
Satd. Flow (perm)	0	2508	1574	1185	0	0		
Right Turn on Red		Yes	Yes	Yes		Yes		
Satd. Flow (RTOR)		334	32	1091				
Headway Factor	1.14	1.14	1.14	1.35	1.14	1.14		
Link Speed (mph)	30		20		20			
Link Distance (ft)	416		293		294			
Travel Time (s)	9.5		10.0		10.0			
Volume (vph)	0	1091	742	1218	0	0		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.92		
Parking (#/hr)				5				
Adj. Flow (vph)	0	1091	742	1218	0	0		
Lane Group Flow (vph)	0	1091	863	1097	0	0		
Turn Type	custom		Perm					
Protected Phases		8	2				4	6
Permitted Phases				2				
Detector Phases		8	2	2				
Minimum Initial (s)		4.0	4.0	4.0			4.0	4.0
Minimum Split (s)		29.0	29.0	29.0			20.0	29.0
Total Split (s)	0.0	36.0	54.0	54.0	0.0	0.0	36.0	54.0
Total Split (%)	0.0%	40.0%	60.0%	60.0%	0.0%	0.0%	40%	60%
Maximum Green (s)		32.0	50.0	50.0			32.0	50.0
Yellow Time (s)		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)		0.5	0.5	0.5			0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)		3.0	3.0	3.0			3.0	3.0
Recall Mode		None	C-Max	C-Max			None	C-Max
Walk Time (s)			10.0	10.0			5.0	10.0
Flash Dont Walk (s)			15.0	15.0			11.0	15.0
Pedestrian Calls (#/hr)			10	10			10	10
Act Effct Green (s)		32.0	50.0	50.0				
Actuated g/C Ratio		0.36	0.56	0.56				
v/c Ratio		0.99	0.97	0.96				
Control Delay		45.1	37.7	20.3				
Queue Delay		0.0	10.5	0.0				
Total Delay		45.1	48.2	20.3				
LOS		D	D	C				
Approach Delay			32.6					

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

Specific Plan PM

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Approach LOS			C					
Stops (vph)		717	668	313				
Fuel Used(gal)		18	11	8				
CO Emissions (g/hr)		1225	743	581				
NOx Emissions (g/hr)		238	145	113				
VOC Emissions (g/hr)		284	172	135				
Dilemma Vehicles (#)		0	0	0				

Intersection Summary

Area Type:	CBD
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 24 (27%), Referenced to phase 2:NBL and 6:Ped, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 37.1	Intersection LOS: D
Intersection Capacity Utilization 76.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 143: East Cotati Avenue & La Plaza

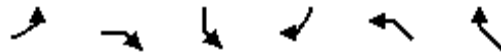
 ø2	 ø4
54 s	36 s
 ø6	 ø8
54 s	36 s



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0	0	0	150
Storage Lanes	2	0	0	0	1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50					50
Trailing Detector (ft)	0					0
Turning Speed (mph)	20	9	15	9	15	9
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00
Frt	0.951					0.865
Flt Protected	0.968					
Satd. Flow (prot)	2994	0	0	0	0	1269
Flt Permitted	0.968					
Satd. Flow (perm)	2994	0	0	0	0	1269
Right Turn on Red	Yes	Yes		Yes		Yes
Satd. Flow (RTOR)	1131					
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.35
Link Speed (mph)	20		20		25	
Link Distance (ft)	279		293		429	
Travel Time (s)	9.5		10.0		11.7	
Volume (vph)	1291	635	0	0	0	669
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)		5				5
Adj. Flow (vph)	1291	635	0	0	0	669
Lane Group Flow (vph)	1926	0	0	0	0	669
Turn Type						
Protected Phases	4					2
Permitted Phases						4
Detector Phases	4					2
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	20.0					20.0
Total Split (s)	67.0	0.0	0.0	0.0	0.0	23.0
Total Split (%)	74.4%	0.0%	0.0%	0.0%	0.0%	25.6%
Maximum Green (s)	63.0					19.0
Yellow Time (s)	3.5					3.5
All-Red Time (s)	0.5					0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Min
Walk Time (s)	5.0					5.0
Flash Dont Walk (s)	11.0					11.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	66.6					90.0
Actuated g/C Ratio	0.74					1.00
v/c Ratio	0.77					0.53
Control Delay	2.7					1.6
Queue Delay	3.9					0.2
Total Delay	6.5					1.8

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

Specific Plan PM



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
LOS	A					A
Approach Delay	6.5					
Approach LOS	A					
Stops (vph)	193					1
Fuel Used(gal)	7					3
CO Emissions (g/hr)	459					186
NOx Emissions (g/hr)	89					36
VOC Emissions (g/hr)	106					43
Dilemma Vehicles (#)	0					0

Intersection Summary

Area Type: CBD

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 68 (76%), Referenced to phase 2:NWR and 6:, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 5.3

Intersection LOS: A

Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 144: La Plaza & Old Redwood Highway

 Ø2	 Ø4
23 s	67 s



Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø8
Lane Configurations				↑↑	↑↑			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0	0	0	150	0	0		
Storage Lanes	0	0	0	1	0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)				50	50			
Trailing Detector (ft)				0	0			
Turning Speed (mph)	15	9	15	9	20	15		
Lane Util. Factor	1.00	1.00	1.00	0.88	0.97	0.95		
Frt				0.850	0.961			
Flt Protected					0.964			
Satd. Flow (prot)	0	0	0	2508	3013	0		
Flt Permitted					0.964			
Satd. Flow (perm)	0	0	0	2508	3013	0		
Right Turn on Red		Yes		Yes	No	Yes		
Satd. Flow (RTOR)				90	109			
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		25		20			
Link Distance (ft)	279		433		301			
Travel Time (s)	9.5		11.8		10.3			
Volume (vph)	0	0	0	481	1445	501		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)						5		
Adj. Flow (vph)	0	0	0	481	1445	501		
Lane Group Flow (vph)	0	0	0	481	1946	0		
Turn Type				custom				
Protected Phases					6		2	8
Permitted Phases				4				
Detector Phases				4	6			
Minimum Initial (s)				4.0	4.0		4.0	4.0
Minimum Split (s)				29.0	20.0		20.0	20.0
Total Split (s)	0.0	0.0	0.0	29.0	61.0	0.0	61.0	29.0
Total Split (%)	0.0%	0.0%	0.0%	32.2%	67.8%	0.0%	68%	32%
Maximum Green (s)				25.0	57.0		57.0	25.0
Yellow Time (s)				3.5	3.5		3.5	3.5
All-Red Time (s)				0.5	0.5		0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)				3.0	3.0		3.0	3.0
Recall Mode				None	C-Max		None	None
Walk Time (s)				10.0			5.0	5.0
Flash Dont Walk (s)				15.0			11.0	11.0
Pedestrian Calls (#/hr)				10			10	10
Act Effct Green (s)				18.9	63.1			
Actuated g/C Ratio				0.21	0.70			
v/c Ratio				0.80	0.91			
Control Delay				30.7	12.7			
Queue Delay				0.1	0.0			
Total Delay				30.7	12.7			



Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø8
LOS				C	B			
Approach Delay					12.7			
Approach LOS					B			
Stops (vph)				363	1216			
Fuel Used(gal)				6	14			
CO Emissions (g/hr)				431	945			
NOx Emissions (g/hr)				84	184			
VOC Emissions (g/hr)				100	219			
Dilemma Vehicles (#)				0	0			

Intersection Summary

Area Type:	CBD
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 12 (13%), Referenced to phase 6:SEL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 16.3	Intersection LOS: B
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 145: La Plaza & West Sierra Avenue

ø2	ø4
61 s	29 s
ø6	ø8
61 s	29 s

Specific Plan 2025 PM
Mitigated Conditions
Synchro

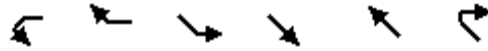
Lanes, Volumes, Timings
3: Commerce Boulevard & Old Redwood Highway

Specific Plan PM - Mitigated

						
Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	100	0			0
Storage Lanes	1	1	0			1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50			50	50
Trailing Detector (ft)	0	0			0	0
Turning Speed (mph)	15	9	15			9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950					
Satd. Flow (prot)	1770	1583	0	0	1863	1583
Flt Permitted	0.950					
Satd. Flow (perm)	1770	1583	0	0	1863	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		44				370
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	30	
Link Distance (ft)	128			458	463	
Travel Time (s)	2.9			10.4	10.5	
Volume (vph)	522	75	0	0	908	764
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	522	75	0	0	908	764
Lane Group Flow (vph)	522	75	0	0	908	764
Turn Type		Perm				Free
Protected Phases	1				2	
Permitted Phases		1				Free
Detector Phases	1	1			2	
Minimum Initial (s)	4.0	4.0			4.0	
Minimum Split (s)	20.0	20.0			20.0	
Total Split (s)	35.0	35.0	0.0	0.0	55.0	0.0
Total Split (%)	38.9%	38.9%	0.0%	0.0%	61.1%	0.0%
Maximum Green (s)	31.0	31.0			51.0	
Yellow Time (s)	3.5	3.5			3.5	
All-Red Time (s)	0.5	0.5			0.5	
Lead/Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes			Yes	
Vehicle Extension (s)	3.0	3.0			3.0	
Recall Mode	Min	Min			C-Min	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	11.0	11.0			11.0	
Pedestrian Calls (#/hr)	0	0			0	
Act Effct Green (s)	29.1	29.1			52.9	90.0
Actuated g/C Ratio	0.32	0.32			0.59	1.00
v/c Ratio	0.91	0.14			0.83	0.48
Control Delay	43.3	10.9			20.4	0.7
Queue Delay	0.0	0.0			1.3	0.0
Total Delay	43.3	10.9			21.7	0.7
LOS	D	B			C	A

Lanes, Volumes, Timings
 3: Commerce Boulevard & Old Redwood Highway

Specific Plan PM - Mitigated



Lane Group	WBL	WBR	SEL	SET	NWT	NWR
Approach Delay	39.2				12.1	
Approach LOS	D				B	
Stops (vph)	459	26			484	7
Fuel Used(gal)	11	1			10	3
CO Emissions (g/hr)	783	62			680	203
NOx Emissions (g/hr)	152	12			132	40
VOC Emissions (g/hr)	181	14			158	47
Dilemma Vehicles (#)	0	0			0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 62 (69%), Referenced to phase 2:NWT and 6:, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 3: Commerce Boulevard & Old Redwood Highway

 ø1	 ø2
35 s	55 s

Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑	↑↑					↑↑	↑	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	450		0
Storage Lanes	0		1	1		0	0		0	2		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)		50	50	50	50					50	50	
Trailing Detector (ft)		0	0	0	0					0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt			0.850								0.850	
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	3539	1583	1770	3539	0	0	0	0	3433	1583	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			556								60	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			35			25			25	
Link Distance (ft)		449			461			617			731	
Travel Time (s)		8.7			9.0			16.8			19.9	
Volume (vph)	0	1124	556	122	1304	0	0	0	0	779	0	310
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1124	556	122	1304	0	0	0	0	779	0	310
Lane Group Flow (vph)	0	1124	556	122	1304	0	0	0	0	779	310	0
Turn Type			Perm	Prot						Perm		
Protected Phases		2		1	6						4	
Permitted Phases			2							4		
Detector Phases		2	2	1	6					4	4	
Minimum Initial (s)		4.0	4.0	4.0	4.0					4.0	4.0	
Minimum Split (s)		20.0	20.0	8.0	20.0					20.0	20.0	
Total Split (s)	0.0	43.0	43.0	15.0	58.0	0.0	0.0	0.0	0.0	32.0	32.0	0.0
Total Split (%)	0.0%	47.8%	47.8%	16.7%	64.4%	0.0%	0.0%	0.0%	0.0%	35.6%	35.6%	0.0%
Maximum Green (s)		39.0	39.0	11.0	54.0					28.0	28.0	
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5	3.5	
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5	0.5	
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	
Recall Mode		C-Max	C-Max	None	C-Max					Min	Min	
Walk Time (s)		5.0	5.0		5.0					5.0	5.0	
Flash Dont Walk (s)		11.0	11.0		11.0					11.0	11.0	
Pedestrian Calls (#/hr)		0	0		0					0	0	
Act Effct Green (s)		44.7	44.7	10.1	56.6					25.4	25.4	
Actuated g/C Ratio		0.50	0.50	0.11	0.63					0.28	0.28	
v/c Ratio		0.64	0.52	0.62	0.59					0.80	0.63	
Control Delay		14.2	3.2	48.2	6.9					34.2	26.8	
Queue Delay		0.2	0.4	0.0	0.3					0.0	0.0	
Total Delay		14.5	3.7	48.2	7.2					34.2	26.8	
LOS		B	A	D	A					C	C	

Lanes, Volumes, Timings
7: Gravenstein Highway & SB US 101 Off-ramp

Specific Plan PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		10.9			10.7						32.1	
Approach LOS		B			B						C	
Stops (vph)		718	78	116	708					696	216	
Fuel Used(gal)		12	3	2	12					13	4	
CO Emissions (g/hr)		860	193	173	805					904	311	
NOx Emissions (g/hr)		167	37	34	157					176	61	
VOC Emissions (g/hr)		199	45	40	186					210	72	
Dilemma Vehicles (#)		65	0	0	0					0	0	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 86 (96%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 7: Gravenstein Highway & SB US 101 Off-ramp

 ø1	 ø2	 ø4
15 s	43 s	32 s
 ø6		
58 s		

Lanes, Volumes, Timings
8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan PM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	↗
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50			50	50	50
Trailing Detector (ft)	0			0	0	0
Turning Speed (mph)		30	30		15	9
Lane Util. Factor	0.95	1.00	1.00	0.95	0.97	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	3539	0	0	3539	3433	1583
Flt Permitted					0.950	
Satd. Flow (perm)	3539	0	0	3539	3433	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						26
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	35			35	25	
Link Distance (ft)	461			384	524	
Travel Time (s)	9.0			7.5	14.3	
Volume (vph)	1903	0	0	868	558	202
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1903	0	0	868	558	202
Lane Group Flow (vph)	1903	0	0	868	558	202
Turn Type						Perm
Protected Phases	2			6	8	
Permitted Phases						8
Detector Phases	2			6	8	8
Minimum Initial (s)	4.0			4.0	4.0	4.0
Minimum Split (s)	20.0			20.0	20.0	20.0
Total Split (s)	66.0	0.0	0.0	66.0	24.0	24.0
Total Split (%)	73.3%	0.0%	0.0%	73.3%	26.7%	26.7%
Maximum Green (s)	62.0			62.0	20.0	20.0
Yellow Time (s)	3.5			3.5	3.5	3.5
All-Red Time (s)	0.5			0.5	0.5	0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	C-Max			C-Max	Min	Min
Walk Time (s)	5.0			5.0	5.0	5.0
Flash Dont Walk (s)	11.0			11.0	11.0	11.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	63.5			63.5	18.5	18.5
Actuated g/C Ratio	0.71			0.71	0.21	0.21
v/c Ratio	0.76			0.35	0.79	0.58
Control Delay	10.9			2.8	40.0	33.6
Queue Delay	0.0			0.5	0.0	0.0
Total Delay	10.9			3.3	40.0	33.6
LOS	B			A	D	C
Approach Delay	10.9			3.3	38.3	
Approach LOS	B			A	D	

Lanes, Volumes, Timings
 8: Gravenstein Highway & NB US 101 Off-ramp

Specific Plan PM - Mitigated

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Stops (vph)	877			222	511	156
Fuel Used(gal)	17			5	9	3
CO Emissions (g/hr)	1200			319	628	201
NOx Emissions (g/hr)	233			62	122	39
VOC Emissions (g/hr)	278			74	146	47
Dilemma Vehicles (#)	56			3	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 70 (78%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 14.9

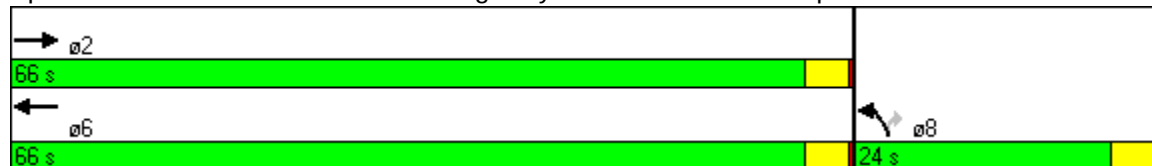
Intersection LOS: B

Intersection Capacity Utilization 94.9%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 8: Gravenstein Highway & NB US 101 Off-ramp



Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan PM - Mitigated

												
Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		150	0	150		0	300		0	0	0	
Storage Lanes		1	1	1		0	1		0	1	1	
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50	50	50	50		50	50		50	50	50
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Turning Speed (mph)	15	25	9	15		9	15		9	15	30	9
Lane Util. Factor	0.97	1.00	0.95	1.00	0.95	0.95	0.91	0.91	0.95	1.00	1.00	1.00
Frt		0.871	0.850		0.936			0.993			0.850	0.850
Flt Protected	0.950	0.993		0.950			0.950	0.995		0.950		
Satd. Flow (prot)	3433	1611	1504	1770	3313	0	1610	3350	0	1770	1583	1583
Flt Permitted	0.950	0.993		0.950			0.950	0.995		0.950		
Satd. Flow (perm)	3433	1611	1504	1770	3313	0	1610	3350	0	1770	1583	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		327	145		185			5				39
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		35			30			30		35		
Link Distance (ft)		384			463			1270		249		
Travel Time (s)		7.5			10.5			28.9		4.9		
Volume (vph)	741	78	1283	17	288	217	609	892	47	56	42	39
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	741	78	1283	17	288	217	609	892	47	56	42	39
Lane Group Flow (vph)	741	552	809	17	505	0	500	1048	0	56	42	39
Turn Type	Split		custom	Split			Split			Split		Perm
Protected Phases	2	2	2	4	4		8	8		6	6	
Permitted Phases			8									6
Detector Phases	2	2	2	4	4		8	8		6	6	6
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0		20.0	20.0		8.0	8.0	8.0
Total Split (s)	27.0	27.0	27.0	20.0	20.0	0.0	35.0	35.0	0.0	8.0	8.0	8.0
Total Split (%)	30.0%	30.0%	30.0%	22.2%	22.2%	0.0%	38.9%	38.9%	0.0%	8.9%	8.9%	8.9%
Maximum Green (s)	23.0	23.0	23.0	16.0	16.0		31.0	31.0		4.0	4.0	4.0
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5		0.5	0.5		0.5	0.5	0.5
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	C-Max	C-Max	C-Max	Min	Min		Min	Min		None	None	None
Walk Time (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0				
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0				
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0				
Act Effct Green (s)	25.6	25.6	60.2	15.4	15.4		30.6	30.6		4.0	4.0	4.0
Actuated g/C Ratio	0.28	0.28	0.67	0.17	0.17		0.34	0.34		0.04	0.04	0.04
v/c Ratio	0.76	0.80	0.77	0.06	0.70		0.91	0.92		0.71	0.60	0.36
Control Delay	27.4	16.5	6.7	4.8	12.9		50.2	40.8		87.2	77.2	23.8
Queue Delay	0.0	0.9	0.4	0.0	0.0		0.0	1.6		0.0	0.0	0.0
Total Delay	27.4	17.4	7.1	4.8	12.9		50.2	42.3		87.2	77.2	23.8
LOS	C	B	A	A	B		D	D		F	E	C

Lanes, Volumes, Timings
9: Gravenstein Highway & Old Redwood Highway

Specific Plan PM - Mitigated

												
Lane Group	EBL2	EBL	EBR	SEL	SET	SER	NWL	NWT	NWR	SWL	SWR	SWR2
Approach Delay	16.9			12.6			44.9			66.1		
Approach LOS	B			B			D			E		
Stops (vph)	655	271	117	10	422		430	927		48	39	14
Fuel Used(gal)	11	5	4	0	5		12	24		1	1	0
CO Emissions (g/hr)	776	379	296	9	383		869	1691		102	72	25
NOx Emissions (g/hr)	151	74	58	2	74		169	329		20	14	5
VOC Emissions (g/hr)	180	88	69	2	89		201	392		24	17	6
Dilemma Vehicles (#)	0	0	0	0	0		0	0		0	0	0

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 18 (20%), Referenced to phase 2:EBL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 28.0

Intersection LOS: C

Intersection Capacity Utilization 91.5%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 9: Gravenstein Highway & Old Redwood Highway

			
ø2	ø6	ø4	ø8
27 s	8 s	20 s	35 s

Lanes, Volumes, Timings
10: George Street & William Street

Specific Plan PM - Mitigated

												
Lane Group	WBL2	WBL	WBR	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0	100	0		250		0	150		0
Storage Lanes		1	0	1	1		1		0	1		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15	30	9	15	30	9	15		9	15		9
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.887			0.850			0.995			0.999	
Flt Protected		0.992		0.950			0.950			0.950		
Satd. Flow (prot)	0	1639	0	1770	1583	0	1770	3522	0	1770	3536	0
Flt Permitted		0.975		0.950			0.950			0.950		
Satd. Flow (perm)	0	1611	0	1770	1583	0	1770	3522	0	1770	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			26			8			1	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25		25				30			25	
Link Distance (ft)		714		696				1270			401	
Travel Time (s)		19.5		19.0				28.9			10.9	
Volume (vph)	3	2	25	67	2	26	22	1548	57	17	1451	6
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	3	2	25	67	2	26	22	1548	57	17	1451	6
Lane Group Flow (vph)	0	30	0	67	28	0	22	1605	0	17	1457	0
Turn Type	Perm			custom			Prot			Prot		
Protected Phases		8!			4!		1	6		5	2	
Permitted Phases	8!			4!								
Detector Phases	8	8		4	4		1	6		5	2	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		8.0	20.0		8.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	8.0	20.0	0.0	8.0	20.0	0.0
Total Split (%)	41.7%	41.7%	0.0%	41.7%	41.7%	0.0%	16.7%	41.7%	0.0%	16.7%	41.7%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		4.0	16.0		4.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Min		None	C-Min	
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	
Act Effct Green (s)		7.0		7.0	7.0		6.0	36.1		5.9	36.1	
Actuated g/C Ratio		0.15		0.15	0.15		0.12	0.75		0.12	0.75	
v/c Ratio		0.12		0.26	0.11		0.10	0.60		0.08	0.55	
Control Delay		9.5		18.1	8.8		19.3	10.1		19.1	9.3	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		9.5		18.1	8.8		19.3	10.2		19.1	9.3	
LOS		A		B	A		B	B		B	A	

Lanes, Volumes, Timings
10: George Street & William Street

Specific Plan PM - Mitigated

												
Lane Group	WBL2	WBL	WBR	NBL	NBR	NBR2	SEL	SET	SER	NWL	NWT	NWR
Approach Delay		9.5		15.4				10.3			9.4	
Approach LOS		A		B				B			A	
Stops (vph)		16		59	13		23	606		19	547	
Fuel Used(gal)		0		1	0		0	23		0	10	
CO Emissions (g/hr)		21		61	19		30	1577		14	687	
NOx Emissions (g/hr)		4		12	4		6	307		3	134	
VOC Emissions (g/hr)		5		14	4		7	365		3	159	
Dilemma Vehicles (#)		0		0	0		0	0		0	0	

Intersection Summary

Area Type: Other

Cycle Length: 48

Actuated Cycle Length: 48

Offset: 8 (17%), Referenced to phase 2:NWT and 6:SET, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 10.0

Intersection LOS: B

Intersection Capacity Utilization 61.6%

ICU Level of Service B

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 10: George Street & William Street

 ø1	 ø2	 ø4
8 s	20 s	20 s
 ø5	 ø6	 ø8
8 s	20 s	20 s

Lanes, Volumes, Timings
15: East Cotati Avenue & Charles Street

Specific Plan PM - Mitigated

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	350		100	0
Storage Lanes		0	1		1	1
Turning Speed (mph)		9	15		15	9
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Frt	0.999					0.850
Flt Protected			0.950			
Satd. Flow (prot)	3536	0	1770	3539	1863	1583
Flt Permitted			0.950			
Satd. Flow (perm)	3536	0	1770	3539	1863	1583
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)	30			30	25	
Link Distance (ft)	416			1192	704	
Travel Time (s)	9.5			27.1	19.2	
Volume (vph)	1212	6	166	1086	0	260
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1212	6	166	1086	0	260
Lane Group Flow (vph)	1218	0	166	1086	0	260
Sign Control	Free			Free	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	56.5%			ICU Level of Service B		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis 15: East Cotati Avenue & Charles Street

Specific Plan PM - Mitigated

							
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	↑↑		↱	↑↑	↱	↱	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	1212	6	166	1086	0	260	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Hourly flow rate (vph)	1212	6	166	1086	0	260	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage (veh)							
Upstream signal (ft)	416			1192			
pX, platoon unblocked					0.93		
vC, conflicting volume			1218		2090	609	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			1218		2097	609	
tC, single (s)			4.1		6.8	6.9	
tC, 2 stage (s)							
tF (s)			2.2		3.5	3.3	
p0 queue free %			71		100	41	
cM capacity (veh/h)			568		29	438	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1	NB 2
Volume Total	808	410	166	543	543	0	260
Volume Left	0	0	166	0	0	0	0
Volume Right	0	6	0	0	0	0	260
cSH	1700	1700	568	1700	1700	1700	438
Volume to Capacity	0.48	0.24	0.29	0.32	0.32	0.00	0.59
Queue Length 95th (ft)	0	0	30	0	0	0	94
Control Delay (s)	0.0	0.0	13.9	0.0	0.0	0.0	24.5
Lane LOS			B			A	C
Approach Delay (s)	0.0		1.8			24.5	
Approach LOS						C	
Intersection Summary							
Average Delay			3.2				
Intersection Capacity Utilization			56.5%		ICU Level of Service		B
Analysis Period (min)			15				

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Specific Plan PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	100		0	0		100	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50	50		50	50		50	50		50	50	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Turning Speed (mph)	15		9	15		9	15		9	15		9
Lane Util. Factor	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		0.965			0.980			0.965			0.995	
Flt Protected		0.977			0.962			0.999			0.998	
Satd. Flow (prot)	0	1756	0	0	1756	0	0	1796	0	0	1850	0
Flt Permitted		0.843			0.728			0.990			0.958	
Satd. Flow (perm)	0	1515	0	0	1329	0	0	1780	0	0	1776	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			26			52			6	
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Link Speed (mph)		25			25			30			25	
Link Distance (ft)		713			704			1515			429	
Travel Time (s)		19.4			19.2			34.4			11.7	
Volume (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	40	24	22	150	10	28	12	595	211	28	584	23
Lane Group Flow (vph)	0	86	0	0	188	0	0	818	0	0	635	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phases	4	4		8	8		2	2		6	6	
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0	20.0	20.0	0.0
Total Split (%)	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%	50.0%	50.0%	0.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5		0.5	0.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		13.4			13.4			31.1			31.1	
Actuated g/C Ratio		0.24			0.24			0.59			0.59	
v/c Ratio		0.22			0.55			0.77			0.61	
Control Delay		7.4			11.4			18.5			12.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.4			11.4			18.5			12.8	
LOS		A			B			B			B	

Lanes, Volumes, Timings
21: Henry Street & Old Redwood Highway

Specific Plan PM - Mitigated

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		7.4			11.4			18.5			12.8	
Approach LOS		A			B			B			B	
Stops (vph)		46			130			459			385	
Fuel Used(gal)		1			2			15			5	
CO Emissions (g/hr)		58			144			1068			381	
NOx Emissions (g/hr)		11			28			208			74	
VOC Emissions (g/hr)		13			33			247			88	
Dilemma Vehicles (#)		0			0			0			0	

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 53

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 15.1

Intersection LOS: B

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 21: Henry Street & Old Redwood Highway

 ø2	 ø4
20 s	20 s
 ø6	 ø8
20 s	20 s

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

Specific Plan PM - Mitigated

Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø4
Lane Configurations	W	W	N	N	S	S		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)	50	50				50		
Trailing Detector (ft)	0	0				0		
Turning Speed (mph)	20	15	15	9	5	9		
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	0.88		
Frt	0.922	0.850				0.850		
Flt Protected	0.976							
Satd. Flow (prot)	1509	1185	0	0	0	2508		
Flt Permitted	0.976							
Satd. Flow (perm)	1509	1185	0	0	0	2508		
Right Turn on Red	Yes	Yes		Yes		Yes		
Satd. Flow (RTOR)	88	1089				693		
Headway Factor	1.14	1.35	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		20		25			
Link Distance (ft)	295		298		401			
Travel Time (s)	10.1		10.2		10.9			
Volume (vph)	359	1474	0	0	0	1577		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)		5						
Adj. Flow (vph)	359	1474	0	0	0	1577		
Lane Group Flow (vph)	744	1089	0	0	0	1577		
Turn Type	Perm							
Protected Phases	8						2	4
Permitted Phases		8				6		
Detector Phases	8	8				6		
Minimum Initial (s)	4.0	4.0				4.0	4.0	4.0
Minimum Split (s)	29.0	29.0				29.0	20.0	29.0
Total Split (s)	45.0	45.0	0.0	0.0	0.0	45.0	45.0	45.0
Total Split (%)	50.0%	50.0%	0.0%	0.0%	0.0%	50.0%	50%	50%
Maximum Green (s)	41.0	41.0				41.0	41.0	41.0
Yellow Time (s)	3.5	3.5				3.5	3.5	3.5
All-Red Time (s)	0.5	0.5				0.5	0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0
Recall Mode	None	None				C-Max	C-Max	None
Walk Time (s)	10.0	10.0				10.0	5.0	10.0
Flash Dont Walk (s)	15.0	15.0				15.0	11.0	15.0
Pedestrian Calls (#/hr)	10	10				10	10	10
Act Effct Green (s)	41.0	41.0				41.0		
Actuated g/C Ratio	0.46	0.46				0.46		
v/c Ratio	1.01	0.96				1.04		
Control Delay	48.4	17.2				48.9		
Queue Delay	0.0	0.9				16.7		
Total Delay	48.4	18.1				65.5		
LOS	D	B				E		
Approach Delay	30.4							

Lanes, Volumes, Timings
141: La Plaza & Old Redwood Highway

Specific Plan PM - Mitigated

												
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø4				
Approach LOS	C											
Stops (vph)	569	391				916						
Fuel Used(gal)	11	8				25						
CO Emissions (g/hr)	754	545				1719						
NOx Emissions (g/hr)	147	106				334						
VOC Emissions (g/hr)	175	126				398						
Dilemma Vehicles (#)	0	0				0						

Intersection Summary

Area Type:	CBD
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 86 (96%), Referenced to phase 2:Ped and 6:SER, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.04	
Intersection Signal Delay: 46.6	Intersection LOS: D
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 141: La Plaza & Old Redwood Highway

 ø2	 ø4
45 s	45 s
 ø6	 ø8
45 s	45 s

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Lane Configurations								
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)		50	50	50				
Trailing Detector (ft)		0	0	0				
Turning Speed (mph)	15	9	20	15	15	9		
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00		
Frt		0.850	0.979	0.850				
Flt Protected			0.959					
Satd. Flow (prot)	0	2508	1574	1185	0	0		
Flt Permitted			0.959					
Satd. Flow (perm)	0	2508	1574	1185	0	0		
Right Turn on Red		Yes	Yes	Yes		Yes		
Satd. Flow (RTOR)		334	32	1091				
Headway Factor	1.14	1.14	1.14	1.35	1.14	1.14		
Link Speed (mph)	30		20		20			
Link Distance (ft)	416		293		294			
Travel Time (s)	9.5		10.0		10.0			
Volume (vph)	0	1091	742	1218	0	0		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	0.92		
Parking (#/hr)				5				
Adj. Flow (vph)	0	1091	742	1218	0	0		
Lane Group Flow (vph)	0	1091	863	1097	0	0		
Turn Type	custom		Perm					
Protected Phases		8	2				4	6
Permitted Phases				2				
Detector Phases		8	2	2				
Minimum Initial (s)		4.0	4.0	4.0			4.0	4.0
Minimum Split (s)		29.0	29.0	29.0			20.0	29.0
Total Split (s)	0.0	36.0	54.0	54.0	0.0	0.0	36.0	54.0
Total Split (%)	0.0%	40.0%	60.0%	60.0%	0.0%	0.0%	40%	60%
Maximum Green (s)		32.0	50.0	50.0			32.0	50.0
Yellow Time (s)		3.5	3.5	3.5			3.5	3.5
All-Red Time (s)		0.5	0.5	0.5			0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)		3.0	3.0	3.0			3.0	3.0
Recall Mode		None	C-Max	C-Max			None	C-Max
Walk Time (s)			10.0	10.0			5.0	10.0
Flash Dont Walk (s)			15.0	15.0			11.0	15.0
Pedestrian Calls (#/hr)			10	10			10	10
Act Effct Green (s)		32.0	50.0	50.0				
Actuated g/C Ratio		0.36	0.56	0.56				
v/c Ratio		0.99	0.97	0.96				
Control Delay		45.1	37.3	20.0				
Queue Delay		0.0	10.5	0.0				
Total Delay		45.1	47.9	20.0				
LOS		D	D	B				
Approach Delay			32.2					

Lanes, Volumes, Timings
143: East Cotati Avenue & La Plaza

Specific Plan PM - Mitigated

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø4	ø6
Approach LOS	C							
Stops (vph)		717	667	313				
Fuel Used(gal)		18	11	8				
CO Emissions (g/hr)		1225	739	576				
NOx Emissions (g/hr)		238	144	112				
VOC Emissions (g/hr)		284	171	133				
Dilemma Vehicles (#)		0	0	0				

Intersection Summary

Area Type:	CBD
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 24 (27%), Referenced to phase 2:NBL and 6:Ped, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 36.8	Intersection LOS: D
Intersection Capacity Utilization 76.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 143: East Cotati Avenue & La Plaza

 ø2	 ø4
54 s	36 s
 ø6	 ø8
54 s	36 s

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

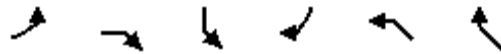
Specific Plan PM - Mitigated



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0	0	0	0	150
Storage Lanes	2	0	0	0	1	1
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Leading Detector (ft)	50					50
Trailing Detector (ft)	0					0
Turning Speed (mph)	20	9	15	9	15	9
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00
Frt	0.951					0.865
Flt Protected	0.968					
Satd. Flow (prot)	2994	0	0	0	0	1269
Flt Permitted	0.968					
Satd. Flow (perm)	2994	0	0	0	0	1269
Right Turn on Red	Yes	Yes		Yes		Yes
Satd. Flow (RTOR)	1131					
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.35
Link Speed (mph)	20		20		25	
Link Distance (ft)	279		293		429	
Travel Time (s)	9.5		10.0		11.7	
Volume (vph)	1291	635	0	0	0	669
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Parking (#/hr)		5				5
Adj. Flow (vph)	1291	635	0	0	0	669
Lane Group Flow (vph)	1926	0	0	0	0	669
Turn Type						
Protected Phases	4					2
Permitted Phases						4
Detector Phases	4					2
Minimum Initial (s)	4.0					4.0
Minimum Split (s)	20.0					20.0
Total Split (s)	67.0	0.0	0.0	0.0	0.0	23.0
Total Split (%)	74.4%	0.0%	0.0%	0.0%	0.0%	25.6%
Maximum Green (s)	63.0					19.0
Yellow Time (s)	3.5					3.5
All-Red Time (s)	0.5					0.5
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Min
Walk Time (s)	5.0					5.0
Flash Dont Walk (s)	11.0					11.0
Pedestrian Calls (#/hr)	0					0
Act Effct Green (s)	66.6					90.0
Actuated g/C Ratio	0.74					1.00
v/c Ratio	0.77					0.53
Control Delay	2.7					1.6
Queue Delay	3.9					0.2
Total Delay	6.5					1.8

Lanes, Volumes, Timings
144: La Plaza & Old Redwood Highway

Specific Plan PM - Mitigated



Lane Group	EBL	EBR	SBL	SBR	NWL	NWR
LOS	A					A
Approach Delay	6.5					
Approach LOS	A					
Stops (vph)	193					1
Fuel Used(gal)	7					3
CO Emissions (g/hr)	459					186
NOx Emissions (g/hr)	89					36
VOC Emissions (g/hr)	106					43
Dilemma Vehicles (#)	0					0

Intersection Summary

Area Type: CBD

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 68 (76%), Referenced to phase 2:NWR and 6:, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 5.3

Intersection LOS: A

Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 144: La Plaza & Old Redwood Highway

 Ø2	 Ø4
23 s	67 s

								
Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø8
Lane Configurations				↑↑	↑↑			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Storage Length (ft)	0	0	0	150	0	0		
Storage Lanes	0	0	0	1	0	0		
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		
Leading Detector (ft)				50	50			
Trailing Detector (ft)				0	0			
Turning Speed (mph)	15	9	15	9	20	15		
Lane Util. Factor	1.00	1.00	1.00	0.88	0.97	0.95		
Frt				0.850	0.961			
Flt Protected					0.964			
Satd. Flow (prot)	0	0	0	2508	3013	0		
Flt Permitted					0.964			
Satd. Flow (perm)	0	0	0	2508	3013	0		
Right Turn on Red		Yes		Yes	No	Yes		
Satd. Flow (RTOR)				90	109			
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14		
Link Speed (mph)	20		25		20			
Link Distance (ft)	279		433		301			
Travel Time (s)	9.5		11.8		10.3			
Volume (vph)	0	0	0	481	1445	501		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00		
Parking (#/hr)						5		
Adj. Flow (vph)	0	0	0	481	1445	501		
Lane Group Flow (vph)	0	0	0	481	1946	0		
Turn Type				custom				
Protected Phases					6		2	8
Permitted Phases				4				
Detector Phases				4	6			
Minimum Initial (s)				4.0	4.0		4.0	4.0
Minimum Split (s)				29.0	20.0		20.0	20.0
Total Split (s)	0.0	0.0	0.0	29.0	61.0	0.0	61.0	29.0
Total Split (%)	0.0%	0.0%	0.0%	32.2%	67.8%	0.0%	68%	32%
Maximum Green (s)				25.0	57.0		57.0	25.0
Yellow Time (s)				3.5	3.5		3.5	3.5
All-Red Time (s)				0.5	0.5		0.5	0.5
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)				3.0	3.0		3.0	3.0
Recall Mode				None	C-Max		None	None
Walk Time (s)				10.0			5.0	5.0
Flash Dont Walk (s)				15.0			11.0	11.0
Pedestrian Calls (#/hr)				10			10	10
Act Effct Green (s)				18.9	63.1			
Actuated g/C Ratio				0.21	0.70			
v/c Ratio				0.80	0.91			
Control Delay				30.7	12.7			
Queue Delay				0.1	0.0			
Total Delay				30.7	12.7			



Lane Group	WBL	WBR	NBL	NBR	SEL	SER	ø2	ø8
LOS				C	B			
Approach Delay					12.7			
Approach LOS					B			
Stops (vph)				363	1216			
Fuel Used(gal)				6	14			
CO Emissions (g/hr)				431	945			
NOx Emissions (g/hr)				84	184			
VOC Emissions (g/hr)				100	219			
Dilemma Vehicles (#)				0	0			

Intersection Summary

Area Type: CBD

Cycle Length: 90

Actuated Cycle Length: 90

Offset: 12 (13%), Referenced to phase 6:SEL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 66.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 145: La Plaza & West Sierra Avenue

ø2	ø4
61 s	29 s
ø6	ø8
61 s	29 s