Appendix D: 2030 Build Alternatives

- 2030 TSM Alternative (scenario 2)
- 2030 TSM Alternative + Grade Separation of UPRR (scenario 3)
- 2030 5-Lane without UPRR Grade Separation (scenario 4)
- 2030 5-Lane with UPRR Grade Separation (scenario 5)
- 2030 5-Lane with UPRR Grade Separation, 800W Closed, at-grade 700 West by-pass (scenario 6)
- 2030 5-Lane without UPRR 500 S Grade Separation, grade separate 700 West by-pass (scenario 7)

Included for each scenario are:

- Intersection Geometry
- Intersection LOS and Delay Results
- Travel Time and Network-wide delay results

Appendix D: 2030 Build Alternatives

- 2030 TSM Alternative (scenario 2)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	20	955	95	150	525	20	100	0	360	15	0	25

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	200	TL
Storage Lanes	1			0	1	1
Volume (vph)	235	1010	570	80	60	65

6: SR 68 & 1100 West

3/7/2006

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)	250		0	250		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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		TL	250		150	350		200	150		0
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

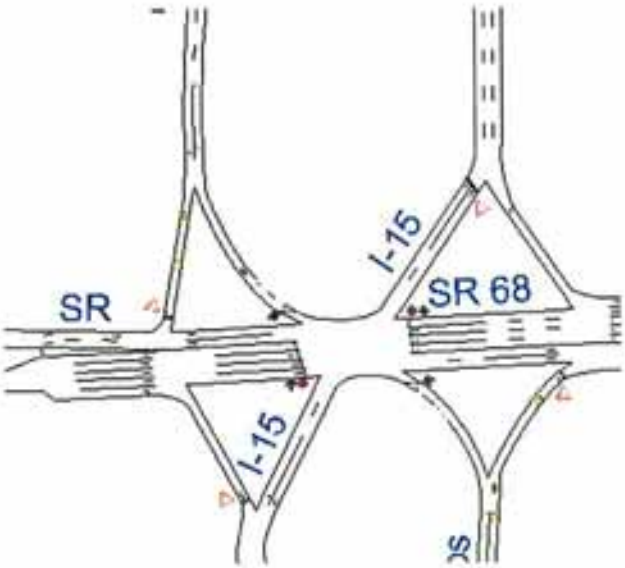
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				250	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

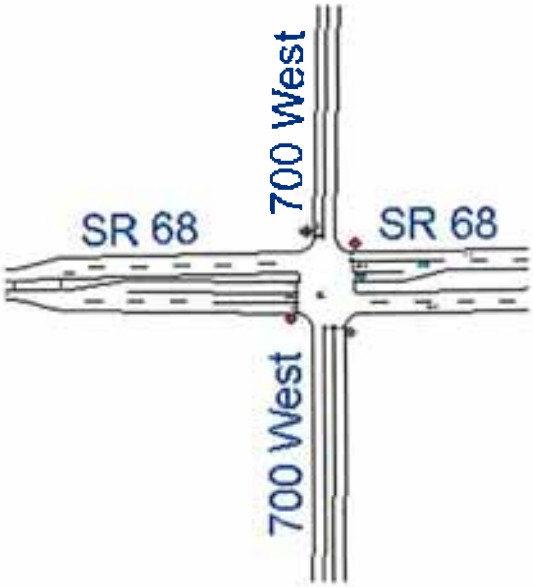
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		375	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

Alternative 2: *Configurations*

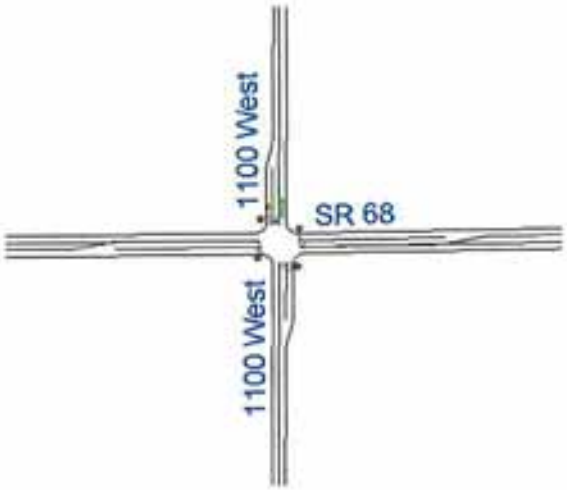


I-15 SB Ramp / 500 South



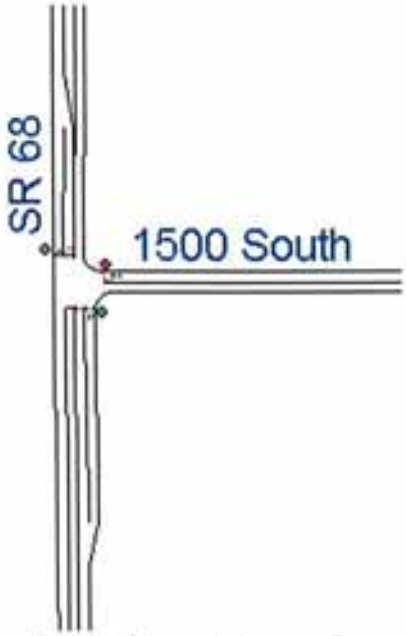
700 W / 500 S

800 W / 500 S

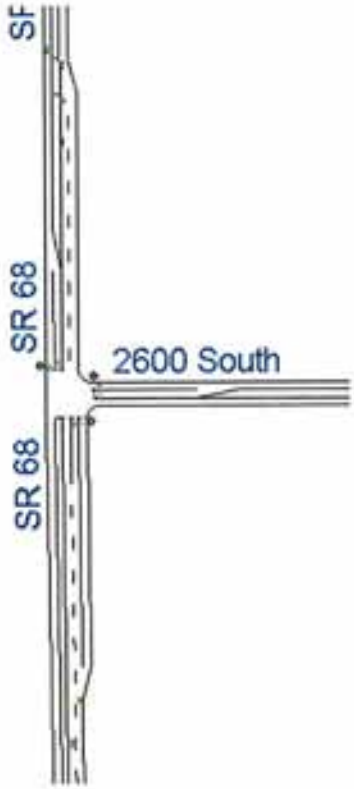


1100 W / 500 S

Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 3 Lane TSM
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 1: SR 68 & I-15 Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	522	83	14	46.0	D	3.5
	T	525	429	82	20	33.7	C	2.4
	R2	175	136	78	12	7.6	A	1.1
	Subtotal	**1330**	**1086**	**82**	--	**36.3**	**D**	--
WB	L	530	434	82	23	76.3	E	5.5
	T	375	327	87	16	67.5	E	8.5
	R2	465	425	91	22	4.3	A	0.7
	Subtotal	**1370**	**1185**	**86**	--	**48.1**	**D**	--
NW	L	75	74	99	14	89.5	F	15.7
	R2	430	419	97	24	1.1	A	0.1
	Subtotal	**505**	**493**	**98**	--	**14.3**	**B**	--
SE	L	455	440	97	22	47.1	D	9.1
	R2	245	236	96	14	30.0	C	11.0
	Subtotal	**700**	**676**	**97**	--	**41.1**	**D**	--
	Total	**3905**	**3441**	**88**	--	**38.2**	**D**	--

Intersection: 2: SR 68 & 700 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	96	96	10	57.7	E	10.7
	R	360	365	101	6	20.7	C	2.1
	Subtotal	**460**	**461**	**100**	--	**28.4**	**C**	--
SB	L	15	10	67	2	43.1	D	20.0
	R	25	26	104	4	14.9	B	4.4
	Subtotal	**40**	**36**	**90**	--	**23.0**	**C**	--
EB	L	20	12	60	4	44.0	D	18.1
	T	955	713	75	18	22.1	C	1.5
	R	95	68	72	10	13.3	B	2.0
	Subtotal	**1070**	**792**	**74**	--	**21.7**	**C**	--
WB	L	150	122	81	9	131.6	F	17.5
	T	525	477	91	26	97.2	F	9.2
	R	20	22	110	4	46.7	D	8.9
	Subtotal	**695**	**621**	**89**	--	**102.2**	**F**	--
	Total	**2265**	**1911**	**84**	--	**49.5**	**D**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 3 Lane TSM
TOD: PM Peak Hour

HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 5: SR 68 & 800 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
SB	L	60	56	93	6	99.6	F	17.9
	R	65	64	98	7	9.8	A	1.7
	Subtotal	**125**	**120**	**96**	--	**51.8**	**D**	--
EB	L	235	167	71	24	131.6	F	14.0
	T	1010	756	75	14	125.1	F	7.9
	Subtotal	**1245**	**923**	**74**	--	**126.3**	**F**	--
WB	T	570	524	92	27	5.3	A	0.6
	R	80	71	89	9	2.6	A	1.1
	Subtotal	**650**	**595**	**92**	--	**5.0**	**A**	--
	Total	**2020**	**1637**	**81**	--	**76.8**	**E**	--

Intersection: 6: SR 68 & 1100 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	101	101	6	138.7	F	43.1
	T	70	64	91	4	130.3	F	29.5
	R	160	149	93	10	129.2	F	54.3
	Subtotal	**330**	**314**	**95**	--	**132.5**	**F**	--
SB	L	40	38	95	4	57.2	E	14.6
	T	40	36	90	6	48.0	D	12.6
	R	50	51	102	10	17.6	B	6.4
	Subtotal	**130**	**125**	**96**	--	**38.3**	**D**	--
EB	L	240	218	91	18	128.0	F	12.2
	T	895	758	85	30	137.8	F	11.9
	R	70	64	91	8	139.4	F	27.8
	Subtotal	**1205**	**1041**	**86**	--	**135.8**	**F**	--
WB	L	160	150	94	12	49.2	D	10.2
	T	430	389	90	21	26.2	C	3.7
	R	85	80	94	17	20.1	C	3.8
	Subtotal	**675**	**618**	**92**	--	**31.0**	**C**	--
	Total	**2340**	**2098**	**90**	--	**98.6**	**F**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 3 Lane TSM
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 7: 1500 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	1001	93	26	18.1	B	2.2
	R	205	188	92	12	10.3	B	0.9
	Subtotal	**1280**	**1189**	**93**	--	**16.9**	**B**	--
SB	L	75	74	99	6	20.7	C	2.5
	T	240	234	98	18	3.2	A	0.5
	Subtotal	**315**	**308**	**98**	--	**7.4**	**A**	--
WB	L	80	78	98	10	31.7	C	5.9
	R	65	74	114	8	22.9	C	4.0
	Subtotal	**145**	**152**	**105**	--	**27.4**	**C**	--
	Total	**1740**	**1648**	**95**	--	**16.1**	**B**	--

Intersection: 8: 2600 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1123	93	7	131.6	F	17.3
	R	200	186	93	21	52.0	D	19.1
	Subtotal	**1410**	**1309**	**93**	--	**120.3**	**F**	--
SB	L	55	52	95	9	94.4	F	49.4
	T	265	258	97	13	6.0	A	1.1
	Subtotal	**320**	**310**	**97**	--	**20.7**	**C**	--
WB	L	200	202	101	15	34.9	C	2.8
	R	70	68	97	10	4.1	A	1.3
	Subtotal	**270**	**270**	**100**	--	**27.2**	**C**	--
	Total	**2000**	**1889**	**94**	--	**90.6**	**F**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 3 Lane TSM
TOD: PM Peak Hour

HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 9: 500 South & Redwood Road
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	663	95	22	35.4	D	7.6
	T	15	12	80	6	28.6	C	16.3
	R	425	392	92	29	28.3	C	6.1
	Subtotal	**1140**	**1067**	**94**	--	**32.7**	**C**	--
SB	L	20	17	85	7	67.1	E	43.1
	T	10	10	100	3	42.7	D	10.5
	R	20	24	120	4	9.1	A	3.3
	Subtotal	**50**	**51**	**102**	--	**35.1**	**D**	--
EB	L	20	20	100	2	39.0	D	6.6
	T	730	704	96	18	39.3	D	13.2
	R	170	173	102	8	3.7	A	1.1
	Subtotal	**920**	**897**	**98**	--	**32.4**	**C**	--
WB	L	135	125	93	6	41.6	D	15.1
	T	450	414	92	11	14.8	B	0.7
	R	15	15	100	4	4.8	A	2.4
	Subtotal	**600**	**554**	**92**	--	**20.6**	**C**	--
	Total	**2710**	**2570**	**95**	--	**30.1**	**C**	--

Alternative 2
2030 TSM Travel Times

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		(min)
Travel Time (seconds)	EB	724.1	752.6	793.8	808.4	756.9	**767.16**	12.79	**12:47**
	WB	527.3	523.1	548	516.7	571.7	**537.36**	8.96	**8:58**

Average Network Delay **246.56 sec/veh**

Appendix D: 2030 Build Alternatives

- 2030 TSM Alternative + Grade Separation of UPRR (scenario 3)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	20	955	95	150	525	20	100	0	360	15	0	25

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200			0	150	TL
Storage Lanes	1			0	1	1
Volume (vph)	235	1010	570	80	60	65

6: SR 68 & 1100 West

3/7/2006

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)	200		0	200		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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		TL	250		150	250		250	150		
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

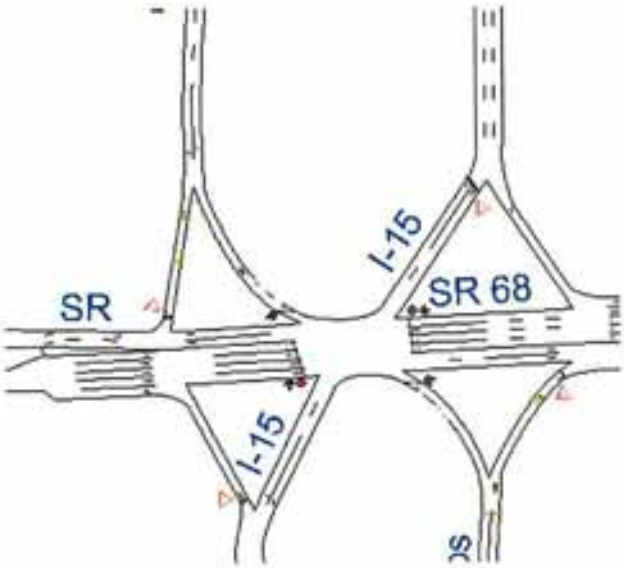
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				150	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

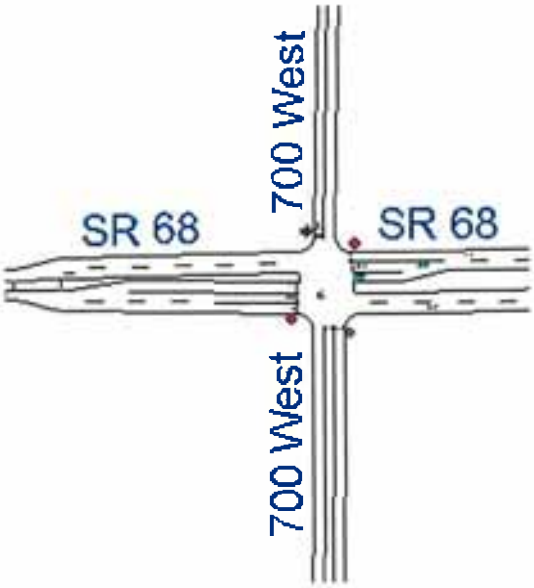
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		375	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

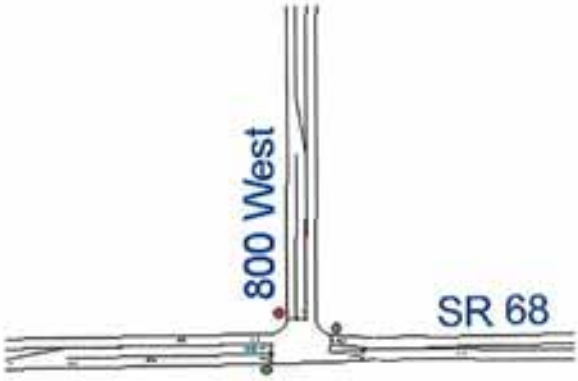
Alternative 3: *Configurations*



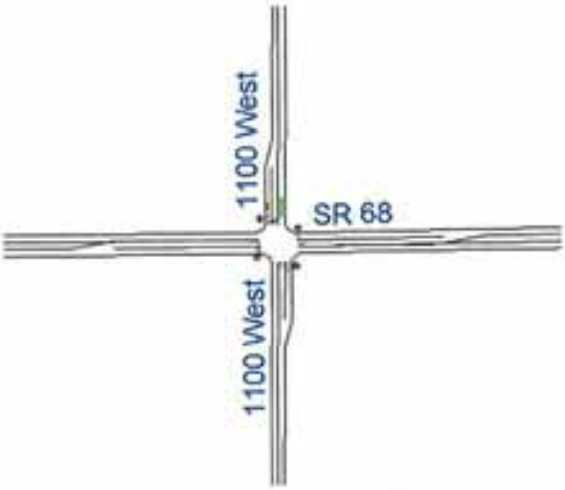
I-15 SB Ramp / 500 South



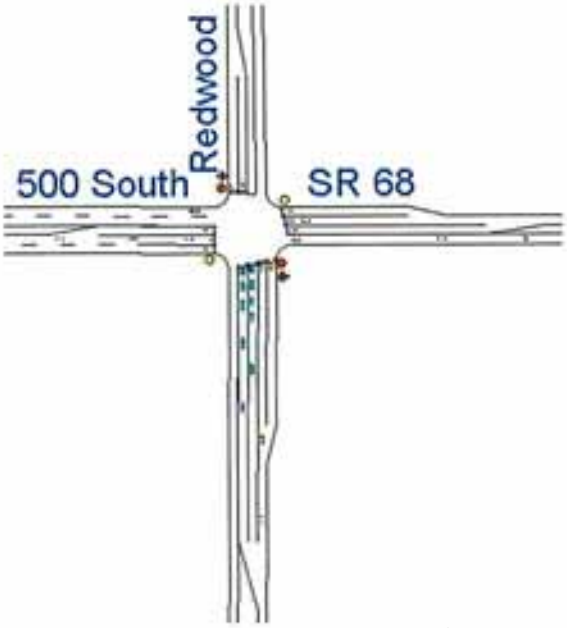
700 W / 500 S



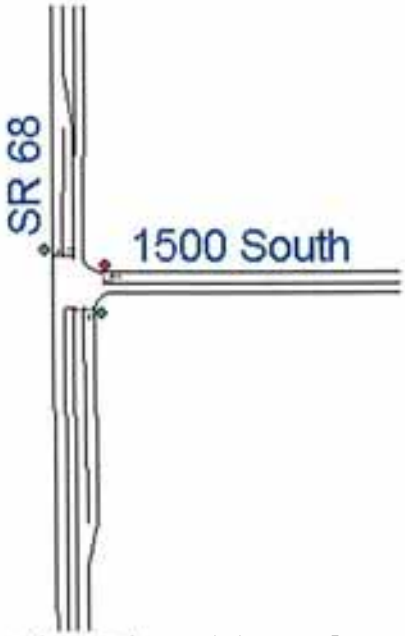
800 W / 500 S



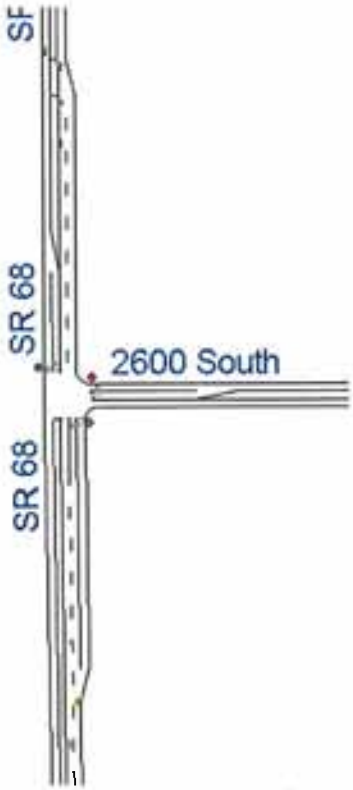
1100 W / 500 S



Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR-68 **HCM:** 2000
Scenario: 2030 TSM Grade Separated **PHF:** 1
TOD: PM Peak Hour **# of Runs:** 5

Intersection: 1: SR 68 & I-15 Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	595	94	22	38.9	D	0.9
	T	525	499	95	11	33.4	C	1.8
	Subtotal	**1155**	**1094**	**95**	--	**36.4**	**D**	--
WB	L	530	526	99	19	52.6	D	4.7
	T	375	367	98	29	45.7	D	3.1
	Subtotal	**905**	**893**	**99**	--	**49.8**	**D**	--
NW	L	75	77	103	6	28.4	C	1.0
	Subtotal	**75**	**77**	**103**	--	**28.4**	**C**	--
SE	L	455	453	100	19	33.0	C	1.3
	Subtotal	**455**	**453**	**100**	--	**33.0**	**C**	--
	Total	**2590**	**2517**	**97**	--	**40.3**	**D**	--

Intersection: 2: SR 68 & 700 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	105	105	15	23.7	C	4.2
	R	360	351	98	11	15.0	B	1.8
	Subtotal	**460**	**456**	**99**	--	**17.0**	**B**	--
SB	L	15	15	100	4	18.8	B	6.5
	R	25	28	112	10	3.1	A	1.9
	Subtotal	**40**	**43**	**108**	--	**8.7**	**A**	--
EB	L	20	19	95	2	9.2	A	2.9
	T	955	893	94	16	11.0	B	0.6
	R	95	97	102	10	6.3	A	0.8
	Subtotal	**1070**	**1008**	**94**	--	**10.5**	**B**	--
WB	L	150	150	100	5	18.1	B	1.8
	T	525	503	96	16	7.6	A	0.6
	R	20	22	110	3	0.9	A	0.3
	Subtotal	**695**	**675**	**97**	--	**9.7**	**A**	--
	Total	**2265**	**2181**	**96**	--	**11.6**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR-68 **HCM:** 2000
Scenario: 2030 TSM Grade Separated **PHF:** 1
TOD: PM Peak Hour **# of Runs:** 5

Intersection: 5: SR 68 & 800 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
SB	L	60	68	113	5	58.7	E	3.9
	R	65	62	95	10	7.5	A	3.6
	Subtotal	**125**	**130**	**104**	--	**34.3**	**C**	--
EB	L	235	223	95	11	14.7	B	2.4
	T	1010	940	93	21	5.7	A	0.2
	Subtotal	**1245**	**1163**	**93**	--	**7.4**	**A**	--
WB	T	570	551	97	14	7.5	A	0.3
	R	80	85	106	3	4.2	A	0.8
	Subtotal	**650**	**637**	**98**	--	**7.1**	**A**	--
	Total	**2020**	**1930**	**96**	--	**9.1**	**A**	--

Intersection: 6: SR 68 & 1100 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	108	108	13	158.5	F	69.3
	T	70	69	99	6	156.5	F	71.6
	R	160	151	94	19	133.9	F	80.7
	Subtotal	**330**	**328**	**99**	--	**146.8**	**F**	--
SB	L	40	42	105	5	38.5	D	8.6
	T	40	37	93	5	40.8	D	6.0
	R	50	56	112	7	11.7	B	2.0
	Subtotal	**130**	**136**	**105**	--	**28.0**	**C**	--
EB	L	240	205	85	15	112.4	F	40.3
	T	895	838	94	6	105.6	F	30.7
	R	70	72	103	8	95.1	F	27.0
	Subtotal	**1205**	**1116**	**93**	--	**106.1**	**F**	--
WB	L	160	157	98	5	45.6	D	8.8
	T	430	409	95	21	18.1	B	2.5
	R	85	85	100	7	13.8	B	3.5
	Subtotal	**675**	**650**	**96**	--	**24.1**	**C**	--
	Total	**2340**	**2230**	**95**	--	**83.4**	**F**	--

SIMTRAFFIC LOS REPORT

Project: SR-68 **HCM:** 2000
Scenario: 2030 TSM Grade Separated **PHF:** 1
TOD: PM Peak Hour **# of Runs:** 5

Intersection: 7: 1500 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	933	87	21	11.5	B	0.7
	R	205	179	87	9	6.7	A	0.3
	Subtotal	**1280**	**1112**	**87**	--	**10.8**	**B**	--
SB	L	75	69	92	5	19.7	B	1.3
	T	240	239	100	11	2.4	A	0.4
	Subtotal	**315**	**308**	**98**	--	**6.3**	**A**	--
WB	L	80	83	104	5	26.9	C	2.5
	R	65	58	89	5	19.5	B	7.0
	Subtotal	**145**	**141**	**97**	--	**23.8**	**C**	--
	Total	**1740**	**1561**	**90**	--	**11.1**	**B**	--

Intersection: 8: 2600 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1046	86	19	300.1	F	50.9
	R	200	180	90	14	175.0	F	32.4
	Subtotal	**1410**	**1226**	**87**	--	**281.7**	**F**	--
SB	L	55	58	105	7	68.3	E	21.3
	T	265	261	98	14	5.5	A	0.6
	Subtotal	**320**	**319**	**100**	--	**17.0**	**B**	--
WB	L	200	201	101	6	27.3	C	1.9
	R	70	65	93	7	16.6	B	2.9
	Subtotal	**270**	**266**	**99**	--	**24.7**	**C**	--
	Total	**2000**	**1811**	**91**	--	**197.3**	**F**	--

SIMTRAFFIC LOS REPORT

Project: SR-68 **HCM:** 2000
Scenario: 2030 TSM Grade Separated **PHF:** 1
TOD: PM Peak Hour **# of Runs:** 5

Intersection: 9: 500 South & Redwood Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	600	86	16	32.1	C	1.2
	T	15	16	107	2	29.2	C	8.0
	R	425	373	88	24	23.6	C	3.4
	Subtotal	**1140**	**989**	**87**	--	**28.8**	**C**	--
SB	L	20	15	75	2	60.9	E	19.2
	T	10	10	100	1	47.9	D	5.5
	R	20	22	110	2	9.1	A	4.3
	Subtotal	**50**	**47**	**94**	--	**34.0**	**C**	--
EB	L	20	17	85	9	29.5	C	15.4
	T	730	746	102	24	30.2	C	3.3
	R	170	176	104	7	3.2	A	0.2
	Subtotal	**920**	**940**	**102**	--	**25.1**	**C**	--
WB	L	135	122	90	16	31.5	C	5.9
	T	450	451	100	14	12.7	B	0.4
	R	15	17	113	6	4.1	A	1.3
	Subtotal	**600**	**589**	**98**	--	**16.3**	**B**	--
	Total	**2710**	**2564**	**95**	--	**24.7**	**C**	--

Alternative 3
2030 3 Lane Grade Separation Travel Times

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		**(min)**
Travel Time (seconds)	EB	527.5	533.8	533.8	509.7	486.1	518.18	8.64	**8:38**
	WB	364.7	364.7	364.7	374.5	365.5	366.82	6.11	**6:07**

Average Network Delay **134.48 sec/veh**

Appendix D: 2030 Build Alternatives

- 2030 5-Lane without UPRR Grade Separation (scenario 4)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	20	955	95	150	525	20	100	0	360	15	0	25

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	150	TL
Storage Lanes	1			0	1	1
Volume (vph)	235	1010	570	80	60	65

6: SR 68 & 1100 West

3/7/2006

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)	200		0	200		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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)	200		150	250		150	250		TL	150		
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

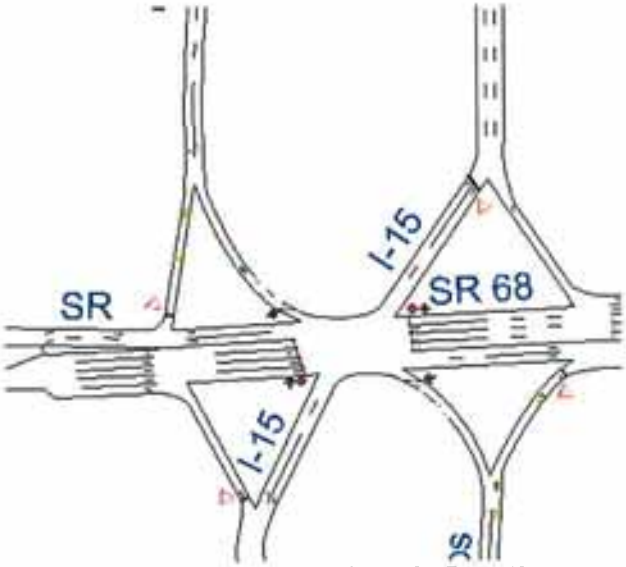
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				150	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

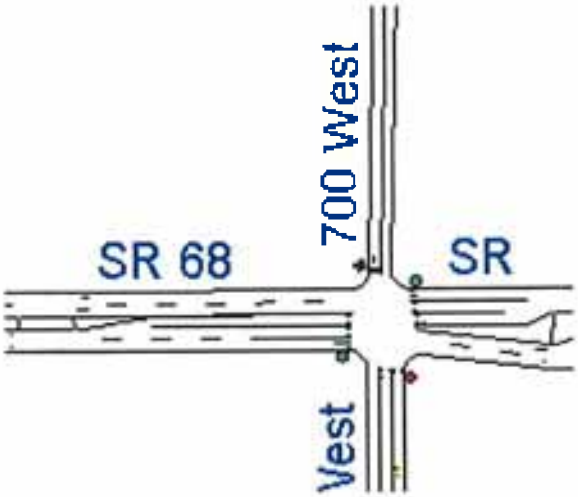
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		150	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

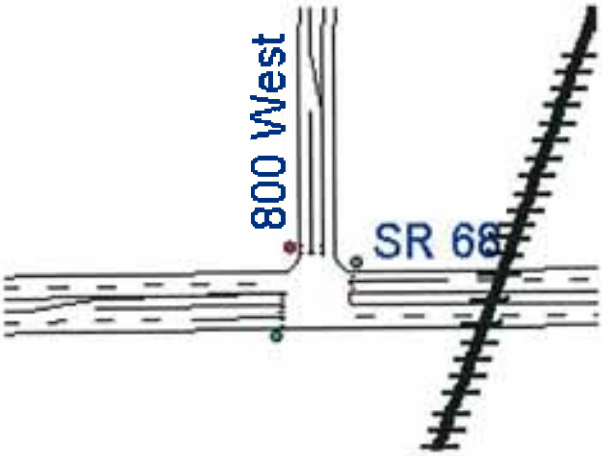
Alternative 4: *Configurations*



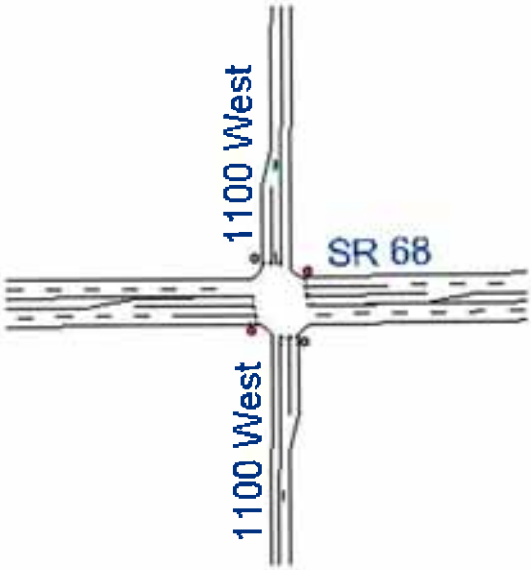
I-15 SB Ramp / 500 South



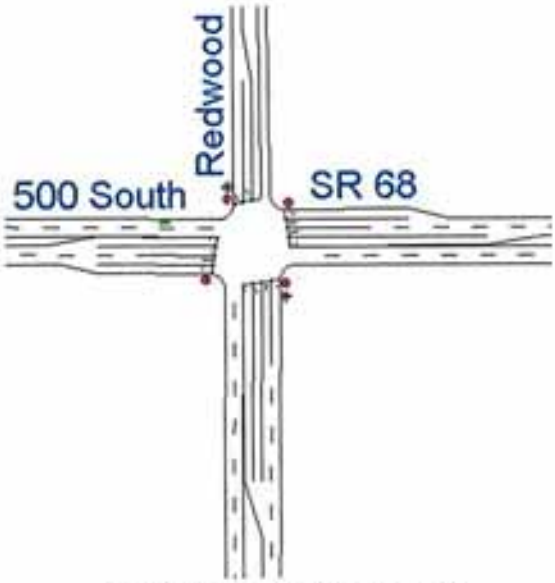
700 W / 500 S



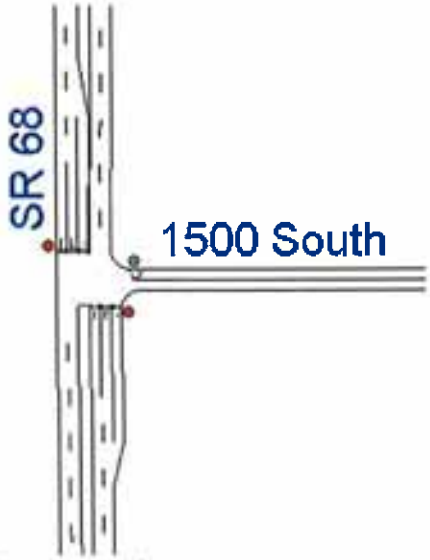
800 W / 500 S



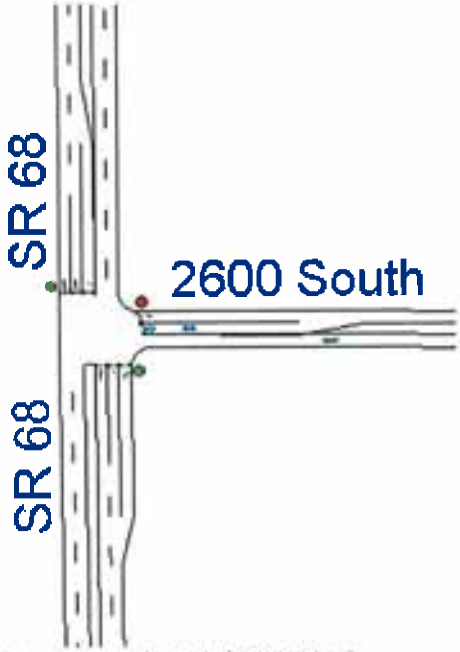
1100 W / 500 S



Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Lane no Grade Separation
TOD: PM Peak Hour

HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 1: SR 68 & I-15 Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	603	96	25	34.1	C	1.9
	T	525	495	94	22	33.6	C	1.0
	Subtotal	**1155**	**1098**	**95**	**--**	**33.9**	**C**	**--**
WB	L	530	526	99	23	40.3	D	2.9
	T	375	374	100	21	38.7	D	3.7
	Subtotal	**905**	**900**	**99**	**--**	**39.6**	**D**	**--**
NW	L	75	66	88	6	27.9	C	8.8
	Subtotal	**75**	**66**	**88**	**--**	**27.9**	**C**	**--**
SE	L	455	458	101	12	32.9	C	2.5
	Subtotal	**455**	**458**	**101**	**--**	**32.9**	**C**	**--**
	Total	**2590**	**2522**	**97**	**--**	**35.6**	**D**	**--**

Intersection: 2: SR 68 & 700 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	100	100	6	23.6	C	1.9
	R	360	351	98	17	16.7	B	1.8
	Subtotal	**460**	**451**	**98**	**--**	**18.2**	**B**	**--**
SB	L	15	12	80	1	22.5	C	5.8
	R	25	24	96	5	5.3	A	2.3
	Subtotal	**40**	**36**	**90**	**--**	**11.1**	**B**	**--**
EB	L	20	17	85	4	15.5	B	3.9
	T	955	918	96	22	22.7	C	1.2
	R	95	99	104	8	19.2	B	1.6
	Subtotal	**1070**	**1034**	**97**	**--**	**22.2**	**C**	**--**
WB	L	150	143	95	10	17.8	B	2.8
	T	525	535	102	38	5.4	A	1.0
	R	20	19	95	6	2.0	A	0.5
	Subtotal	**695**	**697**	**100**	**--**	**7.9**	**A**	**--**
	Total	**2265**	**2218**	**98**	**--**	**16.7**	**B**	**--**

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Lane no Grade Separation
TOD: PM Peak Hour

HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 5: SR 68 & 800 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
SB	L	60	57	95	10	50.4	D	11.3
	R	65	62	95	7	4.6	A	1.3
	Subtotal	**125**	**119**	**95**	--	**26.5**	**C**	--
EB	L	235	217	92	15	51.0	D	11.4
	T	1010	1002	99	30	50.8	D	6.6
	Subtotal	**1245**	**1219**	**98**	--	**50.8**	**D**	--
WB	T	570	580	102	32	5.2	A	0.7
	R	80	78	98	8	2.7	A	0.8
	Subtotal	**650**	**658**	**101**	--	**4.9**	**A**	--
	Total	**2020**	**1996**	**99**	--	**34.2**	**C**	--

Intersection: 6: SR 68 & 1100 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	105	105	10	23.3	C	1.9
	T	70	70	100	12	21.7	C	3.3
	R	160	158	99	5	12.6	B	1.3
	Subtotal	**330**	**333**	**101**	--	**17.9**	**B**	--
SB	L	40	38	95	3	18.7	B	3.5
	T	40	38	95	6	14.9	B	1.0
	R	50	47	94	7	6.1	A	1.6
	Subtotal	**130**	**123**	**95**	--	**12.7**	**B**	--
EB	L	240	245	102	19	22.1	C	4.6
	T	895	887	99	41	9.6	A	0.9
	R	70	74	106	7	5.8	A	1.2
	Subtotal	**1205**	**1206**	**100**	--	**11.9**	**B**	--
WB	L	160	152	95	15	40.2	D	11.3
	T	430	440	102	26	8.9	A	1.2
	R	85	83	98	9	6.1	A	1.7
	Subtotal	**675**	**675**	**100**	--	**15.6**	**B**	--
	Total	**2340**	**2337**	**100**	--	**13.8**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Lane no Grade Separation
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 7: 1500 South & SR 68
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	1084	101	50	9.0	A	1.0
	R	205	207	101	7	5.9	A	0.6
	Subtotal	**1280**	**1291**	**101**	--	**8.5**	**A**	--
SB	L	75	76	101	2	19.9	B	3.1
	T	240	231	96	15	2.0	A	0.2
	Subtotal	**315**	**307**	**97**	--	**6.4**	**A**	--
WB	L	80	78	98	6	18.4	B	1.2
	R	65	57	88	4	8.2	A	1.0
	Subtotal	**145**	**135**	**93**	--	**14.1**	**B**	--
	Total	**1740**	**1733**	**100**	--	**8.6**	**A**	--

Intersection: 8: 2600 South & SR 68
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1217	101	42	14.2	B	0.9
	R	200	187	94	18	6.6	A	1.5
	Subtotal	**1410**	**1404**	**100**	--	**13.2**	**B**	--
SB	L	55	55	100	7	30.3	C	6.1
	T	265	252	95	11	5.8	A	0.6
	Subtotal	**320**	**307**	**96**	--	**10.2**	**B**	--
WB	L	200	203	102	15	18.8	B	1.6
	R	70	74	106	13	14.1	B	3.1
	Subtotal	**270**	**276**	**102**	--	**17.5**	**B**	--
	Total	**2000**	**1987**	**99**	--	**13.3**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Lane no Grade Separation
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 9: 500 South & Redwood Road
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	699	100	39	18.1	B	1.6
	T	15	13	87	2	13.2	B	4.0
	R	425	427	100	11	8.8	A	0.9
	Subtotal	**1140**	**1139**	**100**	**--**	**14.6**	**B**	**--**
SB	L	20	23	115	3	47.3	D	13.2
	T	10	14	140	3	31.5	C	9.9
	R	20	22	110	4	10.6	B	4.3
	Subtotal	**50**	**59**	**118**	**--**	**29.7**	**C**	**--**
EB	L	20	18	90	5	26.0	C	10.9
	T	730	724	99	25	24.4	C	2.8
	R	170	160	94	10	5.3	A	0.9
	Subtotal	**920**	**902**	**98**	**--**	**21.1**	**C**	**--**
WB	L	135	134	99	10	28.7	C	5.4
	T	450	452	100	27	13.6	B	1.0
	R	15	16	107	4	3.1	A	0.9
	Subtotal	**600**	**602**	**100**	**--**	**16.7**	**B**	**--**
	Total	**2710**	**2702**	**100**	**--**	**17.5**	**B**	**--**

Alternative 4
2030 Build 5-Lanes no Grade Separation
Summary Average Travel Time with Train

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		**(min)**
Travel Time (seconds)	EB	438.7	433.7	431.5	436.8	451.8	438.5	7.31	**7:19**
	WB	387.8	376.9	384.6	391.3	394.4	387	6.45	**6:27**

Average Network Delay **65.1 sec/veh**

Appendix D: 2030 Build Alternatives

- 2030 5-Lane with UPRR Grade Separation (scenario 5)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	20	955	95	150	525	20	100	0	360	15	0	25

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	150	TL
Storage Lanes	1			0	1	1
Volume (vph)	235	1010	570	80	60	65

6: SR 68 & 1100 West

3/7/2006

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)	200		0	200		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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)	200		150	250		150	250		TL	150		
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

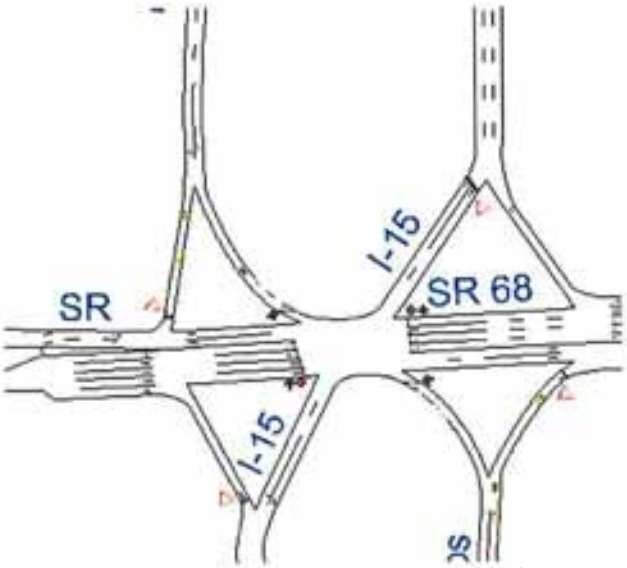
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				150	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

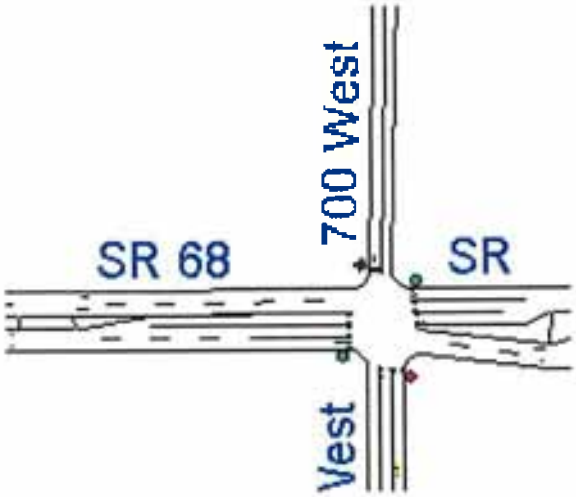
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		150	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

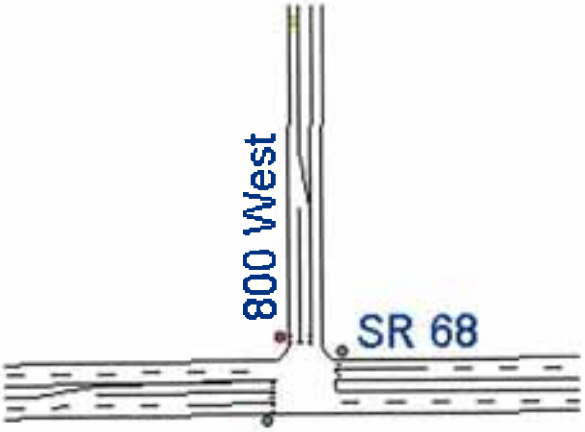
Alternative 5: *Configurations*



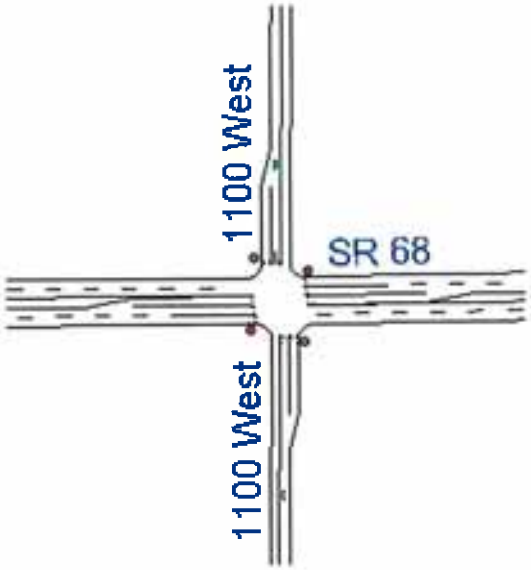
I-15 SB Ramp / 500 South



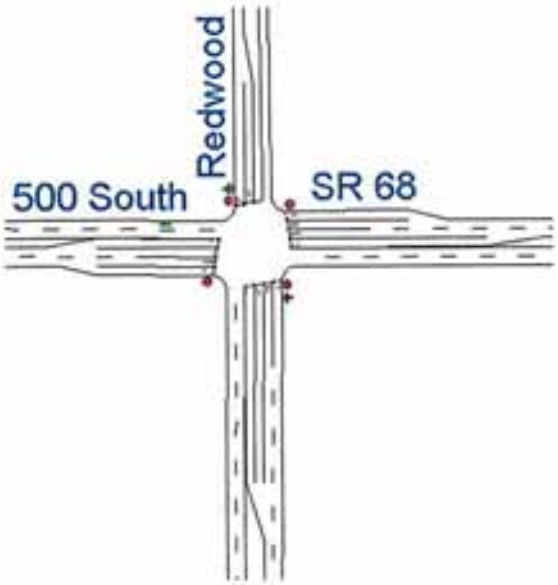
700 W / 500 S



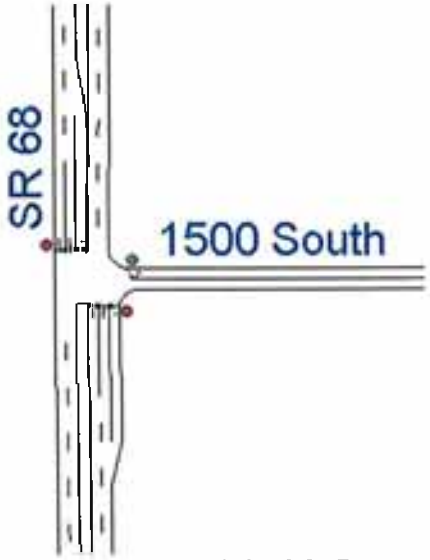
800 W / 500 S



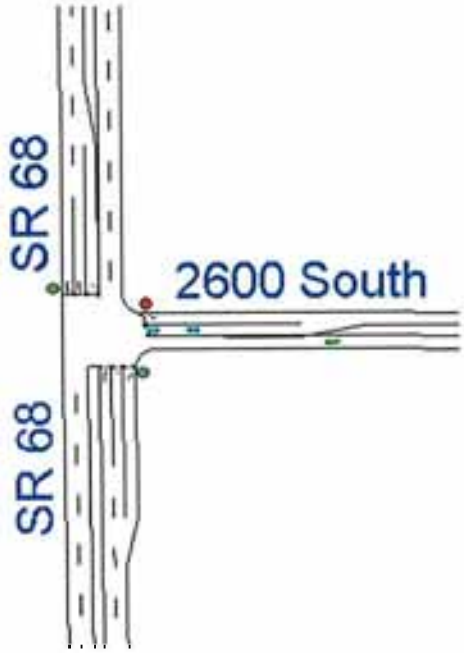
1100 W / 500 S



Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 Build 5-Lane and Grade Separate 800 W
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 1: SR 68 & I-15 Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	630	100	22	32.5	C	1.7
	T	525	518	99	31	32.3	C	1.1
	Subtotal	**1155**	**1147**	**99**	--	**32.4**	**C**	--
WB	L	530	528	100	24	40.1	D	1.9
	T	375	368	98	30	35.8	D	4.7
	Subtotal	**905**	**896**	**99**	--	**38.3**	**D**	--
NW	L	75	77	103	5	27.0	C	3.2
	Subtotal	**75**	**77**	**103**	--	**27.0**	**C**	--
SE	L	455	441	97	18	31.6	C	2.1
	Subtotal	**455**	**441**	**97**	--	**31.6**	**C**	--
	Total	**2590**	**2562**	**99**	--	**34.2**	**C**	--

Intersection: 2: SR 68 & 700 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	102	102	8	22.2	C	2.3
	R	360	363	101	22	15.7	B	1.9
	Subtotal	**460**	**465**	**101**	--	**17.1**	**B**	--
SB	L	15	13	87	4	21.8	C	6.4
	R	25	23	92	5	4.8	A	0.8
	Subtotal	**40**	**36**	**90**	--	**11.0**	**B**	--
EB	L	20	21	105	5	9.0	A	2.4
	T	955	945	99	48	10.9	B	2.0
	R	95	95	100	4	6.9	A	2.1
	Subtotal	**1070**	**1062**	**99**	--	**10.5**	**B**	--
WB	L	150	151	101	18	19.2	B	5.7
	T	525	516	98	27	6.2	A	0.7
	R	20	22	110	7	3.4	A	1.9
	Subtotal	**695**	**688**	**99**	--	**9.0**	**A**	--
	Total	**2265**	**2251**	**99**	--	**11.4**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 Build 5-Lane and Grade Separate 800 W
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 5: SR 68 & 800 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
SB	L	60	61	102	4	26.1	C	2.3
	R	65	65	100	7	4.1	A	0.9
	Subtotal	**125**	**126**	**101**	--	**14.7**	**B**	--
EB	L	235	228	97	22	10.2	B	1.7
	T	1010	1009	100	52	4.4	A	0.2
	Subtotal	**1245**	**1237**	**99**	--	**5.5**	**A**	--
WB	T	570	565	99	20	6.8	A	1.2
	R	80	80	100	15	4.6	A	2.0
	Subtotal	**650**	**644**	**99**	--	**6.5**	**A**	--
	Total	**2020**	**2008**	**99**	--	**6.4**	**A**	--

Intersection: 6: SR 68 & 1100 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	95	95	10	20.8	C	2.6
	T	70	71	101	7	19.1	B	2.2
	R	160	166	104	12	11.2	B	1.7
	Subtotal	**330**	**332**	**101**	--	**15.6**	**B**	--
SB	L	40	34	85	4	18.7	B	3.2
	T	40	40	100	6	15.0	B	4.7
	R	50	49	98	6	5.7	A	0.8
	Subtotal	**130**	**123**	**95**	--	**12.3**	**B**	--
EB	L	240	244	102	5	20.9	C	1.4
	T	895	891	100	50	10.7	B	1.0
	R	70	69	99	10	6.5	A	1.5
	Subtotal	**1205**	**1204**	**100**	--	**12.5**	**B**	--
WB	L	160	156	98	13	31.8	C	6.9
	T	430	426	99	21	7.5	A	0.7
	R	85	85	100	7	4.2	A	0.6
	Subtotal	**675**	**667**	**99**	--	**12.8**	**B**	--
	Total	**2340**	**2325**	**99**	--	**13.0**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 Build 5-Lane and Grade Separate 800 W
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 7: 1500 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	1063	99	46	9.5	A	1.0
	R	205	198	97	22	5.7	A	1.1
	Subtotal	**1280**	**1260**	**98**	--	**8.9**	**A**	--
SB	L	75	71	95	6	19.5	B	2.9
	T	240	242	101	12	2.1	A	0.3
	Subtotal	**315**	**313**	**99**	--	**6.0**	**A**	--
WB	L	80	81	101	4	15.9	B	1.4
	R	65	65	100	7	8.6	A	1.2
	Subtotal	**145**	**146**	**101**	--	**12.7**	**B**	--
	Total	**1740**	**1719**	**99**	--	**8.7**	**A**	--

Intersection: 8: 2600 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1186	98	50	13.6	B	1.7
	R	200	201	101	13	6.7	A	0.7
	Subtotal	**1410**	**1387**	**98**	--	**12.6**	**B**	--
SB	L	55	55	100	6	28.9	C	4.3
	T	265	265	100	10	6.1	A	0.4
	Subtotal	**320**	**320**	**100**	--	**10.0**	**B**	--
WB	L	200	199	100	8	19.2	B	1.3
	R	70	71	101	10	14.2	B	2.7
	Subtotal	**270**	**270**	**100**	--	**17.8**	**B**	--
	Total	**2000**	**1977**	**99**	--	**12.9**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 Build 5-Lane and Grade Separate 800 W
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 9: 500 South & Redwood Road
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	685	98	23	17.3	B	1.7
	T	15	14	93	5	11.4	B	3.9
	R	425	426	100	21	8.8	A	1.1
	Subtotal	**1140**	**1125**	**99**	--	**14.0**	**B**	--
SB	L	20	18	90	7	39.6	D	18.8
	T	10	8	80	5	31.0	C	22.8
	R	20	19	95	4	9.2	A	3.4
	Subtotal	**50**	**46**	**92**	--	**25.5**	**C**	--
EB	L	20	19	95	7	27.0	C	8.8
	T	730	730	100	30	22.8	C	2.0
	R	170	178	105	11	5.3	A	0.6
	Subtotal	**920**	**928**	**101**	--	**19.5**	**B**	--
WB	L	135	126	93	14	21.5	C	4.1
	T	450	443	98	17	11.9	B	1.1
	R	15	15	100	3	2.0	A	0.7
	Subtotal	**600**	**584**	**97**	--	**13.7**	**B**	--
	Total	**2710**	**2683**	**99**	--	**16.1**	**B**	--

Alternative 5
2030 Build 800 West Grade Seperated

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		(min)
Travel Time (seconds)	EB	366.3	370.5	371.9	366.4	367	368.42	6.14	**6:08**
	WB	332.5	332.4	332.9	336.8	337	334.32	5.57	**5:34**

Average Network Delay **45.16 sec/veh**

Appendix D: 2030 Build Alternatives

- 2030 5-Lane with UPRR Grade Separation, 800W Closed, at-grade 700 West by-pass (scenario 6)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	255	895	95	150	445	100	100	0	360	75	0	90

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)						
Storage Lanes						
Volume (vph)		1245	635			

6: SR 68 & 1100 West

3/7/2006

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)	200		0	200		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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)	200		150	250		150	250		TL	150		
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

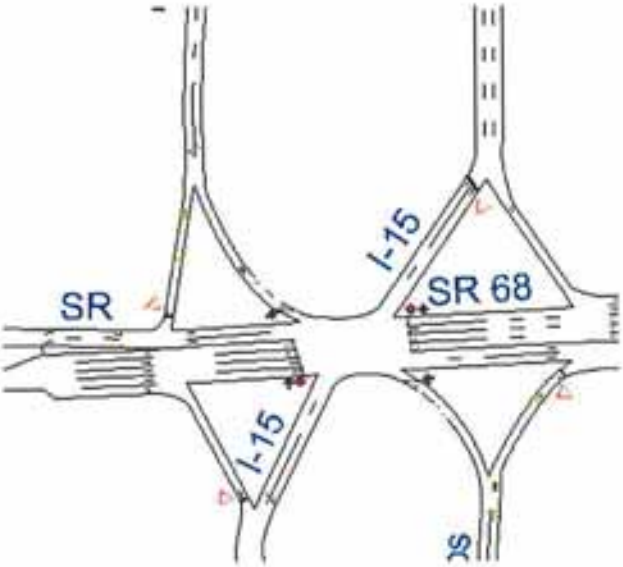
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				150	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

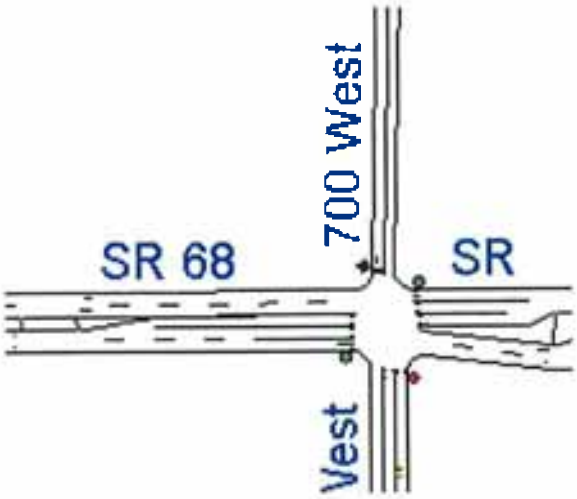
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		150	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

Alternative 6: *Configurations*

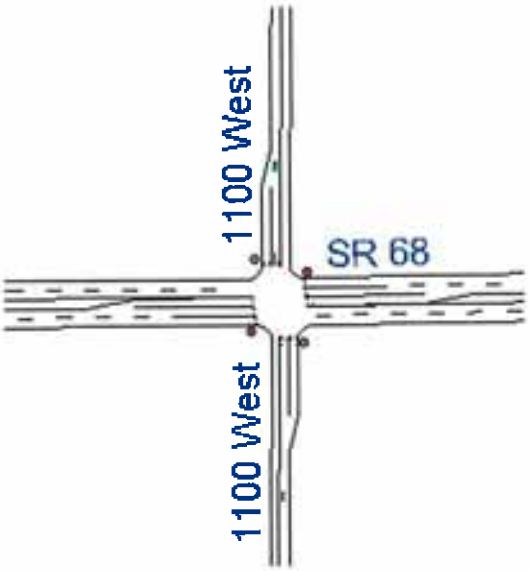


I-15 SB Ramp / 500 South

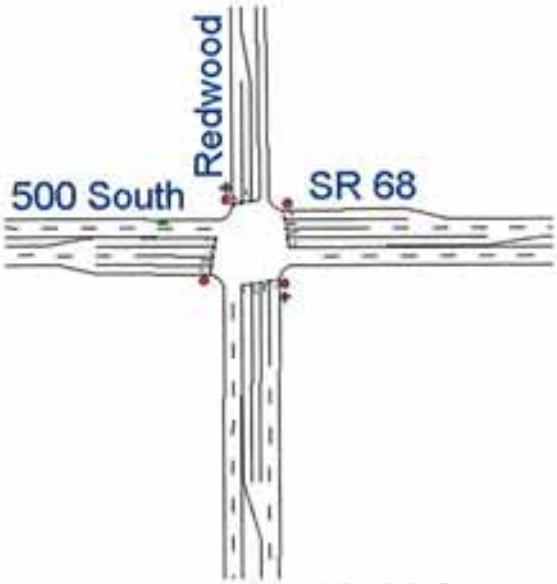


700 W / 500 S

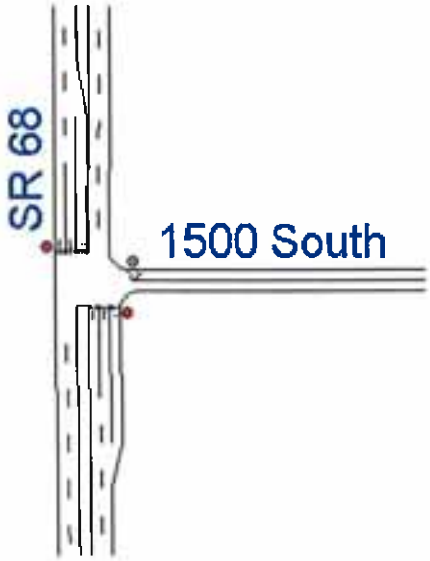
800 W / 500 S



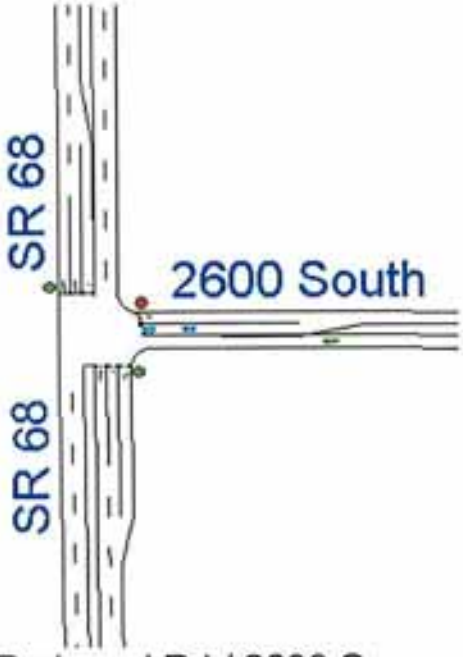
1100 W / 500 S



Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 with by-pass 800 S Grade Separated
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 1: SR 68 & I-15 Ramps
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	615	98	23	32.3	C	2.1
	T	525	530	101	23	31.9	C	2.8
	Subtotal	**1155**	**1146**	**99**	--	**32.1**	**C**	--
WB	L	530	526	99	25	40.4	D	3.8
	T	375	372	99	14	35.5	D	2.5
	Subtotal	**905**	**898**	**99**	--	**38.4**	**D**	--
NW	L	75	77	103	5	28.1	C	2.2
	Subtotal	**75**	**77**	**103**	--	**28.1**	**C**	--
SE	L	455	435	96	9	33.4	C	1.6
	Subtotal	**455**	**435**	**96**	--	**33.4**	**C**	--
	Total	**2590**	**2556**	**99**	--	**34.4**	**C**	--

Intersection: 2: SR 68 & 700 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	100	100	10	23.2	C	4.2
	R	360	358	99	7	15.2	B	1.2
	Subtotal	**460**	**458**	**100**	--	**16.9**	**B**	--
SB	L	75	69	92	11	28.1	C	7.7
	T	0	1	0	1	7.5	A	12.5
	R	90	97	108	6	5.8	A	0.9
	Subtotal	**165**	**168**	**102**	--	**15.1**	**B**	--
EB	L	255	246	96	6	19.4	B	2.1
	T	895	890	99	47	17.3	B	1.4
	R	95	100	105	9	10.9	B	1.7
	Subtotal	**1245**	**1236**	**99**	--	**17.2**	**B**	--
WB	L	150	147	98	9	18.4	B	1.6
	T	445	449	101	15	13.3	B	0.5
	R	100	102	102	16	8.8	A	2.5
	Subtotal	**695**	**698**	**100**	--	**13.7**	**B**	--
	Total	**2565**	**2559**	**100**	--	**16.0**	**B**	--

FEHR & PEERS

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 with by-pass 800 S Grade Separated
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 6: SR 68 & 1100 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	102	102	6	21.1	C	2.5
	T	70	66	94	5	20.2	C	0.9
	R	160	157	98	15	11.6	B	0.6
	Subtotal	**330**	**325**	**98**	**--**	**16.3**	**B**	**--**
SB	L	40	38	95	5	16.3	B	3.6
	T	40	36	90	9	17.1	B	4.8
	R	50	52	104	7	6.2	A	1.2
	Subtotal	**130**	**125**	**96**	**--**	**12.4**	**B**	**--**
EB	L	240	238	99	11	23.1	C	3.0
	T	895	901	101	38	10.5	B	1.0
	R	70	65	93	5	6.8	A	1.2
	Subtotal	**1205**	**1205**	**100**	**--**	**12.8**	**B**	**--**
WB	L	160	165	103	11	33.7	C	8.5
	T	430	431	100	25	7.8	A	0.9
	R	85	88	104	13	5.1	A	1.6
	Subtotal	**675**	**684**	**101**	**--**	**13.7**	**B**	**--**
	Total	**2340**	**2340**	**100**	**--**	**13.5**	**B**	**--**

Intersection: 7: 1500 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	1057	98	38	9.0	A	0.6
	R	205	205	100	13	5.8	A	0.7
	Subtotal	**1280**	**1262**	**99**	**--**	**8.5**	**A**	**--**
SB	L	75	79	105	9	21.3	C	1.7
	T	240	235	98	16	2.0	A	0.4
	Subtotal	**315**	**314**	**100**	**--**	**6.8**	**A**	**--**
WB	L	80	75	94	9	17.0	B	2.6
	R	65	66	102	7	7.3	A	2.1
	Subtotal	**145**	**141**	**97**	**--**	**12.5**	**B**	**--**
	Total	**1740**	**1716**	**99**	**--**	**8.5**	**A**	**--**

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 with by-pass 800 S Grade Separated
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 8: 2600 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1190	98	43	13.7	B	2.4
	R	200	199	100	8	6.4	A	0.4
	Subtotal	**1410**	**1389**	**99**	--	**12.6**	**B**	--
SB	L	55	47	85	5	29.4	C	5.3
	T	265	262	99	16	5.7	A	0.7
	Subtotal	**320**	**309**	**97**	--	**9.3**	**A**	--
WB	L	200	203	102	22	19.9	B	1.9
	R	70	69	99	14	15.8	B	3.9
	Subtotal	**270**	**272**	**101**	--	**18.8**	**B**	--
	Total	**2000**	**1970**	**99**	--	**13.0**	**B**	--

Intersection: 9: 500 South & Redwood Road **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	685	98	32	18.4	B	1.8
	T	15	13	87	3	17.2	B	5.3
	R	425	425	100	11	9.0	A	0.4
	Subtotal	**1140**	**1123**	**99**	--	**14.9**	**B**	--
SB	L	20	15	75	3	43.4	D	13.9
	T	10	10	100	2	34.5	C	9.8
	R	20	23	115	4	8.7	A	2.8
	Subtotal	**50**	**48**	**96**	--	**25.1**	**C**	--
EB	L	20	18	90	5	27.1	C	7.1
	T	730	732	100	24	23.9	C	2.3
	R	170	167	98	11	5.6	A	0.6
	Subtotal	**920**	**917**	**100**	--	**20.6**	**C**	--
WB	L	135	139	103	13	26.2	C	6.8
	T	450	448	100	8	12.3	B	0.8
	R	15	16	107	3	2.2	A	1.1
	Subtotal	**600**	**603**	**101**	--	**15.2**	**B**	--
	Total	**2710**	**2691**	**99**	--	**17.1**	**B**	--

Alternative 6
2030 Build with bypass

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		**(min)**
Travel Time (seconds)	EB	370.2	371.9	367.3	368.2	363	368.12	6.14	**6:08**
	WB	333.6	340.1	345.3	335.8	342.4	339.44	5.66	**5:40**

Average Network Delay **49.98 sec/veh**

Appendix D: 2030 Build Alternatives

- 2030 5-Lane without UPRR 500 S Grade Separation, grade separate 700 West by-pass (scenario 7)
  - Intersection Geometry
  - Intersection LOS and Delay Results
  - Travel Time and Network-wide delay results

TL= Trap Lane

1: SR 68 & I-15 Ramps

3/7/2006

Lane Group	EBL	EBT	EBR2	WBL	WBT	WBR2	SEL	SER2	NWL	NWR2
Lane Configurations										
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	300		200	250		200	TL		TL	
Storage Lanes	2			2			1		1	
Volume (vph)	630	525	175	530	375	465	455	245	75	430

2: SR 68 & 700 West

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)	200			100		0	0		400	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Volume (vph)	10	950	95	155	470	70	100	0	360	20	0	25

5: SR 68 & 800 West

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250			0	150	TL
Storage Lanes	1			0	1	1
Volume (vph)	250	995	565	30	60	70

6: SR 68 & 1100 West

3/7/2006

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)	200		0	200		0	0		100	0		100
Storage Lanes	1		0	1		0	0		1	0		1
Volume (vph)	240	895	70	160	430	85	100	70	160	40	40	50

9: 500 South & Redwood Road

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)	200		150	250		150	250		TL	150		
Storage Lanes	1		1	1		1	2		1	1		0
Volume (vph)	20	730	170	135	450	15	700	15	425	20	10	20

7: 1500 South & SR 68

3/7/2006

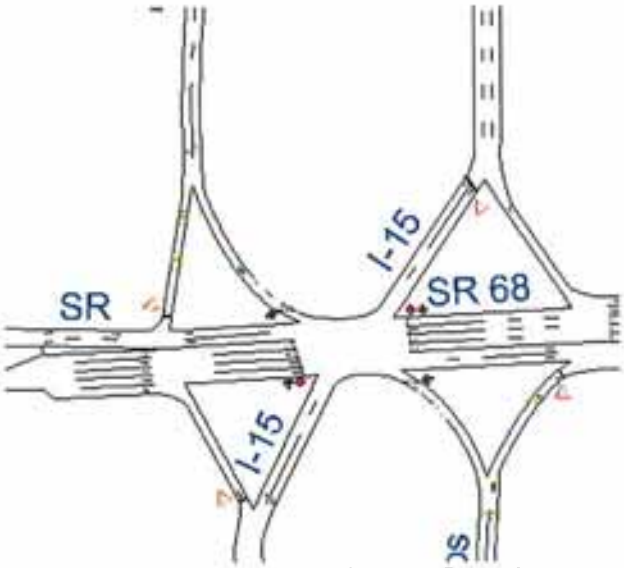
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)				150	150	
Storage Lanes		0		1	1	
Volume (vph)	80	65	1075	205	75	240

8: 2600 South & SR 68

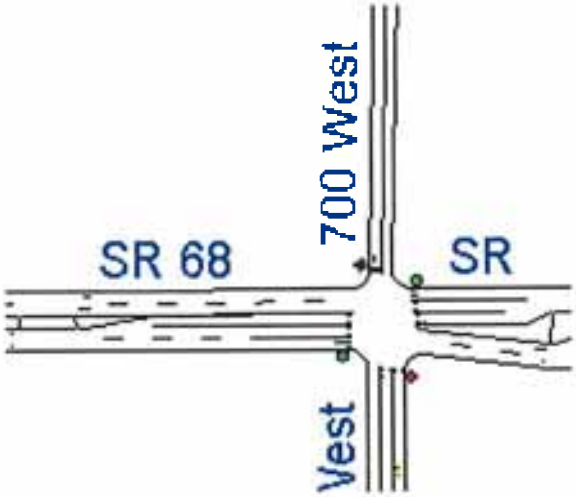
3/7/2006

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150	TL		150	150	
Storage Lanes	1	1		1	1	
Volume (vph)	200	70	1210	200	55	265

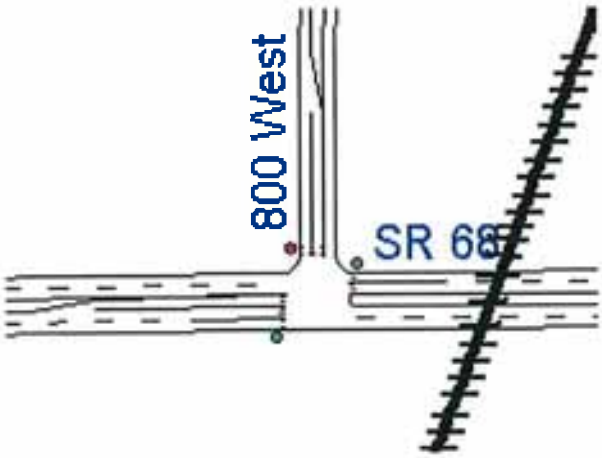
Alternative 7: *Configurations*



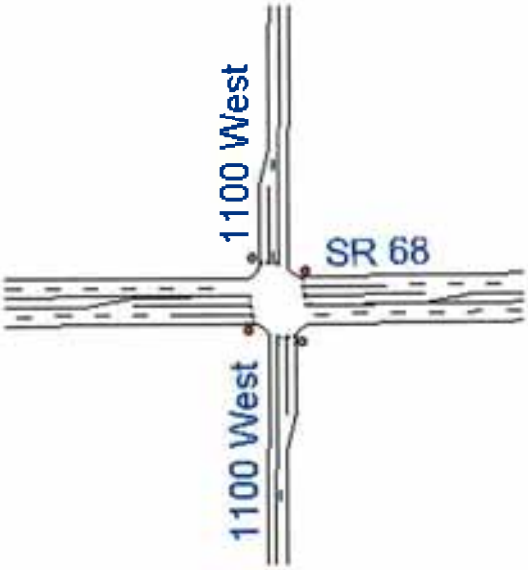
I-15 SB Ramp / 500 South



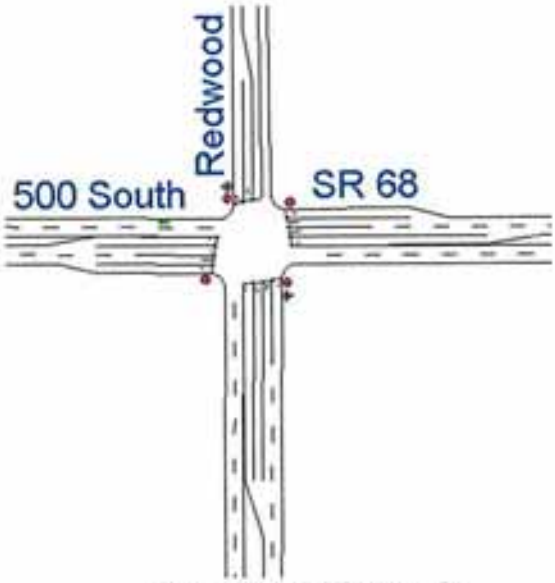
700 W / 500 S



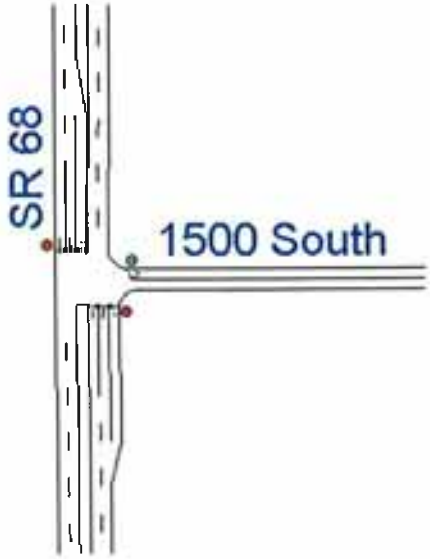
800 W / 500 S



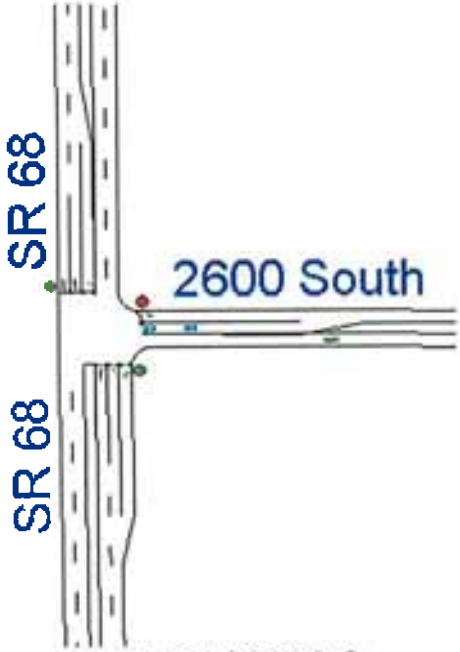
1100 W / 500 S



Redwood Rd / 500 S



Redwood Rd / 1500 S



Redwood Rd / 2600 S

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Ln with Grade Separated By-pass
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 1: SR 68 & I-15 Ramps **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
EB	L	630	595	94	22	36.6	D	4.2
	T	525	514	98	12	33.8	C	2.9
	Subtotal	**1155**	**1109**	**96**	--	**35.3**	**D**	--
WB	L	530	542	102	22	45.9	D	9.5
	T	375	363	97	20	36.6	D	2.3
	Subtotal	**905**	**905**	**100**	--	**42.2**	**D**	--
NW	L	75	70	93	11	29.6	C	6.6
	Subtotal	**75**	**70**	**93**	--	**29.6**	**C**	--
SE	L	455	454	100	21	33.0	C	2.9
	Subtotal	**455**	**454**	**100**	--	**33.0**	**C**	--
	Total	**2590**	**2537**	**98**	--	**37.2**	**D**	--

Intersection: 2: SR 68 & 700 West **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	97	97	4	24.3	C	1.7
	R	360	367	102	16	17.9	B	3.0
	Subtotal	**460**	**464**	**101**	--	**19.2**	**B**	--
SB	L	20	15	75	4	23.9	C	7.4
	R	25	26	104	5	4.6	A	1.2
	Subtotal	**45**	**42**	**93**	--	**11.7**	**B**	--
EB	L	10	10	100	3	14.3	B	7.6
	T	950	900	95	11	23.7	C	2.9
	R	95	85	89	9	19.3	B	3.7
	Subtotal	**1055**	**995**	**94**	--	**23.3**	**C**	--
WB	L	155	145	94	15	19.5	B	5.7
	T	470	463	99	6	5.5	A	0.6
	R	70	73	104	10	3.0	A	0.4
	Subtotal	**695**	**681**	**98**	--	**8.2**	**A**	--
	Total	**2255**	**2182**	**97**	--	**17.5**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Ln with Grade Separated By-pass
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 5: SR 68 & 800 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
SB	L	60	57	95	8	55.6	E	10.0
	R	70	72	103	10	4.6	A	1.1
	Subtotal	**130**	**128**	**98**	**--**	**27.1**	**C**	**--**
EB	L	250	245	98	10	48.5	D	4.4
	T	995	957	96	20	53.1	D	3.3
	Subtotal	**1245**	**1202**	**97**	**--**	**52.2**	**D**	**--**
WB	T	565	547	97	8	4.9	A	0.2
	R	30	30	100	7	1.6	A	0.9
	Subtotal	**595**	**578**	**97**	**--**	**4.7**	**A**	**--**
	Total	**1970**	**1908**	**97**	**--**	**36.1**	**D**	**--**

Intersection: 6: SR 68 & 1100 West
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	100	99	99	11	24.8	C	4.8
	T	70	73	104	11	23.5	C	2.6
	R	160	157	98	8	12.3	B	1.7
	Subtotal	**330**	**329**	**100**	**--**	**18.5**	**B**	**--**
SB	L	40	48	120	4	21.6	C	3.6
	T	40	40	100	9	19.4	B	4.6
	R	50	50	100	1	6.7	A	1.3
	Subtotal	**130**	**138**	**106**	**--**	**15.6**	**B**	**--**
EB	L	240	240	100	11	21.5	C	3.2
	T	895	883	99	4	9.4	A	0.5
	R	70	64	91	5	5.8	A	0.7
	Subtotal	**1205**	**1187**	**99**	**--**	**11.7**	**B**	**--**
WB	L	160	145	91	18	37.9	D	11.0
	T	430	411	96	26	9.0	A	1.2
	R	85	88	104	9	6.6	A	1.8
	Subtotal	**675**	**645**	**96**	**--**	**15.2**	**B**	**--**
	Total	**2340**	**2298**	**98**	**--**	**13.9**	**B**	**--**

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Ln with Grade Separated By-pass
TOD: PM Peak Hour

HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 7: 1500 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1075	1050	98	31	9.3	A	1.3
	R	205	204	100	16	5.7	A	1.1
	Subtotal	**1280**	**1253**	**98**	--	**8.7**	**A**	--
SB	L	75	75	100	5	18.6	B	6.5
	T	240	229	95	9	2.2	A	0.1
	Subtotal	**315**	**304**	**97**	--	**6.2**	**A**	--
WB	L	80	85	106	11	17.5	B	3.4
	R	65	64	98	10	8.8	A	3.0
	Subtotal	**145**	**148**	**102**	--	**13.8**	**B**	--
	Total	**1740**	**1706**	**98**	--	**8.7**	**A**	--

Intersection: 8: 2600 South & SR 68 **Type:** Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	T	1210	1182	98	37	13.0	B	1.8
	R	200	189	95	18	6.2	A	1.0
	Subtotal	**1410**	**1371**	**97**	--	**12.0**	**B**	--
SB	L	55	53	96	5	28.0	C	7.7
	T	265	262	99	16	5.2	A	1.0
	Subtotal	**320**	**315**	**98**	--	**9.1**	**A**	--
WB	L	200	193	97	21	19.6	B	2.5
	R	70	66	94	8	14.5	B	3.1
	Subtotal	**270**	**259**	**96**	--	**18.3**	**B**	--
	Total	**2000**	**1945**	**97**	--	**12.4**	**B**	--

SIMTRAFFIC LOS REPORT

Project: SR 68 EA
Scenario: 2030 5 Ln with Grade Separated By-pass
TOD: PM Peak Hour
HCM: 2000
PHF: 1
# of Runs: 5

Intersection: 9: 500 South & Redwood Road
Type: Signalized

Approach	Movement	Demand Volume	Volume Served			Delay/Veh (sec)		
			Avg	%	Std Dev	Avg	LOS	Std Dev
NB	L	700	678	97	28	17.4	B	0.9
	T	15	16	107	3	15.3	B	5.2
	R	425	417	98	12	9.1	A	0.5
	Subtotal	**1140**	**1111**	**97**	--	**14.2**	**B**	--
SB	L	20	19	95	6	42.4	D	18.2
	T	10	8	80	2	31.4	C	9.6
	R	20	22	110	5	8.8	A	3.0
	Subtotal	**50**	**49**	**98**	--	**25.6**	**C**	--
EB	L	20	20	100	4	29.5	C	7.3
	T	730	725	99	23	22.4	C	1.7
	R	170	167	98	11	5.0	A	0.5
	Subtotal	**920**	**912**	**99**	--	**19.3**	**B**	--
WB	L	135	131	97	11	25.6	C	7.6
	T	450	436	97	23	13.3	B	2.1
	R	15	14	93	5	2.2	A	0.5
	Subtotal	**600**	**581**	**97**	--	**15.8**	**B**	--
	Total	**2710**	**2654**	**98**	--	**16.5**	**B**	--

Alternative 7
2030 Build 5-Lanes Grade Separated By Pass

		Run 1	Run 2	Run 3	Run 4	Run 5	Average (s)		**(min)**
Travel Time (seconds)	EB	445	432.8	445.3	449.3	451.9	444.86	7.41	**7:25**
	WB	373.3	393.7	371.7	377.5	386	380.44	6.34	**6:20**

Average Network Delay **64.34 sec/veh**