



## Appendix

Appendix A – Intersection Turning Movement Counts

Appendix B – Synchro and SimTraffic Outputs

Appendix C – Signal Warrant Analysis Worksheets

Appendix D – Trip Rates Memorandum (November 22, 2016)

Appendix E – Intersection Mitigation Exhibit

Appendix F – Henderson Road/Wilshire Drive Cut-Through Analysis  
Memorandum



# Appendix A

## Intersection Turning Movement Counts

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:15 AM to 8:15 AM		ARRIVAL / DEPARTURE VOLUMES											
NORTH		PHF = 0.82											
0		98			377			109			0		
125		584			903			PHF = 0.76			207		
256		707			826			PHF = 0.85			396		
120		501			529			PHF = 0.83			223		
2859		720			948			PHF = 0.83			0		
HARTNELL AVENUE		0			213			571			164		
CHURN CREEK ROAD													

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 7:15 AM	33	87	53	17	87	17	17	31	17	87	20	29	495				
7:15 AM to 7:30 AM	98	221	100	32	220	48	38	85	46	173	65	60	1186				
7:30 AM to 7:45 AM	167	388	149	56	329	73	79	150	81	230	169	112	1983				
7:45 AM to 8:00 AM	214	551	182	83	400	92	119	228	110	273	329	179	2760				
8:00 AM to 8:15 AM	246	658	217	126	464	115	142	287	137	310	416	236	3354				
8:15 AM to 8:30 AM	279	741	243	175	533	136	163	336	162	343	495	294	3900				
8:30 AM to 8:45 AM	308	818	264	222	590	156	188	368	181	364	570	353	4382				
8:45 AM to 9:00 AM	335	909	293	265	643	183	223	402	198	389	654	414	4908				
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	33	87	53	0	17	87	17	0	17	31	17	0	87	20	29	495
7:15 AM to 7:30 AM	0	65	134	47	0	15	133	31	0	21	54	29	0	86	45	31	691
7:30 AM to 7:45 AM	0	69	167	49	0	24	109	25	0	41	65	35	0	57	104	52	797
7:45 AM to 8:00 AM	0	47	163	33	0	27	71	19	0	40	78	29	0	43	160	67	777
8:00 AM to 8:15 AM	0	32	107	35	0	43	64	23	0	23	59	27	0	37	87	57	594
8:15 AM to 8:30 AM	0	33	83	26	0	49	69	21	0	21	49	25	0	33	79	58	546
8:30 AM to 8:45 AM	0	29	77	21	0	47	57	20	0	25	32	19	0	21	75	59	482
8:45 AM to 9:00 AM	0	27	91	29	0	43	53	27	0	35	34	17	0	25	84	61	526
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	214	551	182	0	83	400	92	0	119	228	110	0	273	329	179	2760
7:15 AM to 8:15 AM	0	213	571	164	0	109	377	98	0	125	256	120	0	223	396	207	2859
7:30 AM to 8:30 AM	0	181	520	143	0	143	313	88	0	125	251	116	0	170	430	234	2714
7:45 AM to 8:45 AM	0	141	430	115	0	166	261	83	0	109	218	100	0	134	401	241	2399
8:00 AM to 9:00 AM	0	121	358	111	0	182	243	91	0	104	174	88	0	116	325	235	2148
PEAK HOUR SUMMARY																	
7:15 AM to 8:15 AM	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	213	571	164	0	109	377	98	0	125	256	120	0	223	396	207	2859
PHF BY MOVEMENT	0.00	0.77	0.85	0.84	0.00	0.63	0.71	0.79	0.00	0.76	0.82	0.86	0.00	0.65	0.62	0.77	OVERALL
PHF BY APPROACH	0.83			0.82			0.85			0.76			0.90				
TRUCK	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	OVERALL		
TRUCK VOLUMES	14	16	9	11	9	13	26	18	58								
TRUCK PERCENTAGE	1.5%	1.8%	1.5%	1.5%	1.8%	2.5%	3.1%	2.5%	2.0%								
BICYCLE	2		3		1		2		8								
PEDESTRIAN BY DIR	20		7		13		32		72								
	N-LEG			S-LEG			E-LEG			W-LEG							
PEDESTRIAN BY DIR	21		24		19		8		72								
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:15 AM to 8:15 AM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)											
NORTH		PHF = 0.82											
0		2			5			2			0		
3		1.5%			1.8%			9			16		
5		2.5%			18			2.5%			3.1%		
1		1.8%			9			1.8%			13		
58		2.0%			5			5			14		
HARTNELL AVENUE		0			2			6			6		
CHURN CREEK ROAD													

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL					
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT						
7:00 AM to 7:15 AM	0	0	2	0	2	1	0	1	0	1	1	1	9					
7:15 AM to 7:30 AM	1	1	4	1	4	1	1	1	1	1	1	3	20					
7:30 AM to 7:45 AM	1	3	7	1	5	2	2	3	1	2	5	5	37					
7:45 AM to 8:00 AM	2	5	8	2	7	3	2	4	1	4	10	7	55					
8:00 AM to 8:15 AM	2	6	8	2	7	3	3	6	1	6	15	8	67					
8:15 AM to 8:30 AM	3	6	9	4	10	4	3	6	2	7	18	10	82					
8:30 AM to 8:45 AM	4	7	10	5	10	5	3	8	2	7	23	12	96					
8:45 AM to 9:00 AM	4	9	12	7	12	5	4	11	4	8	26	15	117					
TOTAL BY PERIOD																		
7:00 AM to 7:15 AM	0	0	0	2	0	0	2	1	0	0	1	1	0	0	1	1	1	9
7:15 AM to 7:30 AM	0	1	1	2	0	1	2	0	0	1	0	1	0	0	0	0	2	11
7:30 AM to 7:45 AM	0	0	2	3	0	0	1	1	0	1	2	0	0	0	1	4	2	17
7:45 AM to 8:00 AM	0	1	2	1	0	1	2	1	0	0	1	0	0	0	2	5	2	18
8:00 AM to 8:15 AM	0	0	1	0	0	0	0	0	0	1	2	0	0	0	2	5	1	12
8:15 AM to 8:30 AM	0	1	0	1	0	2	3	1	0	0	0	1	0	0	1	3	2	15
8:30 AM to 8:45 AM	0	1	1	1	0	1	0	1	0	0	2	0	0	0	0	5	2	14
8:45 AM to 9:00 AM	0	0	2	2	0	2	2	0	0	1	3	2	0	0	1	3	3	21
HOURLY TOTALS																		
7:00 AM to 8:00 AM	0	2	5	8	0	2	7	3	0	2	4	1	0	4	10	7	55	
7:15 AM to 8:15 AM	0	2	6	6	0	2	5	2	0	3	5	1	0	5	14	7	58	
7:30 AM to 8:30 AM	0	2	5	5	0	3	6	3	0	2	5	1	0	6	17	7	62	
7:45 AM to 8:45 AM	0	3	4	3	0	4	5	3	0	1	5	1	0	5	18	7	59	
8:00 AM to 9:00 AM	0	2	4	4	0	5	5	2	0	2	7	3	0	4	16	8	62	
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																		

7:15 AM to 8:15 AM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	14	16	9	11	9	13	26	18	58
TRUCK PERCENTAGE	1.5%	1.8%	1.5%	1.5%	1.8%	2.5%	3.1%	2.5%	2.0%

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:15 AM TO 8:15 AM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:30 AM to 7:45 AM	0 1 1	0 1 0	0 0 0	0 0 0	3
7:45 AM to 8:00 AM	0 1 1	0 1 0	0 1 0	0 1 0	5
8:00 AM to 8:15 AM	0 2 1	0 3 0	0 1 0	0 2 0	9
8:15 AM to 8:30 AM	0 2 1	0 3 0	0 1 0	0 2 0	9
8:30 AM to 8:45 AM	0 3 1	0 3 0	0 1 0	0 2 0	10
8:45 AM to 9:00 AM	0 3 1	0 4 0	0 1 0	0 2 0	11
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 1	0 1 0	0 0 0	0 0 0	2
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 1 0	0 1 0	2
8:00 AM to 8:15 AM	0 1 0	0 2 0	0 0 0	0 1 0	4
8:15 AM to 8:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:30 AM to 8:45 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:45 AM to 9:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 1 1	0 1 0	0 1 0	0 1 0	5
7:15 AM to 8:15 AM	0 1 1	0 3 0	0 1 0	0 2 0	8
7:30 AM to 8:30 AM	0 1 1	0 3 0	0 1 0	0 2 0	8
7:45 AM to 8:45 AM	0 2 0	0 2 0	0 1 0	0 2 0	7
8:00 AM to 9:00 AM	0 2 0	0 3 0	0 0 0	0 1 0	6

TEL: (510) 232 - 1271 FAX: (510) 232 - 1272

7:15 AM to 8:15 AM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	2	3	1	2	8

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:15 AM TO 08:15 AM		TOTAL PEDESTRIAN VOLUMES	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F G H			
SURVEY DATA					
07:00 AM --- 07:15 AM	2 0 1 1	0 1 0 1	0 1 0 1	0 1 0 1	6
07:15 AM --- 07:30 AM	3 2 3 2	1 5 1 1	1 5 1 1	1 1 1 1	18
07:30 AM --- 07:45 AM	5 5 5 2	6 8 3 2	6 8 3 2	6 3 2 2	36
07:45 AM --- 08:00 AM	6 13 5 9	10 10 4 2	10 10 4 2	4 2 2 2	59
08:00 AM --- 08:15 AM	6 17 6 15	15 10 6 3	15 10 6 3	6 3 3 3	78
08:15 AM --- 08:30 AM	6 18 6 19	17 11 6 3	17 11 6 3	6 3 6 3	86
08:30 AM --- 08:45 AM	7 18 6 21	18 12 6 6	18 12 6 6	6 6 6 6	94
08:45 AM --- 09:00 AM	7 19 6 23	19 12 7 8	19 12 7 8	7 8 8 8	101
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	2 0 1 1	0 1 0 1	0 1 0 1	0 1 0 1	6
07:15 AM --- 07:30 AM	1 2 2 1	1 4 1 1	1 4 1 1	1 0 1 0	12
07:30 AM --- 07:45 AM	2 3 2 0	5 3 2 1	5 3 2 1	2 1 1 1	18
07:45 AM --- 08:00 AM	1 8 0 7	4 2 1 0	4 2 1 0	2 1 0 2	23
08:00 AM --- 08:15 AM	0 4 1 6	5 0 2 1	5 0 2 1	0 2 1 0	19
08:15 AM --- 08:30 AM	0 1 0 4	2 1 0 0	2 1 0 0	0 0 0 0	8
08:30 AM --- 08:45 AM	1 0 0 2	1 1 0 3	1 1 0 3	0 0 3 0	8
08:45 AM --- 09:00 AM	0 1 0 2	1 0 1 2	1 0 1 2	1 2 2 2	7
HOURLY TOTALS					
07:00 AM --- 08:00 AM	6 13 5 9	10 10 4 2	10 10 4 2	4 2 2 2	59
07:15 AM --- 08:15 AM	4 17 5 14	15 9 6 2	15 9 6 2	6 2 2 2	72
07:30 AM --- 08:30 AM	3 16 3 17	16 6 5 2	16 6 5 2	5 2 2 2	68
07:45 AM --- 08:45 AM	2 13 1 19	12 4 3 4	12 4 3 4	3 4 4 4	58
08:00 AM --- 09:00 AM	1 6 1 14	9 2 3 6	9 2 3 6	6 6 6 6	42

Tel: (510) 232-1271 Fax: (510) 232-1272

7:15 AM to 8:15 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	20	7	13	32	72
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	21	24	19	8	72

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:45 PM to 5:45 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	29	83	41	76	109	27	41	89	17	37	75	66	690
4:15 PM to 4:30 PM	60	184	82	155	232	65	71	160	50	76	150	130	1415
4:30 PM to 4:45 PM	85	277	117	228	329	105	104	247	69	133	223	181	2098
4:45 PM to 5:00 PM	117	376	159	316	460	150	151	342	87	185	317	250	2910
5:00 PM to 5:15 PM	144	473	196	403	586	185	190	463	121	228	421	321	3731
5:15 PM to 5:30 PM	165	562	235	500	714	213	237	590	148	283	542	380	4569
5:30 PM to 5:45 PM	184	650	288	576	835	246	270	693	168	322	603	443	5278
5:45 PM to 6:00 PM	201	743	329	643	944	272	291	800	183	368	680	500	5954

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	29	83	41	0	76	109	27	0	41	89	17	690
4:15 PM to 4:30 PM	0	31	101	41	0	79	123	38	0	30	71	33	725
4:30 PM to 4:45 PM	0	25	93	35	0	73	97	40	0	33	87	19	683
4:45 PM to 5:00 PM	0	32	99	42	0	88	131	45	0	47	95	18	812
5:00 PM to 5:15 PM	0	27	97	37	0	87	126	35	0	39	121	34	821
5:15 PM to 5:30 PM	0	21	89	39	0	97	128	28	0	47	127	27	838
5:30 PM to 5:45 PM	0	19	88	53	0	76	121	33	0	33	103	20	709
5:45 PM to 6:00 PM	0	17	93	41	0	67	109	26	0	21	107	15	676

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 5:00 PM	0	117	376	159	0	316	460	150	0	151	342	87	2910
4:15 PM to 5:15 PM	0	115	390	155	0	327	477	158	0	149	374	104	3041
4:30 PM to 5:30 PM	0	105	378	153	0	345	482	148	0	166	430	98	3154
4:45 PM to 5:45 PM	0	99	373	171	0	348	506	141	0	166	446	99	3180
5:00 PM to 6:00 PM	0	84	367	170	0	327	484	122	0	140	458	96	3044

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR		WBU	WBL	WBT	WBR
4:45 PM to 5:45 PM	0	99	373	171	0	348	506	141	0	166	446	99	0	189	380	262	3180
PHF BY MOVEMENT	0.00	0.77	0.94	0.81	0.00	0.90	0.97	0.78	0.00	0.88	0.88	0.73	0.00	0.86	0.79	0.92	0.95
PHF BY APPROACH	0.93			0.94			0.88			0.88			0.95				
TRUCK	IN	OUT		IN	OUT		IN	OUT		IN	OUT		OVERALL				
TRUCK VOLUMES	5	7		5	4		7	7		4	3		21				
TRUCK PERCENTAGE	0.8%	0.9%		0.5%	0.5%		1.0%	0.7%		0.5%	0.5%		0.7%				
BICYCLE	2		1		1		2		3		8						
PEDESTRIAN BY DIR	13			16			13			8			50				
	N-LEG			S-LEG			E-LEG			W-LEG							
PEDESTRIAN BY DIR	10			11			14			15			50				

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:45 PM to 5:45 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	1	0	0	1	0	0	2	0	0	0	0	4
4:15 PM to 4:30 PM	0	1	0	0	1	0	0	2	0	1	2	0	8
4:30 PM to 4:45 PM	0	1	0	0	1	0	0	5	0	1	3	0	13
4:45 PM to 5:00 PM	0	2	0	0	2	0	0	1	6	0	1	5	19
5:00 PM to 5:15 PM	0	4	0	0	2	4	0	1	7	0	1	5	24
5:15 PM to 5:30 PM	0	5	0	0	2	4	0	2	9	0	2	6	30
5:30 PM to 5:45 PM	0	6	0	0	3	5	0	2	10	0	2	6	34
5:45 PM to 6:00 PM	0	6	0	0	3	5	0	2	11	0	3	8	38

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	0	1	0	0	0	1	0	0	0	2	0	4
4:15 PM to 4:30 PM	0	0	0	0	0	1	0	0	0	0	0	1	2
4:30 PM to 4:45 PM	0	0	0	0	0	1	0	0	0	0	3	0	5
4:45 PM to 5:00 PM	0	0	1	0	0	1	0	0	0	1	1	0	6
5:00 PM to 5:15 PM	0	0	2	0	0	0	2	0	0	0	1	0	5
5:15 PM to 5:30 PM	0	0	1	0	0	0	0	0	0	1	2	0	6
5:30 PM to 5:45 PM	0	0	1	0	0	1	1	0	0	0	1	0	4
5:45 PM to 6:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	4

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 5:00 PM	0	0	2	0	0	2	2	0	0	1	6	0	19
4:15 PM to 5:15 PM	0	0	3	0	0	2	3	0	0	1	5	0	20
4:30 PM to 5:30 PM	0	0	4	0	0	1	3	0	0	2	7	0	22
4:45 PM to 5:45 PM	0	0	5	0	0	2	3	0	0	2	5	0	21
5:00 PM to 6:00 PM	0	0	4	0	0	1	3	0	0	1	5	0	19

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4:45 PM to 5:45 PM	NB		SB		EB		WB		OVERALL INTERSECTION
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
TRUCK VOLUMES	5	7	5	4	7	7	4	3	21
TRUCK PERCENTAGE	0.8%	0.9%	0.5%	0.5%	1.0%	0.7%	0.5%	0.5%	0.7%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: CHURN CREEK ROAD		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:45 PM TO 5:45 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
4:00 PM to 4:15 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
4:15 PM to 4:30 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
4:30 PM to 4:45 PM	0 1 0	0 1 0	0 0 0	0 1 0	3
4:45 PM to 5:00 PM	0 2 0	0 1 0	0 0 0	0 3 0	6
5:00 PM to 5:15 PM	0 2 0	0 1 0	0 2 0	0 4 0	9
5:15 PM to 5:30 PM	0 2 0	1 0 0	0 2 0	0 4 0	9
5:30 PM to 5:45 PM	0 3 0	0 2 0	0 2 0	0 4 0	11
5:45 PM to 6:00 PM	0 3 0	0 2 0	0 3 0	0 4 0	12
TOTAL BY PERIOD					
4:00 PM to 4:15 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 1 0	0 0 0	0 1 0	2
4:45 PM to 5:00 PM	0 1 0	0 0 0	0 0 0	0 2 0	3
5:00 PM to 5:15 PM	0 0 0	0 0 0	0 2 0	0 1 0	3
5:15 PM to 5:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:30 PM to 5:45 PM	0 1 0	0 1 0	0 0 0	0 0 0	2
5:45 PM to 6:00 PM	0 0 0	0 0 0	0 1 0	0 0 0	1
HOURLY TOTALS					
4:00 PM to 5:00 PM	0 2 0	0 1 0	0 0 0	0 3 0	6
4:15 PM to 5:15 PM	0 1 0	0 1 0	0 2 0	0 4 0	8
4:30 PM to 5:30 PM	0 1 0	0 1 0	0 2 0	0 4 0	8
4:45 PM to 5:45 PM	0 2 0	0 1 0	0 2 0	0 3 0	8
5:00 PM to 6:00 PM	0 1 0	0 1 0	0 3 0	0 1 0	6

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4:45 PM to 5:45 PM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	2	1	2	3	8

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: CHURN CREEK ROAD		DAY: THURSDAY	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:45 PM TO 05:45 PM		TOTAL PEDESTRIAN VOLUMES	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F G H			
SURVEY DATA					
04:00 PM --- 04:15 PM	2 1 3 3	2 3 0 2			16
04:15 PM --- 04:30 PM	2 3 6 7	2 7 2 6			35
04:30 PM --- 04:45 PM	4 4 7 9	5 13 4 8			54
04:45 PM --- 05:00 PM	4 4 9 14	8 16 6 9			70
05:00 PM --- 05:15 PM	6 5 11 15	9 18 9 11			84
05:15 PM --- 05:30 PM	9 5 11 16	9 19 9 14			92
05:30 PM --- 05:45 PM	11 7 14 16	10 19 10 17			104
05:45 PM --- 06:00 PM	11 7 16 16	10 20 10 17			107
TOTAL BY PERIOD					
04:00 PM --- 04:15 PM	2 1 3 3	2 3 0 2			16
04:15 PM --- 04:30 PM	0 2 3 4	0 4 2 4			19
04:30 PM --- 04:45 PM	2 1 1 2	3 6 2 2			19
04:45 PM --- 05:00 PM	0 0 2 5	3 3 2 1			16
05:00 PM --- 05:15 PM	2 1 2 1	1 2 3 2			14
05:15 PM --- 05:30 PM	3 0 0 1	0 1 0 3			8
05:30 PM --- 05:45 PM	2 2 3 0	1 0 1 3			12
05:45 PM --- 06:00 PM	0 0 2 0	0 1 0 0			3
HOURLY TOTALS					
04:00 PM --- 05:00 PM	4 4 9 14	8 16 6 9			70
04:15 PM --- 05:15 PM	4 4 8 12	7 15 9 9			68
04:30 PM --- 05:30 PM	7 2 5 9	7 12 7 8			57
04:45 PM --- 05:45 PM	7 3 7 7	5 6 6 9			50
05:00 PM --- 06:00 PM	7 3 7 2	2 4 4 8			37

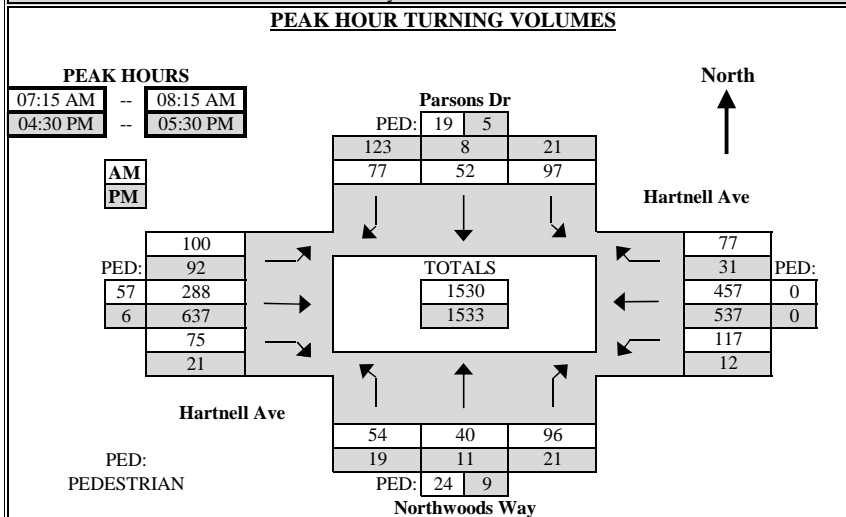
Tel: (510) 232-1271 Fax: (510) 232-1272

4:45 PM to 5:45 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	13	16	13	8	50
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	10	11	14	15	50

# INTERSECTION TURNING MOVEMENT TRAFFIC VOLUME SUMMARY



<b>PROJECT NAME:</b>		<b>SURVEY DATE:</b> 10/13/16 AM / 10/12/16 PM		<b>FILE:</b> T2245TCS001.xlsx	
<b>PROJECT NO:</b>		<b>TC No:</b>		<b>DAY OF WEEK:</b> Thursday / Wednesday	
<b>NB LEG:</b> Northwoods Way		<b>SB LEG:</b> Parsons Dr		<b>EB LEG:</b> Hartnell Ave	
				<b>WB LEG:</b> Hartnell Ave	



**PEAK HOUR VOLUMES PER LEG**

**Intersection Totals**

% Trucks	2.0	0.3
PHF	0.92	0.93

PHF	0.87	0.81	0.81	0.76
% Trck	2.2	0.0	1.8	0.0
VOL	226	152	217	134

		<b>%</b>				<b>%</b>	
PHF	Trck	VOL		VOL	Trck	PHF	
0.96	1.5	588		651	1.5	0.90	
0.93	0.4	679		580	0.5	0.90	
0.92	2.2	463		481	2.9	0.88	
0.88	0.3	750		679	0.3	0.86	

VOL	244	41	190	51
% Trck	1.2	0.0	2.6	0.0
PHF	0.51	0.85	0.63	0.58

**SUMMARY OF MORNING (AM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES													
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Car	Trk												
<b>RAW SURVEY DATA</b>																										
07:00 AM -- 07:15 AM	8	0	5	0	14	0	27	1	83	0	2	0	8	0	11	0	5	1	5	0	64	0	5	0	237	2
07:15 AM -- 07:30 AM	6	0	4	0	20	1	34	0	130	0	17	0	23	0	11	0	17	0	20	0	77	1	16	0	375	2
07:30 AM -- 07:45 AM	18	1	13	1	31	1	61	1	102	2	4	0	15	2	26	1	21	0	28	1	55	1	31	0	405	11
07:45 AM -- 08:00 AM	21	0	19	0	35	1	18	1	109	2	20	0	18	2	11	0	16	0	22	1	79	1	23	0	391	8
08:00 AM -- 08:15 AM	8	0	3	0	7	0	2	0	108	4	36	0	37	0	3	0	23	0	27	1	70	4	5	0	329	9
08:15 AM -- 08:30 AM	1	0	0	0	1	0	5	1	98	4	22	2	14	0	0	0	17	0	13	1	65	3	3	0	239	11
08:30 AM -- 08:45 AM	4	0	3	0	3	0	2	1	99	5	2	0	2	0	0	0	8	1	18	0	74	1	4	0	219	8
08:45 AM -- 09:00 AM	2	0	1	0	2	0	6	0	91	2	1	0	2	0	1	0	9	0	17	0	70	2	0	0	202	4
<b>TOTALS</b>	68	1	48	1	113	3	155	5	820	19	104	2	119	4	63	1	116	2	150	4	554	13	87	0	2397	55
<b>PERCENT TRUCKS</b>	1.5%	2.1%	2.7%	3.2%	2.3%	1.9%	3.4%	1.6%	1.7%	2.7%	2.3%	0.0%	2.3%	0.0%	2.3%				0.0%	2.3%					2.3%	

**HOURLY TOTALS**

07:00 AM -- 08:00 AM	53	1	41	1	100	3	140	3	424	4	43	0	64	4	59	1	59	1	75	2	275	3	75	0	1408	23
07:15 AM -- 08:15 AM	53	1	39	1	93	3	115	2	449	8	77	0	93	4	51	1	77	0	97	3	281	7	75	0	1500	30
07:30 AM -- 08:30 AM	48	1	35	1	74	2	86	3	417	12	82	2	84	4	40	1	77	0	80	4	269	9	62	0	1364	39
07:45 AM -- 08:45 AM	34	0	25	0	46	1	27	3	414	15	80	2	71	2	14	0	64	1	90	3	288	9	35	0	1178	36
08:00 AM -- 09:00 AM	15	0	7	0	13	0	15	2	396	15	61	2	55	0	4	0	57	1	75	2	279	10	12	0	989	32

**SUMMARY OF AFTERNOON (PM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES													
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Car	Trk												
<b>RAW SURVEY DATA</b>																										
04:00 PM -- 04:15 PM	4	0	1	0	10	0	4	0	153	3	8	0	7	0	3	0	28	0	21	1	155	1	3	0	397	5
04:15 PM -- 04:30 PM	3	0	2	0	10	0	4	0	144	0	13	0	9	0	2	0	26	0	24	0	149	0	3	0	389	0
04:30 PM -- 04:45 PM	3	0	2	0	5	0	4	0	148	2	8	0	4	0	2	0	29	0	18	0	125	2	6	0	354	4
04:45 PM -- 05:00 PM	3	0	1	0	3	0	0	0	129	1	9	0	6	0	2	0	20	0	24	0	156	0	4	0	357	1
05:00 PM -- 05:15 PM	6	0	3	0	3	0	3	0	127	0	6	0	5	0	3	0	34	0	19	0	189	0	6	0	404	0
05:15 PM -- 05:30 PM	7	0	5	0	10	0	5	0	130	0	8	0	6	0	1	0	40	0	31	0	165	0	5	0	413	0
05:30 PM -- 05:45 PM	4	0	1	0	7	0	4	0	112	0	19	0	11	0	2	0	22	0	28	0	109	0	3	0	322	0
05:45 PM -- 06:00 PM	2	0	7	0	6	0	1	0	112	1	19	0	7	0	5	0	19	0	28	0	129	0	0	0	335	1
<b>TOTALS</b>	32	0	22	0	54	0	25	0	###	7	90	0	55	0	20	0	218	0	193	1	1177	3	30	0	2971	11
<b>PERCENT TRUCKS</b>	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.3%	0.0%	0.0%	0.5%	0.3%	0.0%				0.4%	

**HOURLY TOTALS**

04:00 PM -- 05:00 PM	13	0	6	0	28	0	12	0	574	6	38	0	26	0	9	0	103	0	87	1	585	3	16	0	1497	10
04:15 PM -- 05:15 PM	15	0	8	0	21	0	11	0	548	3	36	0	24	0	9	0	109	0	85	0	619	2	19	0	1504	5
04:30 PM -- 05:30 PM	19	0	11	0	21	0	12	0	534	3	31	0	21	0	8	0	123	0	92	0	635	2	21	0	1528	5
04:45 PM -- 05:45 PM	20	0	10	0	23	0	12	0	498	1	42	0	28	0	8	0	116	0	102	0	619	0	18	0	1496	1
05:00 PM -- 06:00 PM	19	0	16	0	26	0	13	0	481	1	52	0	29	0	11	0	115	0	106	0	592	0	14	0	1474	1

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> BECHLLI LANE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> HARTNELL AVENUE		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<b>ARRIVAL / DEPARTURE VOLUMES</b>			
PHF = 0.77		PHF = 0.75	
383 419		PHF = 0.80	
650 284		PHF = 0.72	
PHF = 0.80		472 661	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
7:00 AM to 7:15 AM	24	35	23	10	15	4	2	28	9	10	48	12	220
7:15 AM to 7:30 AM	59	69	61	38	58	13	4	79	26	34	120	39	600
7:30 AM to 7:45 AM	109	140	111	60	118	36	5	128	51	89	226	76	1149
7:45 AM to 8:00 AM	193	232	165	92	182	65	5	189	79	148	338	131	1819
8:00 AM to 8:15 AM	243	286	200	121	229	70	8	222	96	182	403	158	2218
8:15 AM to 8:30 AM	292	331	227	151	263	78	13	268	112	215	472	187	2609
8:30 AM to 8:45 AM	339	379	245	162	296	84	18	313	138	246	529	216	2965
8:45 AM to 9:00 AM	370	442	263	187	367	92	23	355	166	280	594	259	3398

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 7:15 AM	0	24	35	23	0	10	15	4	0	2	28	9	0	10	48	12	220
7:15 AM to 7:30 AM	0	35	34	38	0	28	43	9	0	2	51	17	0	24	72	27	380
7:30 AM to 7:45 AM	0	50	71	50	0	22	60	23	0	1	49	25	0	55	106	37	549
7:45 AM to 8:00 AM	0	84	92	54	0	32	64	29	0	0	61	28	0	59	112	55	670
8:00 AM to 8:15 AM	0	50	54	35	0	29	47	5	0	3	33	17	0	34	65	27	399
8:15 AM to 8:30 AM	0	49	45	27	0	30	34	8	0	5	46	16	0	33	69	29	391
8:30 AM to 8:45 AM	0	47	48	18	0	11	33	6	0	5	45	26	0	31	57	29	356
8:45 AM to 9:00 AM	0	31	63	18	0	25	71	8	0	5	42	28	0	34	65	43	433

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 8:00 AM	0	193	232	165	0	92	182	65	0	5	189	79	0	148	338	131	1819
8:00 AM to 8:15 AM	0	219	251	177	0	111	214	66	0	6	194	87	0	172	355	146	1998
8:15 AM to 8:30 AM	0	233	262	166	0	113	205	65	0	9	189	86	0	181	352	148	2009
8:30 AM to 8:45 AM	0	230	239	134	0	102	178	48	0	13	185	87	0	157	303	140	1816
8:45 AM to 9:00 AM	0	177	210	98	0	95	185	27	0	18	166	87	0	132	256	128	1579

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR		WBU	WBL	WBT	WBR
7:30 AM to 8:30 AM	0	233	262	166	0	113	205	65	0	9	189	86	0	181	352	148	2009
PHF BY MOVEMENT	0.00	0.69	0.71	0.77	0.00	0.88	0.80	0.56	0.00	0.45	0.77	0.77	0.00	0.77	0.79	0.67	0.75
PHF BY APPROACH	0.72			0.77			0.80			0.75			0.75				
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	8		7		5		6		6		9		12		9		31
TRUCK PERCENTAGE	1.2%		1.7%		1.3%		1.3%		2.1%		1.9%		1.8%		1.4%		1.5%
BICYCLE	2				2				3				3				10
PEDESTRIAN BY DIR:	8				2				7				3				20
PEDESTRIAN BY LEG	N-LEG			S-LEG			E-LEG			W-LEG						20	
	9			1			4			6							

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> BECHLLI LANE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> HARTNELL AVENUE		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>			
PHF = 0.77		PHF = 0.75	
383 419		PHF = 0.80	
650 284		PHF = 0.72	
PHF = 0.80		472 661	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	4
7:15 AM to 7:30 AM	0	1	1	1	0	0	0	0	0	0	2	6	1	12
7:30 AM to 7:45 AM	0	2	2	2	1	1	0	0	0	2	6	1	0	17
7:45 AM to 8:00 AM	0	4	2	2	2	2	0	0	0	4	4	0	5	28
8:00 AM to 8:15 AM	0	6	2	2	2	2	1	0	4	0	5	10	3	35
8:15 AM to 8:30 AM	1	6	3	2	2	2	2	0	6	0	6	12	3	43
8:30 AM to 8:45 AM	2	9	3	2	2	2	2	0	10	0	6	13	4	53
8:45 AM to 9:00 AM	2	10	3	2	4	2	2	0	13	0	7	14	4	61

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT			
7:00 AM to 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4
7:15 AM to 7:30 AM	0	0	1	1	0	1	0	0	0	0	0	2	6	1	12
7:30 AM to 7:45 AM	0	0	1	1	0	0	1	0	0	0	2	0	0	0	5
7:45 AM to 8:00 AM	0	0	2	0	0	1	1	0	0	0	2	0	0	3	11
8:00 AM to 8:15 AM	0	0	2	0	0	0	0	1	0	0	0	0	0	3	7
8:15 AM to 8:30 AM	0	1	0	1	0	0	0	1	0	0	2	0	0	1	8
8:30 AM to 8:45 AM	0	1	3	0	0	0	0	0	0	0	4	0	0	1	10
8:45 AM to 9:00 AM	0	0	1	0	0	0	0	2	0	0	3	0	0	1	8

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 8:00 AM	0	0	4	2	0	2	2	0	0	0	4	0	0	5	7	2	28
8:00 AM to 8:15 AM	0	0	6	2	0	2	2	1	0	0	4	0	0	4	7	3	31
8:15 AM to 8:30 AM	0	1	5	2	0	1	2	2	0	0	6	0	0	4	6	2	31
8:30 AM to 8:45 AM	0	2	7	1	0	1	1	2	0	0	8	0	0	4	7	3	36
8:45 AM to 9:00 AM	0	2	6	1	0	0	2	2	0	0	9	0	0	2	7	2	33

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

DIRECTION	NB		SB		EB		WB		OVERALL INTERSECTION
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
TRUCK VOLUMES	8	7	5	6	6	9	12	9	31
TRUCK PERCENTAGE	1.2%	1.7%	1.3%	1.3%	2.1%	1.9%	1.8%	1.4%	1.5%



**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: BECHLLI LANE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		N-LEG TOTAL 5 2 3 E-LEG TOTAL 5 3 3 3 2 W-LEG TOTAL 6 2 2 S-LEG TOTAL 4			

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	1 0 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	1 0 0	0 0 0	0 0 0	0 0 0	1
7:30 AM to 7:45 AM	1 1 0	0 1 0	0 1 0	0 1 0	5
7:45 AM to 8:00 AM	1 1 0	0 1 0	0 1 0	0 1 0	5
8:00 AM to 8:15 AM	1 1 0	0 1 0	0 2 1	0 1 1	8
8:15 AM to 8:30 AM	1 2 0	0 1 1	0 2 1	0 2 1	11
8:30 AM to 8:45 AM	1 2 0	0 1 1	0 2 1	0 2 1	11
8:45 AM to 9:00 AM	1 2 0	0 1 1	0 2 1	0 2 1	11
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	1 0 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 1 0	0 1 0	0 1 0	0 1 0	4
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 1 1	0 0 1	3
8:15 AM to 8:30 AM	0 1 0	0 0 1	0 0 0	0 1 0	3
8:30 AM to 8:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:45 AM to 9:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
HOURLY TOTALS					
7:00 AM to 8:00 AM	1 1 0	0 1 0	0 1 0	0 1 0	5
7:15 AM to 8:15 AM	0 1 0	0 1 0	0 2 1	0 1 1	7
7:30 AM to 8:30 AM	0 2 0	0 1 1	0 2 1	0 2 1	10
7:45 AM to 8:45 AM	0 1 0	0 0 1	0 1 1	0 1 1	6
8:00 AM to 9:00 AM	0 1 0	0 0 1	0 1 1	0 1 1	6

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7:30 AM to 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		N-LEG TOTAL 5 2 3 E-LEG TOTAL 5 3 3 3 2 W-LEG TOTAL 6 2 2 S-LEG TOTAL 4			

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
7:30 AM to 8:30 AM	2 2 0	0 1 0	0 1 0	0 1 0	10

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: BECHLLI LANE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		NORTH		TOTAL PEDESTRIAN VOLUMES	
		N-LEG TOTAL 9 3 6 E-LEG TOTAL 9 3 6 W-LEG TOTAL 6 2 4 S-LEG TOTAL 6		BY LEG: N-LEG 9 S-LEG 1 E-LEG 4 W-LEG 6 BY DIRECTION: NB(D+G) 8 SB(C+H) 2 EB(A+F) 7 WB(B+E) 3	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	1 0 0 0	1 0 0 0	1 0 0 0	1 0 0 0	3
07:15 AM --- 07:30 AM	2 0 0 0	1 0 0 0	1 0 0 0	1 0 0 0	4
07:30 AM --- 07:45 AM	3 0 0 0	1 0 2 0	1 0 0 0	2 0 0 0	6
07:45 AM --- 08:00 AM	6 1 1 3	1 0 5 0	0 0 0 0	0 0 0 0	17
08:00 AM --- 08:15 AM	8 3 1 3	1 1 6 1	0 0 0 0	0 0 0 0	24
08:15 AM --- 08:30 AM	8 3 1 3	1 1 6 1	0 0 0 0	0 0 0 0	24
08:30 AM --- 08:45 AM	8 3 1 4	5 1 6 1	0 0 0 0	0 0 0 0	29
08:45 AM --- 09:00 AM	8 5 2 4	5 1 6 1	0 0 0 0	0 0 0 0	32
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	1 0 0 0	1 0 0 0	1 0 0 0	1 0 0 0	3
07:15 AM --- 07:30 AM	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:30 AM --- 07:45 AM	1 0 0 0	0 0 0 0	0 0 0 0	1 0 0 0	2
07:45 AM --- 08:00 AM	3 1 1 3	0 0 3 0	0 0 0 0	0 0 0 0	11
08:00 AM --- 08:15 AM	2 2 0 0	0 0 1 1	0 0 0 0	0 0 0 0	7
08:15 AM --- 08:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
08:30 AM --- 08:45 AM	0 0 0 1	4 0 0 0	0 0 0 0	0 0 0 0	5
08:45 AM --- 09:00 AM	0 2 1 0	0 0 0 0	0 0 0 0	0 0 0 0	3
HOURLY TOTALS					
07:00 AM --- 08:00 AM	6 1 1 3	1 0 5 0	0 0 0 0	0 0 0 0	17
07:15 AM --- 08:15 AM	7 3 1 3	0 1 5 1	0 0 0 0	0 0 0 0	21
07:30 AM --- 08:30 AM	6 3 1 3	0 1 5 1	0 0 0 0	0 0 0 0	20
07:45 AM --- 08:45 AM	5 3 1 4	4 1 4 1	0 0 0 0	0 0 0 0	23
08:00 AM --- 09:00 AM	2 4 1 1	4 1 1 1	0 0 0 0	0 0 0 0	15

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7:30 AM to 8:30 AM		NORTH		TOTAL PEDESTRIAN VOLUMES	
		N-LEG TOTAL 9 3 6 E-LEG TOTAL 9 3 6 W-LEG TOTAL 6 2 4 S-LEG TOTAL 6		BY LEG: N-LEG 9 S-LEG 1 E-LEG 4 W-LEG 6 BY DIRECTION: NB(D+G) 8 SB(C+H) 2 EB(A+F) 7 WB(B+E) 3	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
7:30 AM to 8:30 AM	8 2 1 3	4 6 6 6	0 0 0 0	0 0 0 0	20

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: BECHLLI LANE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
From To	SURVEY DATA																
4:00 PM to 4:15 PM	29	67	37		33	50	7		5	83	51		51	70	12		495
4:15 PM to 4:30 PM	65	128	81		52	114	17		13	145	93		108	133	33		982
4:30 PM to 4:45 PM	92	197	112		85	166	24		26	210	156		151	192	66		1477
4:45 PM to 5:00 PM	127	260	156		121	232	43		32	297	204		215	275	92		2054
5:00 PM to 5:15 PM	166	324	191		168	317	52		39	403	294		287	332	119		2692
5:15 PM to 5:30 PM	193	381	242		212	382	59		53	503	356		344	422	137		3284
5:30 PM to 5:45 PM	232	434	283		249	444	63		57	571	396		379	461	165		3734
5:45 PM to 6:00 PM	261	480	326		282	508	66		64	634	443		422	513	191		4190
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	29	67	37	0	33	50	7	0	5	83	51	0	51	70	12	495
4:15 PM to 4:30 PM	0	36	61	44	0	19	64	10	0	8	62	42	0	57	63	21	487
4:30 PM to 4:45 PM	0	27	69	31	0	33	52	7	0	13	65	63	0	43	59	33	495
4:45 PM to 5:00 PM	0	35	63	44	0	36	66	19	0	6	87	48	0	64	83	26	577
5:00 PM to 5:15 PM	0	39	64	35	0	47	85	9	0	7	106	90	0	72	57	27	638
5:15 PM to 5:30 PM	0	27	57	51	0	44	65	7	0	14	100	62	0	57	90	18	592
5:30 PM to 5:45 PM	0	39	53	41	0	37	62	4	0	4	68	40	0	35	39	28	450
5:45 PM to 6:00 PM	0	29	46	43	0	33	64	3	0	7	63	47	0	43	52	26	456
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	127	260	156	0	121	232	43	0	32	297	204	0	215	275	92	2054
4:15 PM to 5:15 PM	0	137	257	154	0	135	267	45	0	34	320	243	0	236	262	107	2197
4:30 PM to 5:30 PM	0	128	253	161	0	160	268	42	0	40	358	263	0	236	289	104	2302
4:45 PM to 5:45 PM	0	140	237	171	0	164	278	39	0	31	361	240	0	228	269	99	2257
5:00 PM to 6:00 PM	0	134	220	170	0	161	276	23	0	32	337	239	0	207	238	99	2136
PEAK HOUR SUMMARY																	
4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	128	253	161	0	160	268	42	0	40	358	263	0	236	289	104	2302
PHF BY MOVEMENT	0.00	0.82	0.92	0.79	0.00	0.85	0.79	0.55	0.00	0.71	0.84	0.73	0.00	0.82	0.80	0.79	OVERALL
PHF BY APPROACH	0.95				0.83				0.81				0.91				0.90
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	5	4	5	7	10	11	6	4	6	4	6	4	6	4	6	4	26
TRUCK PERCENTAGE	0.9%	1.0%	1.1%	0.9%	1.5%	1.6%	1.0%	0.9%	1.0%	1.6%	1.0%	0.9%	1.0%	0.9%	1.1%	1.1%	1.1%
BICYCLE	1		2		3		1		2		4		4		5		9
PEDESTRIAN BY DIR:					1				0				5				5
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				1				2				2				5
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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: BECHLLI LANE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
From To	SURVEY DATA																
4:00 PM to 4:15 PM	0	2	1		1	0	0		0	1	0		1	2	0		8
4:15 PM to 4:30 PM	0	2	1		2	0	3		0	1	0		2	3	0		14
4:30 PM to 4:45 PM	0	3	1		2	1	3		0	3	0		3	4	0		20
4:45 PM to 5:00 PM	0	4	1		2	3	4		0	8	0		4	6	0		32
5:00 PM to 5:15 PM	0	4	1		2	4	4		0	8	1		4	6	0		34
5:15 PM to 5:30 PM	0	5	3		2	4	4		0	10	1		4	6	1		40
5:30 PM to 5:45 PM	0	6	4		2	4	4		0	12	1		4	6	1		44
5:45 PM to 6:00 PM	1	7	4		2	7	4		0	12	1		4	7	1		50
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	2	1	0	1	0	0	0	0	1	0	0	1	2	0	8
4:15 PM to 4:30 PM	0	0	0	0	0	1	0	3	0	0	0	0	0	1	1	0	6
4:30 PM to 4:45 PM	0	0	1	0	0	0	1	0	0	0	2	0	0	1	1	0	6
4:45 PM to 5:00 PM	0	0	1	0	0	0	2	1	0	0	5	0	0	1	2	0	12
5:00 PM to 5:15 PM	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2
5:15 PM to 5:30 PM	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	1	6
5:30 PM to 5:45 PM	0	0	1	1	0	0	0	0	0	0	2	0	0	0	0	0	4
5:45 PM to 6:00 PM	0	1	1	0	0	0	3	0	0	0	0	0	0	0	1	0	6
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	4	1	0	2	3	4	0	0	8	0	0	4	6	0	32
4:15 PM to 5:15 PM	0	0	2	0	0	1	4	4	0	0	7	1	0	3	4	0	26
4:30 PM to 5:30 PM	0	0	3	2	0	0	4	1	0	0	9	1	0	2	3	1	26
4:45 PM to 5:45 PM	0	0	3	3	0	0	3	1	0	0	9	1	0	1	2	1	24
5:00 PM to 6:00 PM	0	1	3	3	0	0	4	0	0	0	4	1	0	0	1	1	18
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

4:30 PM to 5:30 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	5	4	5	7	10	11	6	4	26
TRUCK PERCENTAGE	0.9%	1.0%	1.1%	0.9%	1.5%	1.6%	1.0%	0.9%	1.1%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: BECHLLI LANE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
NORTH - LEG 0 2 0		N-LEG TOTAL 3	
WEST - LEG 0 2 0		E-LEG TOTAL 6	
EAST - LEG 0 2 2		W-LEG TOTAL 4	
SOUTH - LEG 0 1 0		S-LEG TOTAL 5	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
4:00 PM to 4:15 PM	0 0 1	0 1 0	0 0 0	0 0 0	2
4:15 PM to 4:30 PM	0 0 1	0 1 0	0 0 0	0 0 0	2
4:30 PM to 4:45 PM	0 0 1	0 1 0	0 0 0	1 0 0	3
4:45 PM to 5:00 PM	0 0 1	0 3 0	0 1 0	2 1 0	8
5:00 PM to 5:15 PM	0 1 1	0 3 0	0 2 0	2 2 0	11
5:15 PM to 5:30 PM	0 1 1	0 3 0	0 2 0	2 2 0	11
5:30 PM to 5:45 PM	0 1 1	0 3 1	0 2 0	2 2 0	12
5:45 PM to 6:00 PM	0 2 1	0 3 1	0 3 0	2 2 0	14
TOTAL BY PERIOD					
4:00 PM to 4:15 PM	0 0 1	0 1 0	0 0 0	0 0 0	2
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 0 0	0 0 0	1 0 0	1
4:45 PM to 5:00 PM	0 0 0	0 2 0	0 1 0	1 1 0	5
5:00 PM to 5:15 PM	0 1 0	0 0 0	0 1 0	0 1 0	3
5:15 PM to 5:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:30 PM to 5:45 PM	0 0 0	0 0 1	0 0 0	0 0 0	1
5:45 PM to 6:00 PM	0 1 0	0 0 0	0 1 0	0 0 0	2
HOURLY TOTALS					
4:00 PM to 5:00 PM	0 0 1	0 3 0	0 1 0	2 1 0	8
4:15 PM to 5:15 PM	0 1 0	0 2 0	0 2 0	2 2 0	9
4:30 PM to 5:30 PM	0 1 0	0 2 0	0 2 0	2 2 0	9
4:45 PM to 5:45 PM	0 1 0	0 2 1	0 2 0	1 2 0	9
5:00 PM to 6:00 PM	0 2 0	0 0 1	0 2 0	0 1 0	6

4:30 PM to 5:30 PM		NORTH		
VOLUME BY APPROACH		BICYCLE		
NBT	SBT	EBT	WBT	TOTAL
1	2	2	4	9

TEL: (510) 232-1271 FAX: (510) 232-1272

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: BECHLLI LANE		DAY: THURSDAY	
E-W APPROACH: HARTNELL AVENUE		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES	
		BY LEG:	
N-LEG 0		S-LEG 1	
E-LEG 2		W-LEG 2	
BY DIRECTION:		NB(D+G) 1	
S-LEG 1		SB(C+H) 3	
E-LEG 2		EB(A+F) 1	
W-LEG 2		WB(B+E) 0	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F G H			
SURVEY DATA					
04:00 PM --- 04:15 PM	1 0 0 0	0 0 0 0	0 0 0 0	2 0 0 0	3
04:15 PM --- 04:30 PM	1 2 2 1	0 0 0 0	0 0 0 0	2 0 0 0	8
04:30 PM --- 04:45 PM	1 2 3 2	0 0 0 0	0 1 2 0	2 0 0 0	11
04:45 PM --- 05:00 PM	1 2 3 2	0 0 0 0	0 1 2 0	2 0 0 0	11
05:00 PM --- 05:15 PM	1 2 3 2	0 0 0 0	0 1 2 2	2 2 0 0	13
05:15 PM --- 05:30 PM	1 2 3 2	0 0 0 0	0 1 2 2	2 2 0 0	13
05:30 PM --- 05:45 PM	2 2 3 2	0 0 0 0	0 1 2 2	2 2 0 0	14
05:45 PM --- 06:00 PM	2 3 3 3	0 0 0 0	0 1 5 3	3 0 0 0	20
TOTAL BY PERIOD					
04:00 PM --- 04:15 PM	1 0 0 0	0 0 0 0	0 0 0 0	2 0 0 0	3
04:15 PM --- 04:30 PM	0 2 2 1	0 0 0 0	0 0 0 0	0 0 0 0	5
04:30 PM --- 04:45 PM	0 0 1 1	0 0 0 0	0 1 0 0	0 0 0 0	3
04:45 PM --- 05:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:00 PM --- 05:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 2 0 0	2
05:15 PM --- 05:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:30 PM --- 05:45 PM	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
05:45 PM --- 06:00 PM	0 1 0 1	0 0 0 0	0 0 3 1	1 0 0 0	6
HOURLY TOTALS					
04:00 PM --- 05:00 PM	1 2 3 2	0 0 0 0	0 1 2 0	2 0 0 0	11
04:15 PM --- 05:15 PM	0 2 3 2	0 0 0 0	0 1 0 2	0 0 0 0	10
04:30 PM --- 05:30 PM	0 0 1 1	0 0 0 0	0 1 0 2	0 0 0 0	5
04:45 PM --- 05:45 PM	1 0 0 0	0 0 0 0	0 0 0 2	0 0 0 0	3
05:00 PM --- 06:00 PM	1 1 0 1	0 0 0 0	0 0 3 3	3 0 0 0	9

4:30 PM to 5:30 PM		NORTH		
VOLUME BY DIRECTION		PEDESTRIAN		
N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
1	3	1	0	5

TEL: (510) 232-1271 FAX: (510) 232-1272

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO:</b> 9:00 AM	
<b>E-W APPROACH:</b> SHOTWICK TRAIL		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<b>ARRIVAL / DEPARTURE VOLUMES</b>			
PHF = 0.88		PHF = 0.31	
302 540		PHF = 0.43	
23 5		PHF = 0.77	
12 79		274 597	
PHF = 0.43		PHF = 0.77	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
7:00 AM to 7:15 AM	0	76	3	4	42	1	1	0	0	0	0	0	128
7:15 AM to 7:30 AM	3	184	11	9	113	2	1	0	0	2	0	0	325
7:30 AM to 7:45 AM	4	336	26	16	184	6	2	0	0	2	0	0	576
7:45 AM to 8:00 AM	11	502	46	22	259	11	4	0	0	3	0	0	859
8:00 AM to 8:15 AM	16	600	59	28	317	12	5	0	0	3	0	1	1041
8:15 AM to 8:30 AM	16	711	68	31	383	12	9	0	0	6	0	5	1241
8:30 AM to 8:45 AM	17	806	82	36	455	12	12	0	0	6	2	0	1437
8:45 AM to 9:00 AM	17	896	92	37	533	14	14	0	0	7	3	0	1625

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
7:00 AM to 7:15 AM	0	0	76	3	0	4	42	1	0	1	0	0	0	128
7:15 AM to 7:30 AM	0	3	108	8	0	5	71	1	0	0	0	1	0	197
7:30 AM to 7:45 AM	0	1	152	15	0	7	71	4	0	1	0	0	0	251
7:45 AM to 8:00 AM	0	7	166	20	0	6	75	5	0	2	0	1	0	283
8:00 AM to 8:15 AM	0	5	98	13	0	6	58	1	0	1	0	0	0	182
8:15 AM to 8:30 AM	0	0	111	9	0	3	66	0	0	4	0	3	0	200
8:30 AM to 8:45 AM	0	1	95	14	0	5	72	0	0	3	0	0	2	196
8:45 AM to 9:00 AM	0	0	90	10	0	1	78	2	0	2	0	1	0	188

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL		
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT			
7:00 AM to 8:00 AM	0	11	502	46	0	22	259	11	0	4	0	3	0	0	859
8:00 AM to 8:15 AM	0	16	524	56	0	24	275	11	0	4	0	2	0	0	913
8:15 AM to 8:30 AM	0	13	527	57	0	22	270	10	0	8	0	4	0	0	916
8:30 AM to 8:45 AM	0	13	470	56	0	20	271	6	0	10	0	4	0	2	861
8:45 AM to 9:00 AM	0	6	394	46	0	15	274	3	0	10	0	4	0	3	766

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR		WBU	WBL	WBT	WBR
7:00 AM to 8:00 AM	0	13	527	57	0	22	270	10	0	8	0	4	0	0	0	5	916
PHF BY MOVEMENT	0.00	0.46	0.79	0.71	0.00	0.79	0.90	0.50	0.00	0.50	0.00	0.33	0.00	0.00	0.00	0.31	0.81
PHF BY APPROACH	0.77			0.88			0.43			0.31			0.81				
TRUCK	IN	OUT		IN	OUT		IN	OUT		IN	OUT		IN	OUT		OVERALL	
TRUCK VOLUMES	16	16		7	7		0	0		0	0		0	0		23	
TRUCK PERCENTAGE	2.7%	3.0%		2.3%	2.6%		0.0%	0.0%		0.0%	0.0%		0.0%	0.0%		2.5%	
BICYCLE	5	3		1	0		0	0		0	0		0	0		8	
PEDESTRIAN BY DIR:	2	1		0	0		0	0		0	0		0	0		3	
PEDESTRIAN BY LEG	N-LEG			S-LEG			E-LEG			W-LEG							
	0			0			2			1							

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO:</b> 9:00 AM	
<b>E-W APPROACH:</b> SHOTWICK TRAIL		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>			
2.3% 3.0%		0.0% 0.0%	
7 16		0 0	
0.0% 0.0%		0.0% 0.0%	
0 0		0 0	
0.0% 0.0%		0.0% 0.0%	
7 16		2.6% 2.7%	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
7:00 AM to 7:15 AM	0	5	0	0	0	0	0	0	0	0	0	0	5
7:15 AM to 7:30 AM	0	8	0	0	0	0	0	0	0	0	0	0	8
7:30 AM to 7:45 AM	0	13	0	0	0	4	0	0	0	0	0	0	17
7:45 AM to 8:00 AM	0	14	0	0	0	5	0	0	0	0	0	0	19
8:00 AM to 8:15 AM	0	19	0	0	0	5	0	0	0	0	0	0	24
8:15 AM to 8:30 AM	0	24	0	0	0	7	0	0	0	0	0	0	31
8:30 AM to 8:45 AM	0	27	0	0	0	12	0	0	0	0	0	0	39
8:45 AM to 9:00 AM	0	28	0	0	0	16	0	0	0	0	0	0	44

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
7:00 AM to 7:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	5
7:15 AM to 7:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	3
7:30 AM to 7:45 AM	0	0	5	0	0	0	4	0	0	0	0	0	9
7:45 AM to 8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	2
8:00 AM to 8:15 AM	0	0	5	0	0	0	0	0	0	0	0	0	5
8:15 AM to 8:30 AM	0	0	5	0	0	0	2	0	0	0	0	0	7
8:30 AM to 8:45 AM	0	0	3	0	0	0	5	0	0	0	0	0	8
8:45 AM to 9:00 AM	0	0	1	0	0	0	4	0	0	0	0	0	5

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
7:00 AM to 8:00 AM	0	0	14	0	0	0	5	0	0	0	0	0	0	19
8:00 AM to 8:15 AM	0	0	14	0	0	0	5	0	0	0	0	0	0	19
8:15 AM to 8:30 AM	0	0	16	0	0	0	7	0	0	0	0	0	0	23
8:30 AM to 8:45 AM	0	0	14	0	0	0	8	0	0	0	0	0	0	22
8:45 AM to 9:00 AM	0	0	14	0	0	0	11	0	0	0	0	0	0	25

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**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 8</p> <p>3 5</p> <p>E-LEG TOTAL: 0</p> <p>0 0</p> <p>0 0</p> <p>W-LEG TOTAL: 0</p> <p>3 5</p> <p>S-LEG TOTAL: 8</p>			

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
SURVEY DATA													
7:00 AM	to	7:15 AM	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	to	7:30 AM	0	1	0	0	0	0	0	0	0	0	1
7:30 AM	to	7:45 AM	0	2	0	0	1	0	0	0	0	0	3
7:45 AM	to	8:00 AM	0	4	0	0	1	0	0	0	0	0	5
8:00 AM	to	8:15 AM	0	4	0	0	3	0	0	0	0	0	7
8:15 AM	to	8:30 AM	0	6	0	0	3	0	0	0	0	0	9
8:30 AM	to	8:45 AM	0	6	0	0	3	0	0	0	0	0	9
8:45 AM	to	9:00 AM	0	6	0	0	4	0	0	0	0	0	10
TOTAL BY PERIOD													
7:00 AM	to	7:15 AM	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	1	0	0	1	0	0	0	0	0	2
7:45 AM	to	8:00 AM	0	2	0	0	0	0	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	2	0	0	0	0	0	2
8:15 AM	to	8:30 AM	0	2	0	0	0	0	0	0	0	0	2
8:30 AM	to	8:45 AM	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	to	9:00 AM	0	0	0	0	1	0	0	0	0	0	1
HOURLY TOTALS													
7:00 AM	to	8:00 AM	0	4	0	0	1	0	0	0	0	0	5
7:15 AM	to	8:15 AM	0	3	0	0	3	0	0	0	0	0	6
7:30 AM	to	8:30 AM	0	5	0	0	3	0	0	0	0	0	8
7:45 AM	to	8:45 AM	0	4	0	0	2	0	0	0	0	0	6
8:00 AM	to	9:00 AM	0	2	0	0	3	0	0	0	0	0	5

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7:30 AM	to	8:30 AM					
VOLUME BY APPROACH			NBT	SBT	EBT	WBT	TOTAL
BICYCLE			5	3	0	0	8

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		NORTH		TOTAL PEDESTRIAN VOLUMES	
		<p>N-LEG TOTAL: 3</p> <p>0 0</p> <p>E-LEG TOTAL: 0</p> <p>0 0</p> <p>W-LEG TOTAL: 0</p> <p>3 5</p> <p>S-LEG TOTAL: 8</p>			

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
SURVEY DATA													
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	---	08:00 AM	0	0	0	1	1	0	0	0	1	0	3
08:00 AM	---	08:15 AM	0	0	0	1	1	0	0	0	1	0	3
08:15 AM	---	08:30 AM	0	0	1	1	0	0	0	1	0	0	3
08:30 AM	---	08:45 AM	0	0	0	1	1	0	0	0	2	0	4
08:45 AM	---	09:00 AM	0	0	0	1	2	0	0	2	0	0	5
TOTAL BY PERIOD													
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	1	0	0	1
07:45 AM	---	08:00 AM	0	0	0	1	1	0	0	0	0	0	2
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	1	0	0	1
08:45 AM	---	09:00 AM	0	0	0	1	2	0	0	2	0	0	1
HOURLY TOTALS													
07:00 AM	---	08:00 AM	0	0	0	1	1	0	0	1	0	0	3
07:15 AM	---	08:15 AM	0	0	0	1	1	0	0	1	0	0	3
07:30 AM	---	08:30 AM	0	0	0	1	1	0	0	1	0	0	3
07:45 AM	---	08:45 AM	0	0	0	1	1	0	0	1	0	0	3
08:00 AM	---	09:00 AM	0	0	0	1	2	0	0	1	0	0	2

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7:30 AM	to	8:30 AM					
VOLUME BY DIRECTION			NB	SB	EB	WB	TOTAL
PEDESTRIAN			2	1	0	0	3
VOLUME BY LEG			N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN			0	0	2	1	3

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	1	2	100	2	0	1	134	1	0	3	0	1	0	1	0	6	252
4:15 PM to 4:30 PM	1	4	206	2	2	242	1	6	0	2	1	0	1	0	9	476	
4:30 PM to 4:45 PM	1	5	299	3	6	375	3	9	0	5	2	0	2	0	17	725	
4:45 PM to 5:00 PM	1	5	423	3	6	500	4	14	0	16	2	0	2	0	19	993	
5:00 PM to 5:15 PM	1	6	520	3	7	709	4	16	0	18	4	0	0	23	1311		
5:15 PM to 5:30 PM	1	6	619	3	8	845	7	16	0	19	4	0	0	25	1553		
5:30 PM to 5:45 PM	1	7	708	3	8	966	8	16	0	20	5	0	0	27	1769		
5:45 PM to 6:00 PM	1	7	786	4	8	1063	8	16	0	21	5	0	0	27	1946		
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	1	2	100	2	0	1	134	1	0	3	0	1	0	1	0	6	252
4:15 PM to 4:30 PM	0	2	106	0	0	1	108	0	0	3	0	1	0	0	0	3	224
4:30 PM to 4:45 PM	0	1	93	1	0	4	133	2	0	3	0	3	0	1	0	8	249
4:45 PM to 5:00 PM	0	0	124	0	0	0	125	1	0	5	0	11	0	0	0	2	268
5:00 PM to 5:15 PM	0	1	97	0	0	1	209	0	0	2	0	2	0	2	0	4	318
5:15 PM to 5:30 PM	0	0	99	0	0	1	136	3	0	0	0	1	0	0	0	2	242
5:30 PM to 5:45 PM	0	1	89	0	0	0	121	1	0	0	0	1	0	1	0	2	216
5:45 PM to 6:00 PM	0	0	78	1	0	0	97	0	0	0	0	1	0	0	0	0	177
HOURLY TOTALS																	
4:00 PM to 5:00 PM	1	5	423	3	0	6	500	4	0	14	0	16	0	2	0	19	993
4:15 PM to 5:15 PM	0	4	420	1	0	6	575	3	0	13	0	17	0	3	0	17	1059
4:30 PM to 5:30 PM	0	2	413	1	0	6	603	6	0	10	0	17	0	3	0	16	1077
4:45 PM to 5:45 PM	0	2	409	0	0	2	591	5	0	7	0	15	0	3	0	10	1044
5:00 PM to 6:00 PM	0	2	363	1	0	2	563	4	0	2	0	5	0	3	0	8	953
PEAK HOUR SUMMARY																	
4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	2	413	1	0	6	603	6	0	10	0	17	0	3	0	16	1077
PHF BY MOVEMENT	0.00	0.50	0.83	0.25	0.00	0.38	0.72	0.50	0.00	0.50	0.00	0.39	0.00	0.38	0.00	0.50	OVERALL
PHF BY APPROACH	0.84				0.73				0.42				0.53				0.85
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	5	5	11	12	1	1	1	0	0	0	0	0	0	0	0	0	17
TRUCK PERCENTAGE	1.2%	1.1%	1.8%	1.9%	3.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%
BICYCLE	2		1		0		0		2		0		0		0		5
PEDESTRIAN BY DIR:	3				0				0				0				3
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				0				0				3				3

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	0	4	1	1	0	4	0	0	0	0	0	0	0	0	0	0	9
4:15 PM to 4:30 PM	0	5	1	0	0	4	0	0	0	0	0	0	0	0	0	0	10
4:30 PM to 4:45 PM	0	5	1	0	0	7	0	1	0	0	0	1	0	0	0	0	14
4:45 PM to 5:00 PM	0	10	1	0	0	12	0	0	0	0	0	1	0	0	0	0	24
5:00 PM to 5:15 PM	0	10	1	0	0	15	0	0	0	0	1	0	0	0	0	0	27
5:15 PM to 5:30 PM	0	10	1	0	0	15	0	0	0	0	1	0	0	0	0	0	27
5:30 PM to 5:45 PM	0	10	1	0	0	18	0	0	0	0	1	0	0	0	0	0	30
5:45 PM to 6:00 PM	0	15	2	0	0	19	0	0	0	0	1	0	0	0	0	0	37
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	4	1	0	0	4	0	0	0	0	0	0	0	0	0	9
4:15 PM to 4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM to 4:45 PM	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	4
4:45 PM to 5:00 PM	0	0	5	0	0	0	5	0	0	0	0	0	0	0	0	0	10
5:00 PM to 5:15 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM to 5:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
5:45 PM to 6:00 PM	0	0	5	1	0	0	1	0	0	0	0	0	0	0	0	0	7
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	10	1	0	0	12	0	0	0	0	1	0	0	0	0	24
4:15 PM to 5:15 PM	0	0	6	0	0	0	11	0	0	0	0	1	0	0	0	0	18
4:30 PM to 5:30 PM	0	0	5	0	0	0	11	0	0	0	0	1	0	0	0	0	17
4:45 PM to 5:45 PM	0	0	5	0	0	0	11	0	0	0	0	0	0	0	0	0	16
5:00 PM to 6:00 PM	0	0	5	1	0	0	7	0	0	0	0	0	0	0	0	0	13

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

4:30 PM to 5:30 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	5	5	11	12	1	0	0	0	17
TRUCK PERCENTAGE	1.2%	1.1%	1.8%	1.9%	3.7%	0.0%	0.0%	0.0%	1.6%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL 3		E-LEG TOTAL 2	
W-LEG TOTAL 0		S-LEG TOTAL 5	

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT					
SURVEY DATA													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	1	0	3
5:00 PM	to	5:15 PM	0	2	0	0	1	0	0	0	2	0	5
5:15 PM	to	5:30 PM	0	2	0	0	1	0	0	0	2	0	5
5:30 PM	to	5:45 PM	0	2	0	0	2	0	0	0	2	0	6
5:45 PM	to	6:00 PM	0	2	0	0	4	0	0	0	2	0	8
TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	1	0	3
5:00 PM	to	5:15 PM	0	1	0	0	0	0	0	0	1	0	2
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	to	6:00 PM	0	0	0	0	2	0	0	0	0	0	2
HOURLY TOTALS													
4:00 PM	to	5:00 PM	0	1	0	0	1	0	0	0	1	0	3
4:15 PM	to	5:15 PM	0	2	0	0	1	0	0	0	2	0	5
4:30 PM	to	5:30 PM	0	2	0	0	1	0	0	0	2	0	5
4:45 PM	to	5:45 PM	0	2	0	0	2	0	0	0	2	0	6
5:00 PM	to	6:00 PM	0	1	0	0	3	0	0	0	1	0	5
TEL: (510) 232 - 1271			FAX: (510) 232 - 1272										

4:30 PM TO 5:30 PM		VOLUME BY APPROACH					BICYCLE							
NBT	SBT	EBT	WBT	TOTAL	NBT	SBT	EBT	WBT	TOTAL	NBT	SBT	EBT	WBT	TOTAL
2	1	0	2	5	2	1	0	2	5					

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: HARTNELL AVENUE		DAY: THURSDAY	
E-W APPROACH: SHOTWICK TRAIL		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES	
		<p>BY LEG:</p> <p>N-LEG: 0</p> <p>S-LEG: 0</p> <p>E-LEG: 0</p> <p>W-LEG: 3</p>	
<p>LEGEND:</p> <p>▬ CROSSWALK</p> <p>▬ SIDEWALK</p> <p>● STOP</p> <p>— STOP CONTROL LINE</p> <p>* JAY-WALK IN RED</p>		<p>BY DIRECTION:</p> <p>NB(D+G): 3</p> <p>SB(C+H): 0</p> <p>EB(A+F): 0</p> <p>WB(B+E): 0</p>	

TIME PERIOD	From	To	NORTH X-WALK				EAST X-WALK				SOUTH X-WALK				WEST X-WALK				TOTAL
			A	B	C	D	E	F	G	H	I	J	K	L	M	N			
SURVEY DATA																			
04:00 PM	---	04:15 PM	0	0	1	0	0	0	0	0	0	2	0	0	3				
04:15 PM	---	04:30 PM	0	0	1	0	0	0	0	0	2	0	0	3					
04:30 PM	---	04:45 PM	0	0	1	0	0	0	0	0	3	0	0	4					
04:45 PM	---	05:00 PM	0	0	1	0	0	0	0	0	3	0	0	4					
05:00 PM	---	05:15 PM	0	0	1	0	0	0	0	0	3	0	0	4					
05:15 PM	---	05:30 PM	0	0	1	0	0	0	0	0	5	0	0	6					
05:30 PM	---	05:45 PM	0	0	1	0	0	0	0	0	5	0	0	6					
05:45 PM	---	06:00 PM	0	0	3	0	0	0	0	0	5	1	0	9					
TOTAL BY PERIOD																			
04:00 PM	---	04:15 PM	0	0	1	0	0	0	0	0	2	0	0	3					
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0					
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	1	0	0	1					
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0					
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0					
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	2	0	0	2					
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0					
05:45 PM	---	06:00 PM	0	0	2	0	0	0	0	0	0	1	0	3					
HOURLY TOTALS																			
04:00 PM	---	05:00 PM	0	0	1	0	0	0	0	0	3	0	0	4					
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1					
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	3	0	0	3					
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	2	0	0	2					
05:00 PM	---	06:00 PM	0	0	2	0	0	0	0	0	2	1	0	5					
Tel: (510) 232-1271			Fax: (510) 232-1272																

4:30 PM TO 5:30 PM		VOLUME BY DIRECTION					VOLUME BY LEG					PEDESTRIAN				
NB	SB	EB	WB	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL		
3	0	0	0	3	0	0	0	3	3	0	0	0	3	3		

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH										
<table border="1"> <tr><td>27</td><td>301</td><td>42</td><td>0</td></tr> </table>		27	301	42	0	<table border="1"> <tr><td>370</td><td>513</td></tr> </table>		370	513			
27	301	42	0									
370	513											
		<table border="1"> <tr><td>PHF = 0.90</td></tr> <tr><td>PHF = 0.73</td></tr> <tr><td>PHF = 0.63</td></tr> <tr><td>PHF = 0.78</td></tr> </table>		PHF = 0.90	PHF = 0.73	PHF = 0.63	PHF = 0.78					
PHF = 0.90												
PHF = 0.73												
PHF = 0.63												
PHF = 0.78												
<table border="1"> <tr><td>0</td><td>2</td><td>0</td><td>0</td><td>3</td></tr> </table>		0	2	0	0	3	<table border="1"> <tr><td>49</td><td>5</td><td>32</td><td>54</td></tr> </table>		49	5	32	54
0	2	0	0	3								
49	5	32	54									
<table border="1"> <tr><td>0</td><td>22</td><td>488</td><td>12</td></tr> </table>		0	22	488	12	<table border="1"> <tr><td>313</td><td>522</td></tr> </table>		313	522			
0	22	488	12									
313	522											
HARTNELL AVENUE		HARTNELL AVENUE										

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	4	65	5	0	9	53	2	1	0	0	0	0	0	0	0	139	
7:15 AM to 7:30 AM	5	161	15	0	26	129	5	1	0	1	0	0	0	0	0	343	
7:30 AM to 7:45 AM	11	293	22	0	37	210	16	2	0	1	2	0	3	0	0	597	
7:45 AM to 8:00 AM	20	449	24	0	46	295	23	2	0	2	6	0	7	0	0	874	
8:00 AM to 8:15 AM	23	545	24	0	54	366	26	2	0	3	7	0	14	0	0	1064	
8:15 AM to 8:30 AM	27	649	27	0	68	430	32	3	0	4	9	0	23	0	0	1272	
8:30 AM to 8:45 AM	32	746	28	1	80	504	37	5	0	5	10	0	32	0	0	1480	
8:45 AM to 9:00 AM	38	835	28	1	87	579	45	11	0	9	12	0	42	0	0	1687	
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	4	65	5	0	9	53	2	0	1	0	0	0	0	0	139	
7:15 AM to 7:30 AM	0	1	96	10	0	17	76	3	0	0	1	0	0	0	0	204	
7:30 AM to 7:45 AM	0	6	132	7	0	11	81	11	0	1	0	0	2	0	3	254	
7:45 AM to 8:00 AM	0	9	156	2	0	9	85	7	0	0	1	0	4	0	4	277	
8:00 AM to 8:15 AM	0	3	96	0	0	8	71	3	0	0	1	0	1	0	7	190	
8:15 AM to 8:30 AM	0	4	104	3	0	14	64	6	0	1	1	0	2	0	9	208	
8:30 AM to 8:45 AM	0	5	97	1	1	12	74	5	0	2	0	1	0	1	0	208	
8:45 AM to 9:00 AM	0	6	89	0	0	7	75	8	0	6	0	4	0	2	0	207	
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	20	449	24	0	46	295	23	0	2	0	2	0	6	0	7	874
7:15 AM to 8:15 AM	0	19	480	19	0	45	313	24	0	1	0	3	0	7	0	14	925
7:30 AM to 8:30 AM	0	22	488	12	0	42	301	27	0	2	0	3	0	9	0	23	929
7:45 AM to 8:45 AM	0	21	453	6	1	43	294	21	0	3	0	4	0	8	0	29	883
8:00 AM to 9:00 AM	0	18	386	4	1	41	284	22	0	9	0	7	0	6	0	35	813
PEAK HOUR SUMMARY																	
7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	22	488	12	0	42	301	27	0	2	0	3	0	9	0	23	929
PHF BY MOVEMENT	0.00	0.61	0.78	0.43	0.00	0.75	0.89	0.61	0.00	0.50	0.00	0.75	0.00	0.56	0.00	0.64	OVERALL
PHF BY APPROACH	0.78				0.90				0.63				0.73				0.84
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	10	12	6	5	0	1	2	0	2	0	0	0	0	0	0	0	18
TRUCK PERCENTAGE	1.9%	2.3%	1.6%	1.6%	0.0%	1.9%	6.3%	0.0%	1.9%	6.3%	0.0%	0.0%	1.9%	6.3%	0.0%	1.9%	1.9%
BICYCLE	2		2		2		2		0		0		0		0		4
PEDESTRIAN BY DIR:	4		2		1		1		1		1		1		1		8
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	2				0				2				4				8
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH													
<table border="1"> <tr><td>0</td><td>5</td><td>1</td><td>0</td></tr> </table>		0	5	1	0	<table border="1"> <tr><td>1.6%</td><td>2.3%</td></tr> <tr><td>6</td><td>12</td></tr> </table>		1.6%	2.3%	6	12				
0	5	1	0												
1.6%	2.3%														
6	12														
		<table border="1"> <tr><td>0.0%</td><td>6.3%</td></tr> <tr><td>0</td><td>2</td></tr> <tr><td>0.0%</td><td>1.9%</td></tr> <tr><td>1</td><td>1</td></tr> <tr><td>5</td><td>10</td></tr> <tr><td>1.6%</td><td>1.9%</td></tr> </table>		0.0%	6.3%	0	2	0.0%	1.9%	1	1	5	10	1.6%	1.9%
0.0%	6.3%														
0	2														
0.0%	1.9%														
1	1														
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1.6%	1.9%														
<table border="1"> <tr><td>0</td><td>2</td><td>0</td><td>0</td><td>0</td></tr> </table>		0	2	0	0	0	<table border="1"> <tr><td>2</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>		2	0	0	0	0		
0	2	0	0	0											
2	0	0	0	0											
<table border="1"> <tr><td>0</td><td>0</td><td>10</td><td>0</td></tr> </table>		0	0	10	0	<table border="1"> <tr><td>5</td><td>10</td></tr> </table>		5	10						
0	0	10	0												
5	10														
HARTNELL AVENUE		HARTNELL AVENUE													

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM to 7:30 AM	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
7:30 AM to 7:45 AM	0	8	0	0	0	2	0	0	0	0	0	0	0	0	0	0	10
7:45 AM to 8:00 AM	0	8	0	0	1	3	0	0	0	0	0	0	0	0	0	0	12
8:00 AM to 8:15 AM	0	12	0	0	1	3	0	0	0	0	0	0	0	0	0	1	17
8:15 AM to 8:30 AM	0	17	0	0	1	5	0	0	0	0	0	0	0	0	0	2	25
8:30 AM to 8:45 AM	0	20	0	0	1	10	0	0	0	0	0	0	0	0	0	2	33
8:45 AM to 9:00 AM	0	21	0	0	1	14	0	0	0	0	0	0	0	0	0	2	38
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM to 7:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:30 AM to 7:45 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
7:45 AM to 8:00 AM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
8:00 AM to 8:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:15 AM to 8:30 AM	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	8
8:30 AM to 8:45 AM	0	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	8
8:45 AM to 9:00 AM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	5
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	0	8	0	0	1	3	0	0	0	0	0	0	0	0	0	12
7:15 AM to 8:15 AM	0	0	8	0	0	1	3	0	0	0	0	0	0	0	0	0	13
7:30 AM to 8:30 AM	0	0	10	0	0	1	5	0	0	0	0	0	0	0	0	0	18
7:45 AM to 8:45 AM	0	0	12	0	0	1	8	0	0	0	0	0	0	0	0	0	23
8:00 AM to 9:00 AM	0	0	13	0	0	0	11	0	0	0	0	0	0	0	0	0	26
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

7:30 AM to 8:30 AM	NB		SB		EB		WB		OVERALL
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	10	12	6	5	0	1	2	0	18
TRUCK PERCENTAGE	1.9%	2.3%	1.6%	1.6%	0.0%	1.9%	6.3%	0.0%	1.9%





**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:15 PM to 5:15 PM		<b>ARRIVAL / DEPARTURE VOLUMES</b>									
		<p>PHF = 0.73</p> <p>PHF = 0.95</p> <p>PHF = 0.60</p> <p>PHF = 0.90</p>									

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	1	108	0	2	119	0	0	7	0	6	0	10	1	18	0	272
4:15 PM to 4:30 PM	0	2	217	0	4	228	1	0	12	0	9	0	17	1	26	0	517
4:30 PM to 4:45 PM	1	2	328	0	6	357	5	0	23	0	16	0	20	1	38	0	797
4:45 PM to 5:00 PM	1	2	453	0	6	470	6	0	29	0	25	0	24	1	49	0	1066
5:00 PM to 5:15 PM	1	2	558	0	7	658	7	0	42	0	41	0	32	1	57	0	1406
5:15 PM to 5:30 PM	1	2	654	0	8	789	8	0	47	0	44	0	33	1	61	0	1648
5:30 PM to 5:45 PM	1	2	741	0	10	906	8	0	52	0	48	0	35	1	64	0	1868
5:45 PM to 6:00 PM	1	2	824	0	11	996	8	0	56	0	50	0	36	1	70	0	2055

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	1	108	0	0	2	119	0	0	7	0	6	0	10	1	18	272
4:15 PM to 4:30 PM	0	1	109	0	0	2	109	1	0	5	0	3	0	7	0	8	245
4:30 PM to 4:45 PM	1	0	111	0	0	2	129	4	0	11	0	7	0	3	0	12	280
4:45 PM to 5:00 PM	0	0	125	0	0	0	113	1	0	6	0	9	0	4	0	11	269
5:00 PM to 5:15 PM	0	0	105	0	0	1	188	1	0	13	0	16	0	8	0	8	340
5:15 PM to 5:30 PM	0	0	96	0	0	1	131	1	0	5	0	3	0	1	0	4	242
5:30 PM to 5:45 PM	0	0	87	0	0	2	117	0	0	5	0	4	0	2	0	3	220
5:45 PM to 6:00 PM	0	0	83	0	0	1	90	0	0	4	0	2	0	1	0	6	187

HOURLY TOTALS																	
4:00 PM to 5:00 PM	1	2	453	0	0	6	470	6	0	29	0	25	0	24	1	49	1066
4:15 PM to 5:15 PM	1	1	450	0	0	5	539	7	0	35	0	35	0	22	0	39	1134
4:30 PM to 5:30 PM	1	0	437	0	0	4	561	7	0	35	0	35	0	16	0	35	1131
4:45 PM to 5:45 PM	0	0	413	0	0	4	549	3	0	29	0	32	0	15	0	26	1071
5:00 PM to 6:00 PM	0	0	371	0	0	5	526	2	0	27	0	25	0	12	0	21	989

PEAK HOUR SUMMARY																	
4:15 PM to 5:15 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	1	1	450	0	0	5	539	7	0	35	0	35	0	22	0	39	1134
PHF BY MOVEMENT	0.25	0.25	0.90	0.00	0.00	0.63	0.72	0.44	0.00	0.67	0.00	0.55	0.00	0.69	0.00	0.81	OVERALL
PHF BY APPROACH	0.90				0.73				0.60				0.95				0.83
TRUCK	IN	OUT			IN	OUT			IN	OUT			IN	OUT			OVERALL
TRUCK VOLUMES	4	4			6	6			0	0			0	0			10
TRUCK PERCENTAGE	0.9%	0.8%			1.1%	1.0%			0.0%	0.0%			0.0%	0.0%			0.9%
BICYCLE	2				1				0				1				4
PEDESTRIAN BY DIR:	1				0				0				0				1
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				0				0				1				1

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:15 PM to 5:15 PM		<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>									
		<p>1.1% 0.8%</p> <p>6 4</p> <p>0.0% 0.0%</p> <p>0 0</p> <p>0.0% 0.0%</p> <p>6 4</p> <p>1.0% 0.9%</p>									

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
4:15 PM to 4:30 PM	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
4:30 PM to 4:45 PM	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
4:45 PM to 5:00 PM	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	0	11
5:00 PM to 5:15 PM	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0	0	13
5:15 PM to 5:30 PM	0	6	0	0	0	7	0	0	0	0	0	0	0	0	0	0	13
5:30 PM to 5:45 PM	0	7	0	0	0	8	0	0	0	0	0	0	0	0	0	0	15
5:45 PM to 6:00 PM	0	8	0	0	0	8	0	0	0	0	0	0	0	0	0	1	17

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	3
4:15 PM to 4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM to 4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
4:45 PM to 5:00 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5
5:00 PM to 5:15 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM to 5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
5:45 PM to 6:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	2

HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0	11
4:15 PM to 5:15 PM	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	10
4:30 PM to 5:30 PM	0	0	3	0	0	0	6	0	0	0	0	0	0	0	0	0	9
4:45 PM to 5:45 PM	0	0	4	0	0	0	5	0	0	0	0	0	0	0	0	0	9
5:00 PM to 6:00 PM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	1	6

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4:15 PM to 5:15 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	4	4	6	6	0	0	0	0	10
TRUCK PERCENTAGE	0.9%	0.8%	1.1%	1.0%	0.0%	0.0%	0.0%	0.0%	0.9%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:15 PM TO 5:15 PM		ARRIVAL / DEPARTURE VOLUMES									
NORTH		N-LEG TOTAL					E-LEG TOTAL				
SOUTH		W-LEG TOTAL					S-LEG TOTAL				
HARTNELL AVENUE		COBBLESTONE BUSINESS PARK DRIVEWAY					VA CLINIC DRIVEWAY				

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To		From	To		From	To		From	To		
SURVEY DATA													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	2	0	0	1	0	0	0	0	0	4
5:15 PM	to	5:30 PM	0	2	0	0	1	0	0	0	0	0	4
5:30 PM	to	5:45 PM	0	2	0	0	2	0	0	0	0	0	5
5:45 PM	to	6:00 PM	0	2	0	0	4	0	0	0	0	0	7
TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	1	0	0	0	0	0	0	0	0	2
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	to	6:00 PM	0	0	0	0	2	0	0	0	0	0	2
HOURLY TOTALS													
4:00 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	to	5:15 PM	0	2	0	0	1	0	0	0	0	0	4
4:30 PM	to	5:30 PM	0	2	0	0	1	0	0	0	0	0	4
4:45 PM	to	5:45 PM	0	2	0	0	2	0	0	0	0	0	5
5:00 PM	to	6:00 PM	0	1	0	0	3	0	0	0	0	0	5

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4:15 PM	to	5:15 PM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL		
BICYCLE	2	1	0	1	4		

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 04:15 PM TO 05:15 PM		TOTAL PEDESTRIAN VOLUMES									
SOUTH		W-LEG					E-LEG				
HARTNELL AVENUE		COBBLESTONE BUSINESS PARK DRIVEWAY					VA CLINIC DRIVEWAY				

TIME PERIOD	NORTH X-WALK			EAST X-WALK			SOUTH X-WALK			WEST X-WALK			TOTAL
	From	To		From	To		From	To		From	To		
SURVEY DATA													
04:00 PM	---	04:15 PM	0	0	1	0	0	0	2	0	0	3	
04:15 PM	---	04:30 PM	0	0	1	0	0	0	2	0	0	3	
04:30 PM	---	04:45 PM	0	0	1	0	0	0	3	0	0	4	
04:45 PM	---	05:00 PM	0	0	1	0	0	0	3	0	0	4	
05:00 PM	---	05:15 PM	0	0	1	0	0	0	3	0	0	4	
05:15 PM	---	05:30 PM	0	0	2	0	0	0	5	0	0	7	
05:30 PM	---	05:45 PM	0	0	2	0	0	0	5	1	0	8	
05:45 PM	---	06:00 PM	0	0	5	0	0	0	5	1	0	11	
TOTAL BY PERIOD													
04:00 PM	---	04:15 PM	0	0	1	0	0	0	2	0	0	3	
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	0	0	
04:30 PM	---	04:45 PM	0	0	0	0	0	0	1	0	0	1	
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	0	0	
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0	0	
05:15 PM	---	05:30 PM	0	0	1	0	0	0	2	0	0	3	
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	1	1	
05:45 PM	---	06:00 PM	0	0	3	0	0	0	0	0	0	3	
HOURLY TOTALS													
04:00 PM	---	05:00 PM	0	0	1	0	0	0	3	0	0	4	
04:15 PM	---	05:15 PM	0	0	0	0	0	0	1	0	0	1	
04:30 PM	---	05:30 PM	0	0	1	0	0	0	3	0	0	4	
04:45 PM	---	05:45 PM	0	0	1	0	0	0	2	1	0	4	
05:00 PM	---	06:00 PM	0	0	4	0	0	0	0	2	1	7	

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4:15 PM	to	5:15 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL		
PEDESTRIAN	1	0	0	0	1		
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL		
PEDESTRIAN	0	0	0	1	1		

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM TO 9:00 AM			
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		<b>ARRIVAL / DEPARTURE VOLUMES</b>	
		<p>PHF = 0.84</p> <p>435 513</p> <p>PHF = 0.63</p> <p>PHF = 0.58</p> <p>375 530</p> <p>PHF = 0.80</p>	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
7:00 AM to 7:15 AM	2	65	1		2	61	4		1	1		1	1		1	1	139
7:15 AM to 7:30 AM	4	166	2		2	157	10		1	2		1	2		1	1	346
7:30 AM to 7:45 AM	11	302	2		2	255	19		2	3		1	1		1	1	598
7:45 AM to 8:00 AM	21	454	6		2	360	43		4	4		1	3		3	3	898
8:00 AM to 8:15 AM	24	557	6		3	439	55		6	5		1	4		1	4	1100
8:15 AM to 8:30 AM	30	665	7		7	527	70		11	6		2	5		2	5	1330
8:30 AM to 8:45 AM	31	772	8		7	608	77		11	6		3	7		3	7	1530
8:45 AM to 9:00 AM	36	880	8		11	703	88		15	9		7	9		7	9	1766
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	2	65	1	0	2	61	4	0	1	0	1	0	1	0	1	139
7:15 AM to 7:30 AM	0	2	101	1	0	0	96	6	0	0	0	1	0	0	0	0	207
7:30 AM to 7:45 AM	0	7	136	0	0	0	98	9	0	1	0	1	0	0	0	0	252
7:45 AM to 8:00 AM	0	10	152	4	0	0	105	24	0	2	0	1	0	0	0	2	300
8:00 AM to 8:15 AM	0	3	103	0	0	1	79	12	0	2	0	1	0	0	0	1	202
8:15 AM to 8:30 AM	0	6	108	1	0	4	88	15	0	5	0	1	0	1	0	1	230
8:30 AM to 8:45 AM	0	1	107	1	0	0	81	7	0	0	0	0	0	1	0	2	200
8:45 AM to 9:00 AM	0	5	108	0	0	4	95	11	0	4	0	3	0	4	0	2	236
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	21	454	6	0	2	360	43	0	4	0	4	0	1	0	3	898
7:15 AM to 8:15 AM	0	22	492	5	0	1	378	51	0	5	0	4	0	0	0	3	961
7:30 AM to 8:30 AM	0	26	499	5	0	5	370	60	0	10	0	4	0	1	0	4	984
7:45 AM to 8:45 AM	0	20	470	6	0	5	353	58	0	9	0	3	0	2	0	6	932
8:00 AM to 9:00 AM	0	15	426	2	0	9	343	45	0	11	0	5	0	6	0	6	868
<b>PEAK HOUR SUMMARY</b>																	
7:30 AM to 8:30 AM	<b>NORTHBOUND</b>				<b>SOUTHBOUND</b>				<b>EASTBOUND</b>				<b>WESTBOUND</b>				<b>TOTAL</b>
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
<b>VOLUME</b>	0	26	499	5	0	5	370	60	0	10	0	4	0	1	0	4	984
<b>PHF BY MOVEMENT</b>	0.00	0.65	0.82	0.31	0.00	0.31	0.88	0.63	0.00	0.50	0.00	1.00	0.00	0.25	0.00	0.50	<b>OVERALL</b>
<b>PHF BY APPROACH</b>	0.80				0.84				0.58				0.63				0.82
<b>TRUCK</b>	IN		OUT		IN		OUT		IN		OUT		IN		OUT		<b>OVERALL</b>
<b>TRUCK VOLUMES</b>	11		12		7		7		0		0		1		0		19
<b>TRUCK PERCENTAGE</b>	2.1%		2.3%		1.6%		1.9%		0.0%		0.0%		20.0%		0.0%		1.9%
<b>BICYCLE</b>	4				3				0				0				7
<b>PEDESTRIAN BY DIR:</b>	3				2				0				0				5
<b>PEDESTRIAN BY LEG</b>	<b>N-LEG</b>				<b>S-LEG</b>				<b>E-LEG</b>				<b>W-LEG</b>				
	0				0				2				3				5

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM TO 9:00 AM			
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>	
		<p>1.6% 2.3%</p> <p>7 12</p> <p>0.0% 20.0%</p> <p>0 1</p> <p>0.0% 0.0%</p> <p>0 0</p> <p>7 11</p> <p>1.9% 2.1%</p>	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
7:00 AM to 7:15 AM	0	4	0		0	0	0		0	0	0		0	0	0		4
7:15 AM to 7:30 AM	0	6	1		0	1	0		0	0	0		0	0	0		8
7:30 AM to 7:45 AM	0	7	1		0	3	0		0	0	0		0	0	0		11
7:45 AM to 8:00 AM	0	7	1		0	4	0		0	0	0		0	0	0		12
8:00 AM to 8:15 AM	0	11	1		0	4	0		0	4	0		0	0	0		17
8:15 AM to 8:30 AM	0	17	1		0	8	0		0	0	0		0	0	0		27
8:30 AM to 8:45 AM	0	18	1		0	11	0		0	0	0		0	0	0		32
8:45 AM to 9:00 AM	0	19	1		0	15	0		0	0	0		0	0	0		39
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM to 7:30 AM	0	0	2	1	0	0	1	0	0	0	0	0	0	0	0	0	4
7:30 AM to 7:45 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
7:45 AM to 8:00 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
8:00 AM to 8:15 AM	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5
8:15 AM to 8:30 AM	0	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	10
8:30 AM to 8:45 AM	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	5
8:45 AM to 9:00 AM	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	7
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	0	7	1	0	0	4	0	0	0	0	0	0	0	0	0	12
7:15 AM to 8:15 AM	0	0	7	1	0	0	4	0	0	0	0	0	0	0	0	0	13
7:30 AM to 8:30 AM	0	0	11	0	0	0	7	0	0	0	0	0	0	0	0	0	19
7:45 AM to 8:45 AM	0	0	11	0	0	0	8	0	0	0	0	0	0	0	0	0	21
8:00 AM to 9:00 AM	0	0	12	0	0	0	11	0	0	0	0	0	0	0	0	0	27

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7:30 AM to 8:30 AM	<b>NB</b>		<b>SB</b>		<b>EB</b>		<b>WB</b>		<b>OVERALL INTERSECTION</b>
<b>DIRECTION</b>	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
<b>TRUCK VOLUMES</b>	11	12	7	7	0	0	1	0	19
<b>TRUCK PERCENTAGE</b>	2.1%	2.3%	1.6%	1.9%	0.0%	0.0%	20.0%	0.0%	1.9%

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 7</p> <p>3 4</p> <p>E-LEG TOTAL: 0</p> <p>0 0</p> <p>0 0</p> <p>W-LEG TOTAL: 0</p> <p>0 0</p> <p>S-LEG TOTAL: 7</p> <p>3 4</p>	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 1 0	0 1 0	0 0 0	0 0 0	2
7:30 AM to 7:45 AM	0 3 0	0 2 0	0 0 0	0 0 0	5
7:45 AM to 8:00 AM	0 4 0	0 2 0	0 0 0	0 0 0	6
8:00 AM to 8:15 AM	0 4 0	0 4 0	0 0 0	0 0 0	8
8:15 AM to 8:30 AM	0 5 0	0 4 0	0 0 0	0 0 0	9
8:30 AM to 8:45 AM	0 5 0	0 5 0	0 0 0	0 0 0	10
8:45 AM to 9:00 AM	0 5 0	0 5 0	0 0 0	0 0 0	10
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
7:30 AM to 7:45 AM	0 2 0	0 1 0	0 0 0	0 0 0	3
7:45 AM to 8:00 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:00 AM to 8:15 AM	0 0 0	0 2 0	0 0 0	0 0 0	2
8:15 AM to 8:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:30 AM to 8:45 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:45 AM to 9:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 4 0	0 2 0	0 0 0	0 0 0	6
7:15 AM to 8:15 AM	0 3 0	0 4 0	0 0 0	0 0 0	7
7:30 AM to 8:30 AM	0 4 0	0 3 0	0 0 0	0 0 0	7
7:45 AM to 8:45 AM	0 2 0	0 3 0	0 0 0	0 0 0	5
8:00 AM to 9:00 AM	0 1 0	0 3 0	0 0 0	0 0 0	4

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7:30 AM to 8:30 AM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	4	3	0	0	7

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: HARTNELL AVENUE		DAY: THURSDAY	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING	
SURVEY PERIOD: 7:00 AM TO 9:00 AM		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		TOTAL PEDESTRIAN VOLUMES	
		<p>5</p> <p>N-LEG A&amp;B: 0</p> <p>W-LEG G&amp;H: 3</p> <p>0 0</p> <p>0 0</p> <p>E&amp;F S-LEG: 0</p> <p>2 2</p> <p>C&amp;D E-LEG: 0</p>	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	0 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:30 AM --- 07:45 AM	0 0 1 0	0 0 0 0	0 0 1 0	0 0 0 0	2
07:45 AM --- 08:00 AM	0 0 2 1	0 0 0 0	0 0 1 0	0 0 0 0	4
08:00 AM --- 08:15 AM	0 0 2 1	0 0 0 0	0 0 1 1	0 0 0 0	5
08:15 AM --- 08:30 AM	0 0 2 1	0 0 0 0	0 0 2 1	0 0 0 0	6
08:30 AM --- 08:45 AM	0 0 2 2	0 0 0 0	0 0 3 1	0 0 0 0	8
08:45 AM --- 09:00 AM	0 0 2 3	0 0 0 0	0 0 3 1	0 0 0 0	9
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	0 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 0	0 0 0 0	0 0 1 0	0 0 0 0	1
07:45 AM --- 08:00 AM	0 0 1 1	0 0 0 0	0 0 0 0	0 0 0 0	2
08:00 AM --- 08:15 AM	0 0 0 0	0 0 0 0	0 0 0 1	0 0 0 0	1
08:15 AM --- 08:30 AM	0 0 0 0	0 0 0 0	0 0 1 0	0 0 0 0	1
08:30 AM --- 08:45 AM	0 0 0 1	0 0 0 0	0 0 1 0	0 0 0 0	2
08:45 AM --- 09:00 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	1
HOURLY TOTALS					
07:00 AM --- 08:00 AM	0 0 2 1	0 0 0 0	1 0 0 0	0 0 0 0	4
07:15 AM --- 08:15 AM	0 0 1 1	0 0 0 0	1 1 0 0	0 0 0 0	4
07:30 AM --- 08:30 AM	0 0 1 1	0 0 0 0	2 1 0 0	0 0 0 0	5
07:45 AM --- 08:45 AM	0 0 1 2	0 0 0 0	2 1 0 0	0 0 0 0	6
08:00 AM --- 09:00 AM	0 0 0 2	0 0 0 0	2 1 0 0	0 0 0 0	5

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7:30 AM to 8:30 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	3	2	0	0	5
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	2	3	5

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:30 PM to 5:30 PM		↑ NORTH		<b>ARRIVAL / DEPARTURE VOLUMES</b>	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>																			
4:00 PM to 4:15 PM			2	133	0	0	1	115	3	10	5	0	0	0	0	0	0	0	269
4:15 PM to 4:30 PM			5	258	2	0	1	225	7	19	10	2	4	4	0	0	0	0	533
4:30 PM to 4:45 PM			6	380	2	0	2	347	12	29	17	3	4	8	0	0	0	0	802
4:45 PM to 5:00 PM			8	525	2	0	3	455	13	41	20	4	6	6	0	0	0	0	1077
5:00 PM to 5:15 PM			10	646	3	1	7	639	15	49	30	4	6	14	0	0	0	0	1410
5:15 PM to 5:30 PM			11	760	4	1	7	774	18	60	31	4	7	16	0	0	0	0	1677
5:30 PM to 5:45 PM			11	854	5	1	8	888	18	63	31	5	8	18	0	0	0	0	1892
5:45 PM to 6:00 PM			11	949	5	1	8	989	18	65	31	6	8	18	0	0	0	0	2091
<b>TOTAL BY PERIOD</b>																			
4:00 PM to 4:15 PM	0	2	133	0	0	1	115	3	0	10	0	5	0	0	0	0	0	0	269
4:15 PM to 4:30 PM	0	3	125	2	0	0	110	4	0	9	0	5	0	2	0	4	0	0	264
4:30 PM to 4:45 PM	0	1	122	0	0	1	122	5	0	10	0	7	0	1	0	0	0	0	269
4:45 PM to 5:00 PM	0	2	145	0	0	1	108	1	0	12	0	3	0	1	0	2	0	0	275
5:00 PM to 5:15 PM	0	2	121	1	1	4	184	2	0	8	0	10	0	0	0	0	0	0	333
5:15 PM to 5:30 PM	0	1	114	1	0	0	135	3	0	11	0	1	0	0	0	0	0	0	267
5:30 PM to 5:45 PM	0	0	94	1	0	1	114	0	0	3	0	0	0	1	0	0	0	0	215
5:45 PM to 6:00 PM	0	0	95	0	0	0	101	0	0	2	0	0	0	1	0	0	0	0	199
<b>HOURLY TOTALS</b>																			
4:00 PM to 5:00 PM	0	8	525	2	0	3	455	13	0	41	0	20	0	4	0	6	0	0	1077
4:15 PM to 5:15 PM	0	8	513	3	1	6	524	12	0	39	0	25	0	4	0	6	0	0	1141
4:30 PM to 5:30 PM	0	6	502	2	1	6	549	11	0	41	0	21	0	2	0	3	0	0	1144
4:45 PM to 5:45 PM	0	5	474	3	1	6	541	6	0	34	0	14	0	2	0	4	0	0	1090
5:00 PM to 6:00 PM	0	3	424	3	1	5	534	5	0	24	0	11	0	2	0	2	0	0	1014
<b>PEAK HOUR SUMMARY</b>																			
4:30 PM to 5:30 PM	<b>NORTHBOUND</b>				<b>SOUTHBOUND</b>				<b>EASTBOUND</b>				<b>WESTBOUND</b>				<b>TOTAL</b>		
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR			
<b>VOLUME</b>	0	6	502	2	1	6	549	11	0	41	0	21	0	2	0	3	<b>1144</b>		
<b>PHF BY MOVEMENT</b>	0.00	0.75	0.87	0.50	0.25	0.38	0.75	0.55	0.00	0.85	0.00	0.53	0.00	0.50	0.00	0.38	<b>OVERALL</b>		
<b>PHF BY APPROACH</b>	0.87				0.74				0.86				0.42				0.86		
<b>TRUCK</b>	IN		OUT		IN		OUT		IN		OUT		IN		OUT		<b>OVERALL</b>		
<b>TRUCK VOLUMES</b>	5	5	3	3	0	0	0	0	0	0	0	0	0	0	0	0	<b>8</b>		
<b>TRUCK PERCENTAGE</b>	1.0%	0.9%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	<b>0.7%</b>		
<b>BICYCLE</b>	3		2		0		0		0		0		0		0		<b>5</b>		
<b>PEDESTRIAN BY DIR:</b>	3		1		0		0		0		0		0		0		<b>4</b>		
<b>PEDESTRIAN BY LEG</b>	N-LEG				S-LEG				E-LEG				W-LEG						
	0				0				1				3				<b>4</b>		

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> COBBLESTONE BUSINESS PARK DRIVEWAY		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:30 PM to 5:30 PM		↑ NORTH		<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
<b>SURVEY DATA</b>																			
4:00 PM to 4:15 PM			0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
4:15 PM to 4:30 PM			0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	6
4:30 PM to 4:45 PM			0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	0	7
4:45 PM to 5:00 PM			0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	12
5:00 PM to 5:15 PM			0	8	0	0	0	6	0	0	0	0	0	0	0	0	0	0	14
5:15 PM to 5:30 PM			0	8	0	0	0	6	0	0	0	0	0	0	0	0	0	0	14
5:30 PM to 5:45 PM			0	9	0	0	0	7	0	0	0	0	0	0	0	0	0	0	16
5:45 PM to 6:00 PM			0	9	0	0	0	8	0	0	0	0	0	0	0	0	0	0	17
<b>TOTAL BY PERIOD</b>																			
4:00 PM to 4:15 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4
4:15 PM to 4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
4:30 PM to 4:45 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM to 5:00 PM	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
5:00 PM to 5:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM to 5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
5:45 PM to 6:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<b>HOURLY TOTALS</b>																			
4:00 PM to 5:00 PM	0	0	6	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	12
4:15 PM to 5:15 PM	0	0	6	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	10
4:30 PM to 5:30 PM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	8
4:45 PM to 5:45 PM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	9
5:00 PM to 6:00 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	5

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4:30 PM to 5:30 PM	<b>NB</b>		<b>SB</b>		<b>EB</b>		<b>WB</b>		<b>OVERALL INTERSECTION</b>
<b>DIRECTION</b>	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
<b>TRUCK VOLUMES</b>	5	5	3	3	0	0	0	0	<b>8</b>
<b>TRUCK PERCENTAGE</b>	1.0%	0.9%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%	<b>0.7%</b>

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 5</p> <p>S-LEG TOTAL: 4</p> <p>W-LEG TOTAL: 1</p> <p>E-LEG TOTAL: 0</p>	

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To		From	To		From	To		From	To		
SURVEY DATA													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	3	0	0	1	1	0	0	0	0	5
5:15 PM	to	5:30 PM	0	3	0	0	1	1	0	0	0	0	5
5:30 PM	to	5:45 PM	0	3	0	0	2	1	0	0	0	0	6
5:45 PM	to	6:00 PM	0	3	0	0	4	1	0	0	0	0	8
TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
5:00 PM	to	5:15 PM	0	2	0	0	0	1	0	0	0	0	3
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	1	0	0	0	0	0	1
5:45 PM	to	6:00 PM	0	0	0	0	2	0	0	0	0	0	2
HOURLY TOTALS													
4:00 PM	to	5:00 PM	0	1	0	0	1	0	0	0	0	0	2
4:15 PM	to	5:15 PM	0	3	0	0	1	1	0	0	0	0	5
4:30 PM	to	5:30 PM	0	3	0	0	1	1	0	0	0	0	5
4:45 PM	to	5:45 PM	0	3	0	0	2	1	0	0	0	0	6
5:00 PM	to	6:00 PM	0	2	0	0	3	1	0	0	0	0	6

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4:30 PM TO 5:30 PM		VOLUME BY APPROACH				
NBT	SBT	EBT	WBT	TOTAL		
3	2	0	0	5		

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: HARTNELL AVENUE		DAY: THURSDAY	
E-W APPROACH: COBBLESTONE BUSINESS PARK DRIVEWAY		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES	
		<p>N-LEG: 0</p> <p>S-LEG: 0</p> <p>E-LEG: 1</p> <p>W-LEG: 3</p>	

TIME PERIOD	NORTH X-WALK		EAST X-WALK		SOUTH X-WALK		WEST X-WALK		TOTAL		
	From	To	A	B	C	D	E	F		G	H
SURVEY DATA											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	2	0	2
04:15 PM	---	04:30 PM	0	0	0	0	0	0	2	0	2
04:30 PM	---	04:45 PM	0	0	0	0	0	0	3	0	3
04:45 PM	---	05:00 PM	0	0	0	0	0	0	3	0	3
05:00 PM	---	05:15 PM	0	0	0	0	0	0	3	0	3
05:15 PM	---	05:30 PM	0	0	1	0	0	0	5	0	6
05:30 PM	---	05:45 PM	0	0	1	1	0	0	5	1	8
05:45 PM	---	06:00 PM	0	0	3	1	0	0	5	1	10
TOTAL BY PERIOD											
04:00 PM	---	04:15 PM	0	0	0	0	0	0	2	0	2
04:15 PM	---	04:30 PM	0	0	0	0	0	0	2	0	2
04:30 PM	---	04:45 PM	0	0	0	0	0	0	3	0	3
04:45 PM	---	05:00 PM	0	0	0	0	0	0	3	0	3
05:00 PM	---	05:15 PM	0	0	0	0	0	0	3	0	3
05:15 PM	---	05:30 PM	0	0	1	0	0	0	2	0	3
05:30 PM	---	05:45 PM	0	0	0	1	0	0	0	1	2
05:45 PM	---	06:00 PM	0	0	0	2	0	0	0	0	2
HOURLY TOTALS											
04:00 PM	---	05:00 PM	0	0	0	0	0	0	3	0	3
04:15 PM	---	05:15 PM	0	0	0	0	0	0	1	0	1
04:30 PM	---	05:30 PM	0	0	1	0	0	0	3	0	4
04:45 PM	---	05:45 PM	0	0	1	1	0	0	2	1	5
05:00 PM	---	06:00 PM	0	0	3	1	0	0	2	1	7

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4:30 PM TO 5:30 PM		VOLUME BY DIRECTION				
N-LEG	S-LEG	E-LEG	W-LEG	TOTAL		
3	1	0	0	4		
VOLUME BY LEG		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN		0	0	1	3	4

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM to 8:30 AM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
SURVEY DATA																			
7:00 AM to 7:15 AM			2	66	1		1	61	2		2	0	0	1					137
7:15 AM to 7:30 AM			5	156	2		1	158	3		9	0	3						340
7:30 AM to 7:45 AM			5	282	7		3	268	8		19	0	6						601
7:45 AM to 8:00 AM			9	418	17		5	378	16		27	0	7						883
8:00 AM to 8:15 AM			10	526	20		9	465	20		32	0	10						1101
8:15 AM to 8:30 AM			14	635	25		15	561	26		37	0	12						1344
8:30 AM to 8:45 AM			17	729	28		17	655	31		46	0	15						1561
8:45 AM to 9:00 AM			22	823	33		19	754	37		53	0	16						1782
TOTAL BY PERIOD																			
7:00 AM to 7:15 AM	0	2	66	1	0	1	61	2	0	2	0	0	1	0	0	0	0	1	137
7:15 AM to 7:30 AM	0	3	90	1	0	0	97	1	0	7	0	2	0	0	0	0	2	0	203
7:30 AM to 7:45 AM	0	0	126	5	0	2	110	5	0	10	0	3	0	0	0	0	0	0	261
7:45 AM to 8:00 AM	0	4	136	10	0	2	110	8	0	8	0	1	0	1	0	0	2	0	282
8:00 AM to 8:15 AM	0	1	108	3	0	4	87	5	0	5	0	3	0	0	0	2	0	0	218
8:15 AM to 8:30 AM	0	4	109	5	0	6	96	5	0	5	0	2	0	7	0	4	0	0	243
8:30 AM to 8:45 AM	0	3	94	3	0	2	94	5	0	9	0	3	0	2	1	1	0	0	217
8:45 AM to 9:00 AM	0	5	94	5	0	2	99	6	0	7	0	1	0	1	0	1	0	0	221
HOURLY TOTALS																			
7:00 AM to 8:00 AM	0	9	418	17	0	5	378	16	0	27	0	7	0	1	0	5	0	0	883
7:15 AM to 8:15 AM	0	8	460	19	0	8	404	19	0	30	0	9	0	1	0	6	0	0	964
7:30 AM to 8:30 AM	0	9	479	23	0	14	403	23	0	28	0	9	0	8	0	8	0	0	1004
7:45 AM to 8:45 AM	0	12	447	21	0	14	387	23	0	27	0	9	0	10	1	9	0	0	960
8:00 AM to 9:00 AM	0	13	405	16	0	14	376	21	0	26	0	9	0	10	1	8	0	0	899
PEAK HOUR SUMMARY																			
7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR			
VOLUME	0	9	479	23	0	14	403	23	0	28	0	9	0	8	0	8			1004
PHF BY MOVEMENT	0.00	0.56	0.88	0.58	0.00	0.58	0.92	0.72	0.00	0.70	0.00	0.75	0.00	0.29	0.00	0.50			OVERALL
PHF BY APPROACH	0.85				0.92				0.71				0.36				0.89		
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL		
TRUCK VOLUMES	13	12	7	6	2	4	0	0	0	0	0	0	0	0	0	0	0	0	22
TRUCK PERCENTAGE	2.5%	2.3%	1.6%	1.4%	5.4%	10.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.2%
BICYCLE	3				3				0				0				6		
PEDESTRIAN BY DIR:	3				2				0				10				15		
	N-LEG				S-LEG				E-LEG				W-LEG						
PEDESTRIAN BY LEG	7				3				3				2				15		

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM to 8:30 AM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	From	To	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT		THRU	RIGHT
SURVEY DATA																			
7:00 AM to 7:15 AM			1	3	0		0	0	0		0	0	0						4
7:15 AM to 7:30 AM			2	4	0		0	0	0		0	0	0						6
7:30 AM to 7:45 AM			2	4	1		0	2	0		0	0	0						9
7:45 AM to 8:00 AM			2	4	1		0	3	0		2	0	0						12
8:00 AM to 8:15 AM			2	9	2		0	3	0		2	0	0						18
8:15 AM to 8:30 AM			2	14	3		1	6	0		2	0	0						28
8:30 AM to 8:45 AM			2	19	3		1	10	0		2	0	0						39
8:45 AM to 9:00 AM			2	20	3		1	15	0		2	0	0						45
TOTAL BY PERIOD																			
7:00 AM to 7:15 AM	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:15 AM to 7:30 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM to 7:45 AM	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3
7:45 AM to 8:00 AM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	3
8:00 AM to 8:15 AM	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
8:15 AM to 8:30 AM	0	0	5	1	0	1	3	0	0	0	0	0	0	0	0	0	0	0	10
8:30 AM to 8:45 AM	0	0	5	0	0	0	4	0	0	0	0	0	0	0	1	1	0	0	11
8:45 AM to 9:00 AM	0	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	6
HOURLY TOTALS																			
7:00 AM to 8:00 AM	0	2	4	1	0	0	3	0	0	2	0	0	0	0	0	0	0	0	12
7:15 AM to 8:15 AM	0	1	6	2	0	0	3	0	0	2	0	0	0	0	0	0	0	0	14
7:30 AM to 8:30 AM	0	0	10	3	0	1	6	0	0	2	0	0	0	0	0	0	0	0	22
7:45 AM to 8:45 AM	0	0	15	2	0	1	8	0	0	2	0	0	0	0	1	1	0	0	30
8:00 AM to 9:00 AM	0	0	16	2	0	1	12	0	0	0	0	0	0	0	1	1	0	0	33
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7:30 AM to 8:30 AM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	13	12	7	6	2	4	0	0	22
TRUCK PERCENTAGE	2.5%	2.3%	1.6%	1.4%	5.4%	10.8%	0.0%	0.0%	2.2%



**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 1 0	0 1 0	0 0 0	0 0 0	2
7:30 AM to 7:45 AM	0 2 0	0 2 0	0 0 0	0 0 0	4
7:45 AM to 8:00 AM	0 3 0	0 2 0	0 0 0	0 0 0	5
8:00 AM to 8:15 AM	0 3 0	0 4 0	0 0 0	0 0 0	7
8:15 AM to 8:30 AM	0 4 0	0 4 0	0 0 0	0 0 0	8
8:30 AM to 8:45 AM	0 4 0	0 4 0	0 0 0	0 0 0	8
8:45 AM to 9:00 AM	0 4 0	0 5 0	0 0 0	0 0 0	9
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:15 AM to 7:30 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
7:30 AM to 7:45 AM	0 1 0	0 1 0	0 0 0	0 0 0	2
7:45 AM to 8:00 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:00 AM to 8:15 AM	0 0 0	0 2 0	0 0 0	0 0 0	2
8:15 AM to 8:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:30 AM to 8:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:45 AM to 9:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 3 0	0 2 0	0 0 0	0 0 0	5
7:15 AM to 8:15 AM	0 2 0	0 4 0	0 0 0	0 0 0	6
7:30 AM to 8:30 AM	0 3 0	0 3 0	0 0 0	0 0 0	6
7:45 AM to 8:45 AM	0 2 0	0 2 0	0 0 0	0 0 0	4
8:00 AM to 9:00 AM	0 1 0	0 3 0	0 0 0	0 0 0	4

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7:30 AM to 8:30 AM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	3	3	0	0	6

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		NORTH		TOTAL PEDESTRIAN VOLUMES	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	0 2 0 0	0 0 0 0	0 0 0 0	1 1 1	4
07:15 AM --- 07:30 AM	0 2 0 0	0 0 0 0	0 0 0 0	1 1 1	4
07:30 AM --- 07:45 AM	0 2 0 0	0 0 0 0	1 0 0 0	1 1 1	5
07:45 AM --- 08:00 AM	0 8 1 0	0 0 0 0	1 0 2 2	2 2 2	14
08:00 AM --- 08:15 AM	0 9 1 1	1 2 0 2	2 0 2 2	2 2 2	17
08:15 AM --- 08:30 AM	0 9 1 2	2 3 0 2	3 0 2 2	2 2 2	19
08:30 AM --- 08:45 AM	0 9 2 2	2 3 0 2	3 0 2 3	2 3 2	21
08:45 AM --- 09:00 AM	0 9 2 2	2 3 0 2	3 0 2 3	2 3 2	21
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	0 2 0 0	0 0 0 0	0 0 0 0	1 1 1	4
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 0	0 0 0 0	1 0 0 0	0 0 0	1
07:45 AM --- 08:00 AM	0 6 1 0	0 0 0 0	0 0 1 1	1 1 1	9
08:00 AM --- 08:15 AM	0 1 0 1	1 1 0 2	1 0 0 0	0 0 0	3
08:15 AM --- 08:30 AM	0 0 0 1	1 1 0 0	1 0 0 0	0 0 0	2
08:30 AM --- 08:45 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 0 1	2
08:45 AM --- 09:00 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0	0
HOURLY TOTALS					
07:00 AM --- 08:00 AM	0 8 1 0	1 0 0 0	1 0 2 2	2 2 2	14
07:15 AM --- 08:15 AM	0 7 1 1	1 2 0 1	2 0 1 1	1 1 1	13
07:30 AM --- 08:30 AM	0 7 1 2	2 3 0 1	3 0 1 2	1 1 1	15
07:45 AM --- 08:45 AM	0 7 2 2	2 2 0 2	2 0 1 2	1 2 1	16
08:00 AM --- 09:00 AM	0 1 1 2	2 2 0 0	2 0 0 1	1 1 1	7

Tel: (510) 232-1271 Fax: (510) 232-1272

7:30 AM to 8:30 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	3	2	0	10	15
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	7	3	3	2	15

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	7	132	10		5	116	9		7	0	3		3	1	8	301	
4:15 PM to 4:30 PM	13	247	18		10	213	20		14	0	5		9	1	12	562	
4:30 PM to 4:45 PM	16	371	23		18	330	33		25	0	7		16	1	25	865	
4:45 PM to 5:00 PM	19	512	29		25	425	46		36	0	13		21	1	30	1157	
5:00 PM to 5:15 PM	22	653	32		29	603	59		49	0	17		29	1	35	1529	
5:15 PM to 5:30 PM	24	766	36		31	723	74		56	0	20		31	3	37	1801	
5:30 PM to 5:45 PM	27	860	38		31	817	85		66	1	24		43	3	41	2036	
5:45 PM to 6:00 PM	31	945	40		32	900	95		78	2	26		49	3	45	2246	

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	7	132	10	0	5	116	9	0	7	0	3	0	3	1	8	301
4:15 PM to 4:30 PM	0	6	115	8	0	5	97	11	0	7	0	2	0	6	0	4	261
4:30 PM to 4:45 PM	0	3	124	5	0	8	117	13	0	11	0	2	0	7	0	13	303
4:45 PM to 5:00 PM	0	3	141	6	0	7	95	13	0	11	0	6	0	5	0	5	292
5:00 PM to 5:15 PM	0	3	141	3	0	4	178	13	0	13	0	4	0	8	0	5	372
5:15 PM to 5:30 PM	0	2	113	4	0	2	120	15	0	7	0	3	0	2	2	2	272
5:30 PM to 5:45 PM	0	3	94	2	0	0	94	11	0	10	1	4	0	12	0	4	235
5:45 PM to 6:00 PM	0	4	85	2	0	1	83	10	0	12	1	2	0	6	0	4	210

HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	19	512	29	0	25	425	46	0	36	0	13	0	21	1	30	1157
4:15 PM to 5:15 PM	0	15	521	22	0	24	487	50	0	42	0	14	0	26	0	27	1228
4:30 PM to 5:30 PM	0	11	519	18	0	21	510	54	0	42	0	15	0	22	2	25	1239
4:45 PM to 5:45 PM	0	11	489	15	0	13	487	52	0	41	1	17	0	27	2	16	1171
5:00 PM to 6:00 PM	0	12	433	11	0	7	475	49	0	42	2	13	0	28	2	15	1089

PEAK HOUR SUMMARY																	
4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	11	519	18	0	21	510	54	0	42	0	15	0	22	2	25	1239
PHF BY MOVEMENT	0.00	0.92	0.92	0.75	0.00	0.66	0.72	0.90	0.00	0.81	0.00	0.63	0.00	0.69	0.25	0.48	OVERALL
PHF BY APPROACH	0.91				0.75				0.84				0.61				0.83
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	3	3	7	7	0	0	0	0	0	0	0	0	0	0	0	0	10
TRUCK PERCENTAGE	0.5%	0.5%	1.2%	1.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%
BICYCLE	2		2		0		0		0		0		0		0		4
PEDESTRIAN BY DIR:	0		1		0		3		0		0		0		0		4
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	3				0				1				0				4

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
4:00 PM to 4:15 PM	0	2	0		0	2	0		0	0	0		0	0	0	4	
4:15 PM to 4:30 PM	0	3	0		0	2	0		0	0	0		0	0	0	5	
4:30 PM to 4:45 PM	0	3	0		0	5	0		0	0	0		0	0	0	8	
4:45 PM to 5:00 PM	0	5	0		0	7	0		0	0	0		0	0	0	12	
5:00 PM to 5:15 PM	0	6	0		0	9	0		0	0	0		0	0	0	15	
5:15 PM to 5:30 PM	0	6	0		0	9	0		0	0	0		0	0	0	15	
5:30 PM to 5:45 PM	0	6	0		0	10	0		0	0	0		0	0	0	16	
5:45 PM to 6:00 PM	0	9	0		0	10	0		0	0	0		0	0	0	19	

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
4:15 PM to 4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30 PM to 4:45 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
4:45 PM to 5:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
5:00 PM to 5:15 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:45 PM to 6:00 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3

HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12
4:15 PM to 5:15 PM	0	0	4	0	0	0	7	0	0	0	0	0	0	0	0	0	11
4:30 PM to 5:30 PM	0	0	3	0	0	0	7	0	0	0	0	0	0	0	0	0	10
4:45 PM to 5:45 PM	0	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	8
5:00 PM to 6:00 PM	0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	7

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4:30 PM to 5:30 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	3	3	7	7	0	0	0	0	10
TRUCK PERCENTAGE	0.5%	0.5%	1.2%	1.3%	0.0%	0.0%	0.0%	0.0%	0.8%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 4</p> <p>S-LEG TOTAL: 2</p> <p>W-LEG TOTAL: 1</p> <p>E-LEG TOTAL: 0</p>		<p>W-LEG TOTAL: 1</p> <p>S-LEG TOTAL: 3</p>	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
4:00 PM to 4:15 PM	0 0 0	0 0 1	0 0 0	0 0 0	1
4:15 PM to 4:30 PM	0 0 0	0 0 1	0 0 0	0 0 0	1
4:30 PM to 4:45 PM	0 0 0	0 0 1	0 0 0	0 0 0	1
4:45 PM to 5:00 PM	0 1 0	0 0 2	0 0 0	0 0 0	3
5:00 PM to 5:15 PM	0 2 0	0 1 2	0 0 0	0 0 0	5
5:15 PM to 5:30 PM	0 2 0	0 1 2	0 0 0	0 0 0	5
5:30 PM to 5:45 PM	0 2 0	0 2 2	0 0 0	0 0 0	6
5:45 PM to 6:00 PM	0 2 0	0 4 2	0 0 0	0 0 0	8
TOTAL BY PERIOD					
4:00 PM to 4:15 PM	0 0 0	0 0 1	0 0 0	0 0 0	1
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:45 PM to 5:00 PM	0 1 0	0 0 1	0 0 0	0 0 0	2
5:00 PM to 5:15 PM	0 1 0	0 1 0	0 0 0	0 0 0	2
5:15 PM to 5:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:30 PM to 5:45 PM	0 0 0	0 1 0	0 0 0	0 0 0	1
5:45 PM to 6:00 PM	0 0 0	0 2 0	0 0 0	0 0 0	2
HOURLY TOTALS					
4:00 PM to 5:00 PM	0 1 0	0 0 2	0 0 0	0 0 0	3
4:15 PM to 5:15 PM	0 2 0	0 1 1	0 0 0	0 0 0	4
4:30 PM to 5:30 PM	0 2 0	0 1 1	0 0 0	0 0 0	4
4:45 PM to 5:45 PM	0 2 0	0 2 1	0 0 0	0 0 0	5
5:00 PM to 6:00 PM	0 1 0	0 4 0	0 0 0	0 0 0	5

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4:30 PM TO 5:30 PM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 4</p> <p>S-LEG TOTAL: 2</p> <p>W-LEG TOTAL: 1</p> <p>E-LEG TOTAL: 0</p>		<p>W-LEG TOTAL: 1</p> <p>S-LEG TOTAL: 3</p>	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
4:30 PM to 5:30 PM	2 2 0	0 0 0	0 0 0	0 0 0	4

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 4</p> <p>S-LEG TOTAL: 3</p> <p>W-LEG TOTAL: 0</p> <p>E-LEG TOTAL: 0</p>		<p>W-LEG TOTAL: 0</p> <p>S-LEG TOTAL: 3</p>	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F G H			
SURVEY DATA					
04:00 PM --- 04:15 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	4
04:15 PM --- 04:30 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	5
04:30 PM --- 04:45 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	5
04:45 PM --- 05:00 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	5
05:00 PM --- 05:15 PM	3 0 3 0	0 0 1 0	0 0 0 0	0 0 0 0	8
05:15 PM --- 05:30 PM	4 0 3 0	0 0 1 0	0 0 0 0	0 0 0 0	9
05:30 PM --- 05:45 PM	5 0 6 1	0 0 1 0	0 0 0 0	0 0 0 0	14
05:45 PM --- 06:00 PM	6 0 6 1	0 0 1 0	0 0 0 0	0 0 0 0	15
TOTAL BY PERIOD					
04:00 PM --- 04:15 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	4
04:15 PM --- 04:30 PM	0 0 0 0	0 0 1 0	0 0 0 0	0 0 0 0	1
04:30 PM --- 04:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
04:45 PM --- 05:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:00 PM --- 05:15 PM	2 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	3
05:15 PM --- 05:30 PM	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
05:30 PM --- 05:45 PM	1 0 3 1	0 0 0 0	0 0 0 0	0 0 0 0	5
05:45 PM --- 06:00 PM	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
HOURLY TOTALS					
04:00 PM --- 05:00 PM	1 0 2 0	0 0 1 0	0 0 0 0	0 0 0 0	5
04:15 PM --- 05:15 PM	2 0 1 0	0 0 1 0	0 0 0 0	0 0 0 0	4
04:30 PM --- 05:30 PM	3 0 1 0	0 0 0 0	0 0 0 0	0 0 0 0	4
04:45 PM --- 05:45 PM	4 0 4 1	0 0 0 0	0 0 0 0	0 0 0 0	9
05:00 PM --- 06:00 PM	5 0 4 1	0 0 0 0	0 0 0 0	0 0 0 0	10

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4:30 PM TO 5:30 PM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 4</p> <p>S-LEG TOTAL: 3</p> <p>W-LEG TOTAL: 0</p> <p>E-LEG TOTAL: 0</p>		<p>W-LEG TOTAL: 0</p> <p>S-LEG TOTAL: 3</p>	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
4:30 PM to 5:30 PM	2 2 0	0 0 0	0 0 0	0 0 0	4

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM TO 9:00 AM			
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM to 8:30 AM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	71	1	0	0	65	0	0	0	0	0	1	0	0	0	0	138
7:15 AM to 7:30 AM	1	164	3	2	2	160	0	1	1	1	1	1	0	0	0	0	333
7:30 AM to 7:45 AM	2	296	7	6	6	279	0	1	1	1	1	1	2	0	0	0	595
7:45 AM to 8:00 AM	2	437	9	18	18	398	0	1	1	1	1	1	0	0	0	0	869
8:00 AM to 8:15 AM	2	551	11	23	23	497	1	1	1	1	1	1	5	0	0	0	1093
8:15 AM to 8:30 AM	3	666	12	37	37	603	1	3	3	1	1	1	8	0	0	0	1335
8:30 AM to 8:45 AM	8	764	13	44	44	702	1	6	6	2	3	1	8	0	0	0	1552
8:45 AM to 9:00 AM	9	860	17	47	47	807	1	7	7	2	3	3	9	0	0	0	1762
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	71	1	0	0	65	0	0	0	0	0	1	0	0	0	138
7:15 AM to 7:30 AM	0	1	93	2	0	2	95	0	0	1	0	1	0	0	0	0	195
7:30 AM to 7:45 AM	0	1	132	4	0	4	119	0	0	0	0	0	0	0	0	2	262
7:45 AM to 8:00 AM	0	0	141	2	0	12	119	0	0	0	0	0	0	0	0	0	274
8:00 AM to 8:15 AM	0	0	114	2	0	5	99	1	0	0	0	0	0	0	0	3	224
8:15 AM to 8:30 AM	0	1	115	1	0	14	106	0	0	2	0	0	0	0	0	3	242
8:30 AM to 8:45 AM	0	5	98	1	0	7	99	0	0	3	0	1	0	2	0	1	217
8:45 AM to 9:00 AM	0	1	96	4	0	3	105	0	0	1	0	0	0	0	0	0	210
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	2	437	9	0	18	398	0	0	1	0	1	0	1	0	2	869
7:15 AM to 8:15 AM	0	2	480	10	0	23	432	1	0	1	0	1	0	0	0	5	955
7:30 AM to 8:30 AM	0	2	502	9	0	35	443	1	0	2	0	0	0	0	0	8	1002
7:45 AM to 8:45 AM	0	6	468	6	0	38	423	1	0	5	0	1	0	2	0	7	957
8:00 AM to 9:00 AM	0	7	423	8	0	29	409	1	0	6	0	1	0	2	0	7	893
PEAK HOUR SUMMARY																	
7:30 AM to 8:30 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	2	502	9	0	35	443	1	0	2	0	0	0	0	0	8	1002
PHF BY MOVEMENT	0.00	0.50	0.89	0.56	0.00	0.63	0.93	0.25	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.67	OVERALL
PHF BY APPROACH	0.90				0.91				0.25				0.67				0.91
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	12	16	12	7	0	0	5	4	0	0	0	0	0	0	0	0	28
TRUCK PERCENTAGE	2.3%	3.1%	2.5%	1.6%	0.0%	0.0%	11.4%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.8%
BICYCLE	0				1				0				0				1
PEDESTRIAN BY DIR:	4				0				0				0				4
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				0				2				2				4

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM TO 9:00 AM			
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM to 8:30 AM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:15 AM to 7:30 AM	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
7:30 AM to 7:45 AM	0	4	0	1	2	0	0	0	0	0	0	0	0	0	0	0	7
7:45 AM to 8:00 AM	0	7	0	2	3	0	0	0	0	0	0	0	0	0	0	0	12
8:00 AM to 8:15 AM	0	11	0	2	4	0	0	0	0	0	0	0	0	0	0	1	18
8:15 AM to 8:30 AM	0	16	0	5	7	0	0	0	0	0	0	0	0	0	0	4	32
8:30 AM to 8:45 AM	0	20	0	6	11	0	0	0	0	0	0	0	0	0	0	5	42
8:45 AM to 9:00 AM	0	22	0	6	15	0	1	0	0	0	0	0	0	0	0	5	49
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
7:15 AM to 7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM to 7:45 AM	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	3
7:45 AM to 8:00 AM	0	0	3	0	0	1	1	0	0	0	0	0	0	0	0	0	5
8:00 AM to 8:15 AM	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0	1	6
8:15 AM to 8:30 AM	0	0	5	0	0	3	3	0	0	0	0	0	0	0	0	3	14
8:30 AM to 8:45 AM	0	0	4	0	0	1	4	0	0	0	0	0	0	0	0	1	10
8:45 AM to 9:00 AM	0	0	2	0	0	0	4	0	0	1	0	0	0	0	0	0	7
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	0	7	0	0	2	3	0	0	0	0	0	0	0	0	0	12
7:15 AM to 8:15 AM	0	0	8	0	0	2	4	0	0	0	0	0	0	0	0	1	15
7:30 AM to 8:30 AM	0	0	12	0	0	5	7	0	0	0	0	0	0	0	0	4	28
7:45 AM to 8:45 AM	0	0	16	0	0	5	9	0	0	0	0	0	0	0	0	5	35
8:00 AM to 9:00 AM	0	0	15	0	0	4	12	0	0	1	0	0	0	0	0	5	37
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7:30 AM to 8:30 AM	NB		SB		EB		WB		OVERALL INTERSECTION
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
TRUCK VOLUMES	12	16	12	7	0	5	4	0	28
TRUCK PERCENTAGE	2.3%	3.1%	2.5%	1.6%	0.0%	11.4%	50.0%	0.0%	2.8%

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	
		<p>N-LEG TOTAL: 1</p> <p>E-LEG TOTAL: 0</p> <p>W-LEG TOTAL: 0</p> <p>S-LEG TOTAL: 1</p>			

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:00 AM to 8:15 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:15 AM to 8:30 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:30 AM to 8:45 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:45 AM to 9:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:30 AM to 8:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:45 AM to 9:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
7:15 AM to 8:15 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
7:30 AM to 8:30 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
7:45 AM to 8:45 AM	0 0 0	0 1 0	0 0 0	0 0 0	1
8:00 AM to 9:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0

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7:30 AM to 8:30 AM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	1	0	0	1

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		NORTH		TOTAL PEDESTRIAN VOLUMES	
		<p>N-LEG TOTAL: 1</p> <p>E-LEG TOTAL: 0</p> <p>W-LEG TOTAL: 0</p> <p>S-LEG TOTAL: 1</p>		<p>PEAK HOUR TOTAL PEDESTRIAN VOLUMES: 4</p> <p>N-LEG A&amp;B: 0</p> <p>W-LEG G&amp;H: 2</p> <p>E&amp;F: 0</p> <p>S-LEG: 2</p> <p>C&amp;D: 2</p> <p>E-LEG: 0</p>	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 1 0 0	2
07:45 AM --- 08:00 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 1 0 0	2
08:00 AM --- 08:15 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 2 0 0	3
08:15 AM --- 08:30 AM	0 0 0 2	0 0 0 0	0 0 0 0	0 2 0 0	4
08:30 AM --- 08:45 AM	0 0 0 3	0 0 0 0	0 0 0 0	0 4 0 0	7
08:45 AM --- 09:00 AM	0 0 0 3	0 0 0 0	0 0 0 0	0 4 0 0	7
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 1 0 0	2
07:45 AM --- 08:00 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	0
08:00 AM --- 08:15 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 1 0 0	1
08:15 AM --- 08:30 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 0 0 0	1
08:30 AM --- 08:45 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 2 0 0	3
08:45 AM --- 09:00 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
HOURLY TOTALS					
07:00 AM --- 08:00 AM	0 0 0 1	0 0 0 0	0 0 0 0	1 0 0 0	2
07:15 AM --- 08:15 AM	0 0 0 1	0 0 0 0	0 0 0 0	0 2 0 0	3
07:30 AM --- 08:30 AM	0 0 0 2	0 0 0 0	0 0 0 0	0 2 0 0	4
07:45 AM --- 08:45 AM	0 0 0 2	0 0 0 0	0 0 0 0	0 3 0 0	5
08:00 AM --- 09:00 AM	0 0 0 2	0 0 0 0	0 0 0 0	0 3 0 0	5

Tel: (510) 232-1271 Fax: (510) 232-1272

7:30 AM to 8:30 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	4	0	0	0	4
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	2	2	4

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		ARRIVAL / DEPARTURE VOLUMES									

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	1	143	1		6	125	4		3	3			0	1	2		289
4:15 PM to 4:30 PM	3	267	2		8	239	6		4	3			2	1	4		539
4:30 PM to 4:45 PM	4	412	3		10	375	9		9	4			2	1	9		838
4:45 PM to 5:00 PM	5	564	5		15	486	11		17	8			3	1	16		1131
5:00 PM to 5:15 PM	6	717	8		21	675	18		19	10			5	1	26		1506
5:15 PM to 5:30 PM	9	837	9		26	808	26		24	15			7	1	31		1793
5:30 PM to 5:45 PM	12	942	10		26	910	27		32	17			7	1	32		2016
5:45 PM to 6:00 PM	15	1039	12		27	1002	32		34	21			7	1	33		2223
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	1	143	1	0	6	125	4	0	3	0	3	0	0	1	2	289
4:15 PM to 4:30 PM	0	2	124	1	0	2	114	2	0	1	0	0	0	2	0	2	250
4:30 PM to 4:45 PM	0	1	145	1	0	2	136	3	0	5	0	1	0	0	0	5	299
4:45 PM to 5:00 PM	0	1	152	2	0	5	111	2	0	8	0	4	0	1	0	7	293
5:00 PM to 5:15 PM	0	1	153	3	0	6	189	7	0	2	0	2	0	2	0	10	375
5:15 PM to 5:30 PM	0	3	120	1	0	5	133	8	0	5	0	5	0	2	0	5	287
5:30 PM to 5:45 PM	0	3	105	1	0	0	102	1	0	8	0	2	0	0	0	1	223
5:45 PM to 6:00 PM	0	3	97	2	0	1	92	5	0	2	0	4	0	0	0	1	207
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	5	564	5	0	15	486	11	0	17	0	8	0	3	1	16	1131
4:15 PM to 5:15 PM	0	5	574	7	0	15	550	14	0	16	0	7	0	5	0	24	1217
4:30 PM to 5:30 PM	0	6	570	7	0	18	569	20	0	20	0	12	0	5	0	27	1254
4:45 PM to 5:45 PM	0	8	530	7	0	16	535	18	0	23	0	13	0	5	0	23	1178
5:00 PM to 6:00 PM	0	10	475	7	0	12	516	21	0	17	0	13	0	4	0	17	1092
PEAK HOUR SUMMARY																	
4:30 PM to 5:30 PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	6	570	7	0	18	569	20	0	20	0	12	0	5	0	27	1254
PHF BY MOVEMENT	0.00	0.50	0.93	0.58	0.00	0.75	0.75	0.63	0.00	0.63	0.00	0.60	0.00	0.63	0.00	0.68	OVERALL
PHF BY APPROACH	0.93				0.75				0.67				0.67				0.84
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	3		3		5		6		1		0		0		0		9
TRUCK PERCENTAGE	0.5%		0.5%		0.8%		1.0%		3.1%		0.0%		0.0%		0.0%		0.7%
BICYCLE	0				0				0				0				0
PEDESTRIAN BY DIR:	0				0				0				0				0
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				0				0				0				0
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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)									

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
4:00 PM to 4:15 PM	0	2	0		0	2	0		0	0	0		0	0	0		4
4:15 PM to 4:30 PM	0	3	0		0	3	0		0	0	0		0	0	0		6
4:30 PM to 4:45 PM	0	3	0		0	5	0		0	0	0		0	0	0		8
4:45 PM to 5:00 PM	0	5	0		0	7	0		0	0	0		0	0	0		12
5:00 PM to 5:15 PM	0	6	0		0	8	0		0	0	0		0	0	0		14
5:15 PM to 5:30 PM	0	6	0		0	8	0		0	1	0		0	0	0		15
5:30 PM to 5:45 PM	0	7	0		0	9	0		0	1	0		0	0	0		17
5:45 PM to 6:00 PM	0	9	0		0	9	0		0	1	0		0	0	0		19
TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
4:15 PM to 4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
4:30 PM to 4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
4:45 PM to 5:00 PM	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	4
5:00 PM to 5:15 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
5:15 PM to 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
5:30 PM to 5:45 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
5:45 PM to 6:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	5	0	0	0	7	0	0	0	0	0	0	0	0	0	12
4:15 PM to 5:15 PM	0	0	4	0	0	0	6	0	0	0	0	0	0	0	0	0	10
4:30 PM to 5:30 PM	0	0	3	0	0	0	5	0	0	0	0	1	0	0	0	0	9
4:45 PM to 5:45 PM	0	0	4	0	0	0	4	0	0	0	0	1	0	0	0	0	9
5:00 PM to 6:00 PM	0	0	4	0	0	0	2	0	0	0	0	1	0	0	0	0	7
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

4:30 PM to 5:30 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	3	3	5	6	1	0	0	0	9
TRUCK PERCENTAGE	0.5%	0.5%	0.8%	1.0%	3.1%	0.0%	0.0%	0.0%	0.7%

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		ARRIVAL / DEPARTURE VOLUMES									
NORTH		N-LEG TOTAL					E-LEG TOTAL				
WEST - LEG		0		0		0		0		0	
EAST - LEG		0		0		0		0		0	
SOUTH - LEG		0		0		0		0		0	
HARTNELL AVENUE		0		0		0		0		0	

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL
	From	To		From	To		From	To		From	To		
SURVEY DATA													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY PERIOD													
4:00 PM	to	4:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	4:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	4:45 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS													
4:00 PM	to	5:00 PM	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	to	5:15 PM	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	to	5:30 PM	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	to	5:45 PM	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	to	6:00 PM	0	0	0	0	0	0	0	0	0	0	0

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

4:30 PM	to	5:30 PM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL		
BICYCLE	0	0	0	0	0	0	

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: RALEY'S SHOPPING CENTER DWY		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES									
NORTH		N-LEG					E-LEG				
WEST - LEG		0		0		0		0		0	
EAST - LEG		0		0		0		0		0	
SOUTH - LEG		0		0		0		0		0	
HARTNELL AVENUE		0		0		0		0		0	

TIME PERIOD	NORTH X-WALK			EAST X-WALK			SOUTH X-WALK			WEST X-WALK			TOTAL
	From	To		From	To		From	To		From	To		
SURVEY DATA													
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	0	0	0
TOTAL BY PERIOD													
04:00 PM	---	04:15 PM	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	---	04:30 PM	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	---	04:45 PM	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	---	05:00 PM	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	---	05:30 PM	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	---	05:45 PM	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	---	06:00 PM	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS													
04:00 PM	---	05:00 PM	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	---	05:15 PM	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	---	05:30 PM	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	---	05:45 PM	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	---	06:00 PM	0	0	0	0	0	0	0	0	0	0	0

Tel: (510) 232-1271      Fax: (510) 232-1272

4:30 PM	to	5:30 PM				
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL	
PEDESTRIAN	0	0	0	0	0	0
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	
PEDESTRIAN	0	0	0	0	0	0

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> HENDERSON ROAD		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<p align="center">PHF = 0.86</p> <p align="center">515    532</p>		<p align="center">PHF = 0.00</p>	
<p align="center">PHF = 0.00</p>		<p align="center">502    534</p> <p align="center">PHF = 0.75</p>	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
7:00 AM to 7:15 AM	0	70					80	0		1	1						152
7:15 AM to 7:30 AM	0	162					173	2		1	1						339
7:30 AM to 7:45 AM	0	289					295	3		1	1						589
7:45 AM to 8:00 AM	0	466					445	3		1	1						916
8:00 AM to 8:15 AM	1	576					549	11		1	1						1139
8:15 AM to 8:30 AM	2	694					675	15		1	1						1388
8:30 AM to 8:45 AM	3	806					781	20		1	1						1612
8:45 AM to 9:00 AM	3	917					902	25		1	2						1850
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	0	70	0	0	0	80	0	0	1	0	1	0	0	0	0	152
7:15 AM to 7:30 AM	0	0	92	0	0	0	93	2	0	0	0	0	0	0	0	0	187
7:30 AM to 7:45 AM	0	0	127	0	0	0	122	1	0	0	0	0	0	0	0	0	250
7:45 AM to 8:00 AM	0	0	177	0	0	0	150	0	0	0	0	0	0	0	0	0	327
8:00 AM to 8:15 AM	0	1	110	0	0	0	104	8	0	0	0	0	0	0	0	0	223
8:15 AM to 8:30 AM	0	1	118	0	0	0	126	4	0	0	0	0	0	0	0	0	249
8:30 AM to 8:45 AM	0	1	112	0	0	0	106	5	0	0	0	0	0	0	0	0	224
8:45 AM to 9:00 AM	0	0	111	0	0	0	121	5	0	0	0	1	0	0	0	0	238
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	0	466	0	0	0	445	3	0	1	0	1	0	0	0	0	916
7:15 AM to 8:15 AM	0	1	506	0	0	0	469	11	0	0	0	0	0	0	0	0	987
7:30 AM to 8:30 AM	0	2	532	0	0	0	502	13	0	0	0	0	0	0	0	0	1049
7:45 AM to 8:45 AM	0	3	517	0	0	0	486	17	0	0	0	0	0	0	0	0	1023
8:00 AM to 9:00 AM	0	3	451	0	0	0	457	22	0	0	0	1	0	0	0	0	934
<b>PEAK HOUR SUMMARY</b>																	
7:30 AM to 8:30 AM	<b>NORTHBOUND</b>				<b>SOUTHBOUND</b>				<b>EASTBOUND</b>				<b>WESTBOUND</b>				<b>TOTAL</b>
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
<b>VOLUME</b>	0	2	532	0	0	0	502	13	0	0	0	0	0	0	0	0	1049
<b>PHF BY MOVEMENT</b>	0.00	0.50	0.75	0.00	0.00	0.00	0.84	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	OVERALL
<b>PHF BY APPROACH</b>	0.75				0.86				0.00				0.00				0.80
<b>TRUCK</b>	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
<b>TRUCK VOLUMES</b>	11	11	9	9	9	9	0	0	0	0	0	0	0	0	0	0	20
<b>TRUCK PERCENTAGE</b>	2.1%	2.1%	1.7%	1.8%	1.7%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%
<b>BICYCLE</b>	0				2				0				0				2
<b>PEDESTRIAN BY DIR:</b>	2				0				0				0				2
	<b>N-LEG</b>				<b>S-LEG</b>				<b>E-LEG</b>				<b>W-LEG</b>				
<b>PEDESTRIAN BY LEG</b>	0				0				0				2				2

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 7:00 AM		<b>TO</b> 9:00 AM	
<b>E-W APPROACH:</b> HENDERSON ROAD		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:30 AM to 8:30 AM		↑ NORTH	
<p align="center">1.7%    2.1%</p> <p align="center">9    11</p>		<p align="center">0.0%</p> <p align="center">0</p>	
<p align="center">0.0%</p> <p align="center">0</p>		<p align="center">0.0%</p> <p align="center">0</p>	
<p align="center">9    11</p> <p align="center">1.8%    2.1%</p>			

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
7:00 AM to 7:15 AM	0	1					0	0		0	0						1
7:15 AM to 7:30 AM	0	2					0	0		0	0						2
7:30 AM to 7:45 AM	0	2					2	0		0	0						4
7:45 AM to 8:00 AM	0	3					3	0		0	0						6
8:00 AM to 8:15 AM	0	6					3	0		0	0						9
8:15 AM to 8:30 AM	0	13					9	0		0	0						22
8:30 AM to 8:45 AM	0	16					12	0		0	0						28
8:45 AM to 9:00 AM	0	18					17	1		0	0						36
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM to 7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:30 AM to 7:45 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
7:45 AM to 8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
8:00 AM to 8:15 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
8:15 AM to 8:30 AM	0	0	7	0	0	0	6	0	0	0	0	0	0	0	0	0	13
8:30 AM to 8:45 AM	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	6
8:45 AM to 9:00 AM	0	0	2	0	0	0	5	1	0	0	0	0	0	0	0	0	8
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	6
7:15 AM to 8:15 AM	0	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	8
7:30 AM to 8:30 AM	0	0	11	0	0	0	9	0	0	0	0	0	0	0	0	0	20
7:45 AM to 8:45 AM	0	0	14	0	0	0	10	0	0	0	0	0	0	0	0	0	24
8:00 AM to 9:00 AM	0	0	15	0	0	0	14	1	0	0	0	0	0	0	0	0	30

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7:30 AM to 8:30 AM	<b>NB</b>		<b>SB</b>		<b>EB</b>		<b>WB</b>		<b>OVERALL INTERSECTION</b>
<b>DIRECTION</b>	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
<b>TRUCK VOLUMES</b>	11	11	9	9	0	0	0	0	20
<b>TRUCK PERCENTAGE</b>	2.1%	2.1%	1.7%	1.8%	0.0%	0.0%	0.0%	0.0%	1.9%



**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HENDERSON ROAD		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL	
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		
SURVEY DATA														
7:00 AM	to	7:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	to	7:30 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:30 AM	to	7:45 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:45 AM	to	8:00 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:00 AM	to	8:15 AM	0	0	0	0	3	0	0	0	0	0	0	3
8:15 AM	to	8:30 AM	0	0	0	0	3	0	0	0	0	0	0	3
8:30 AM	to	8:45 AM	0	0	0	0	4	0	0	0	0	0	0	4
8:45 AM	to	9:00 AM	0	0	0	0	4	0	1	0	0	0	0	5
TOTAL BY PERIOD														
7:00 AM	to	7:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	to	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	to	7:45 AM	0	0	0	0	1	0	0	0	0	0	0	1
7:45 AM	to	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	to	8:15 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:15 AM	to	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	to	8:45 AM	0	0	0	0	1	0	0	0	0	0	0	1
8:45 AM	to	9:00 AM	0	0	0	0	0	0	1	0	0	0	0	1
HOURLY TOTALS														
7:00 AM	to	8:00 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:15 AM	to	8:15 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:30 AM	to	8:30 AM	0	0	0	0	2	0	0	0	0	0	0	2
7:45 AM	to	8:45 AM	0	0	0	0	2	0	0	0	0	0	0	2
8:00 AM	to	9:00 AM	0	0	0	0	2	0	1	0	0	0	0	3
			TEL: (510) 232 - 1271						FAX: (510) 232 - 1272					

7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	

VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
	0	2	0	0	2

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: HENDERSON ROAD		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:30 AM TO 08:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)			SB (NORTH - LEG)			EB (WEST - LEG)			WB (EAST - LEG)			TOTAL	
	From	To		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		
SURVEY DATA														
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	0	1	0	1
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	0	2	0	2
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	0	2	0	2
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	0	3	0	3
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	0	3	0	3
TOTAL BY PERIOD														
07:00 AM	---	07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	---	07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	---	07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	---	08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	---	08:15 AM	0	0	0	0	0	0	0	0	0	1	0	1
08:15 AM	---	08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	---	08:45 AM	0	0	0	0	0	0	0	0	0	1	0	1
08:45 AM	---	09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS														
07:00 AM	---	08:00 AM	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	---	08:15 AM	0	0	0	0	0	0	0	0	0	2	0	2
07:30 AM	---	08:30 AM	0	0	0	0	0	0	0	0	0	2	0	2
07:45 AM	---	08:45 AM	0	0	0	0	0	0	0	0	0	2	0	2
08:00 AM	---	09:00 AM	0	0	0	0	0	0	0	0	0	2	0	2
			Tel: (510) 232-1271						Fax: (510) 232-1272					

7:30 AM TO 8:30 AM		NORTH		ARRIVAL / DEPARTURE VOLUMES	

VOLUME BY DIRECTION	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL	
						PEDESTRIAN
	2	0	0	0	2	
VOLUME BY LEG		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN		0	0	0	2	2

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> HENDERSON ROAD		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:30 PM to 5:30 PM		↑ NORTH	
<b>ARRIVAL / DEPARTURE VOLUMES</b>			
PHF = 0.81		PHF = 0.00	
656 581		645 580	
PHF = 0.50		PHF = 0.87	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
4:00 PM to 4:15 PM	1	139				144	5		0	1							290
4:15 PM to 4:30 PM	1	254				267	9		1	2							534
4:30 PM to 4:45 PM	2	400				420	13		2	3							840
4:45 PM to 5:00 PM	2	566				560	15		2	4							1149
5:00 PM to 5:15 PM	2	705				758	19		3	7							1494
5:15 PM to 5:30 PM	2	833				906	26		3	8							1778
5:30 PM to 5:45 PM	3	952				1032	28		3	11							2029
5:45 PM to 6:00 PM	3	1053				1142	32		3	14							2247
<b>TOTAL BY PERIOD</b>																	
4:00 PM to 4:15 PM	0	1	139	0	0	0	144	5	0	0	0	1	0	0	0	0	290
4:15 PM to 4:30 PM	0	0	115	0	0	0	123	4	0	1	0	1	0	0	0	0	244
4:30 PM to 4:45 PM	0	1	146	0	0	0	153	4	0	1	0	1	0	0	0	0	306
4:45 PM to 5:00 PM	0	0	166	0	0	0	140	2	0	0	0	1	0	0	0	0	309
5:00 PM to 5:15 PM	0	0	139	0	0	0	198	4	0	1	0	3	0	0	0	0	345
5:15 PM to 5:30 PM	0	0	128	0	0	0	148	7	0	0	0	1	0	0	0	0	284
5:30 PM to 5:45 PM	0	1	119	0	0	0	126	2	0	0	0	3	0	0	0	0	251
5:45 PM to 6:00 PM	0	0	101	0	0	0	110	4	0	0	0	3	0	0	0	0	218
<b>HOURLY TOTALS</b>																	
4:00 PM to 5:00 PM	0	2	566	0	0	0	560	15	0	2	0	4	0	0	0	0	1149
4:15 PM to 5:15 PM	0	1	566	0	0	0	614	14	0	3	0	6	0	0	0	0	1204
4:30 PM to 5:30 PM	0	1	579	0	0	0	639	17	0	2	0	6	0	0	0	0	1244
4:45 PM to 5:45 PM	0	1	552	0	0	0	612	15	0	1	0	8	0	0	0	0	1189
5:00 PM to 6:00 PM	0	1	487	0	0	0	582	17	0	1	0	10	0	0	0	0	1098
<b>PEAK HOUR SUMMARY</b>																	
4:30 PM to 5:30 PM	<b>NORTHBOUND</b>				<b>SOUTHBOUND</b>				<b>EASTBOUND</b>				<b>WESTBOUND</b>				<b>TOTAL</b>
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
<b>VOLUME</b>	0	1	579	0	0	0	639	17	0	2	0	6	0	0	0	0	1244
<b>PHF BY MOVEMENT</b>	0.00	0.25	0.87	0.00	0.00	0.00	0.81	0.61	0.00	0.50	0.00	0.50	0.00	0.00	0.00	0.00	OVERALL
<b>PHF BY APPROACH</b>	0.87				0.81				0.50				0.00				0.90
<b>TRUCK</b>	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
<b>TRUCK VOLUMES</b>	2		2		5		5		0		0		0		0		7
<b>TRUCK PERCENTAGE</b>	0.3%		0.3%		0.8%		0.8%		0.0%		0.0%		0.0%		0.0%		0.6%
<b>BICYCLE</b>	1				0				0				0				1
<b>PEDESTRIAN BY DIR:</b>	0				1				0				0				1
<b>PEDESTRIAN BY LEG</b>	N-LEG				S-LEG				E-LEG				W-LEG				1
	0				0				0				1				1

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HARTNELL AVENUE		<b>SURVEY TIME:</b> 4:00 PM		<b>TO:</b> 6:00 PM	
<b>E-W APPROACH:</b> HENDERSON ROAD		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 4:30 PM to 5:30 PM		↑ NORTH	
<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b>			
PHF = 0.81		PHF = 0.00	
0 5 0 0		5 2	
PHF = 0.50		PHF = 0.87	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
<b>SURVEY DATA</b>																	
4:00 PM to 4:15 PM	0	1				0	0		0	0	0	0					1
4:15 PM to 4:30 PM	0	2				1	0		0	0	0	0					3
4:30 PM to 4:45 PM	0	2				3	0		0	0	0	0					5
4:45 PM to 5:00 PM	0	3				5	0		0	0	0	0					8
5:00 PM to 5:15 PM	0	3				6	0		0	0	0	0					9
5:15 PM to 5:30 PM	0	4				6	0		0	0	0	0					10
5:30 PM to 5:45 PM	0	4				7	0		0	0	0	0					11
5:45 PM to 6:00 PM	0	6				7	0		0	0	0	0					13
<b>TOTAL BY PERIOD</b>																	
4:00 PM to 4:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM to 4:30 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
4:30 PM to 4:45 PM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
4:45 PM to 5:00 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	3
5:00 PM to 5:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:15 PM to 5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30 PM to 5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
5:45 PM to 6:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<b>HOURLY TOTALS</b>																	
4:00 PM to 5:00 PM	0	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	8
4:15 PM to 5:15 PM	0	0	2	0	0	0	6	0	0	0	0	0	0	0	0	0	8
4:30 PM to 5:30 PM	0	0	2	0	0	0	5	0	0	0	0	0	0	0	0	0	7
4:45 PM to 5:45 PM	0	0	2	0	0	0	4	0	0	0	0	0	0	0	0	0	6
5:00 PM to 6:00 PM	0	0	3	0	0	0	2	0	0	0	0	0	0	0	0	0	5

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

4:30 PM to 5:30 PM	<b>NB</b>		<b>SB</b>		<b>EB</b>		<b>WB</b>		<b>OVERALL INTERSECTION</b>
<b>DIRECTION</b>	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
<b>TRUCK VOLUMES</b>	2	2	5	5	0	0	0	0	7
<b>TRUCK PERCENTAGE</b>	0.3%	0.3%	0.8%	0.8%	0.0%	0.0%	0.0%	0.0%	0.6%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: HENDERSON ROAD		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		ARRIVAL / DEPARTURE VOLUMES									
NORTH		N-LEG TOTAL									
WEST - LEG		E-LEG TOTAL									
EAST - LEG		W-LEG TOTAL									
SOUTH - LEG		S-LEG TOTAL									

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
4:00 PM to 4:15 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
4:15 PM to 4:30 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
4:30 PM to 4:45 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
4:45 PM to 5:00 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
5:00 PM to 5:15 PM	0 1 0	0 1 1	0 0 0	0 0 0	3
5:15 PM to 5:30 PM	0 1 0	0 1 1	0 0 0	0 0 0	3
5:30 PM to 5:45 PM	0 1 0	0 2 1	0 0 0	0 0 0	4
5:45 PM to 6:00 PM	0 1 0	0 3 1	0 0 0	0 0 0	5
TOTAL BY PERIOD					
4:00 PM to 4:15 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:45 PM to 5:00 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:00 PM to 5:15 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
5:15 PM to 5:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:30 PM to 5:45 PM	0 0 0	0 1 0	0 0 0	0 0 0	1
5:45 PM to 6:00 PM	0 0 0	0 1 0	0 0 0	0 0 0	1
HOURLY TOTALS					
4:00 PM to 5:00 PM	0 0 0	0 1 1	0 0 0	0 0 0	2
4:15 PM to 5:15 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
4:30 PM to 5:30 PM	0 1 0	0 0 0	0 0 0	0 0 0	1
4:45 PM to 5:45 PM	0 1 0	0 1 0	0 0 0	0 0 0	2
5:00 PM to 6:00 PM	0 1 0	0 2 0	0 0 0	0 0 0	3

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4:30 PM TO 5:30 PM		VOLUME BY APPROACH				
BICYCLE		NBT	SBT	EBT	WBT	TOTAL
		1	0	0	0	1

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: HARTNELL AVENUE		DAY: THURSDAY	
E-W APPROACH: HENDERSON ROAD		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES									
HENDERSON ROAD		HARTNELL AVENUE									
LEGEND:		BY LEG:									
BY DIRECTION:		BY LEG:									

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
04:00 PM --- 04:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
04:15 PM --- 04:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
04:30 PM --- 04:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 1	1
04:45 PM --- 05:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 1	1
05:00 PM --- 05:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
05:15 PM --- 05:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
05:30 PM --- 05:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 2	2
05:45 PM --- 06:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 2	2
TOTAL BY PERIOD					
04:00 PM --- 04:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
04:15 PM --- 04:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
04:30 PM --- 04:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 1 1	1
04:45 PM --- 05:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:00 PM --- 05:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:15 PM --- 05:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
05:30 PM --- 05:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
05:45 PM --- 06:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
HOURLY TOTALS					
04:00 PM --- 05:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
04:15 PM --- 05:15 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
04:30 PM --- 05:30 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
04:45 PM --- 05:45 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1
05:00 PM --- 06:00 PM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 1	1

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4:30 PM TO 5:30 PM		VOLUME BY DIRECTION				
PEDESTRIAN		NB	SB	EB	WB	TOTAL
		0	1	0	0	1
VOLUME BY LEG		N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN		0	0	0	1	1

**B. A. Y. M. E. T. R. I. C. S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:45 AM to 8:45 AM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 7:15 AM	61	4	8	1	0	1	0	9	55	72	9	97	4	321			
7:15 AM to 7:30 AM	143	8	13	4	1	3	0	19	129	144	30	216	5	715			
7:30 AM to 7:45 AM	266	8	18	7	3	6	0	28	222	233	64	358	14	1227			
7:45 AM to 8:00 AM	427	12	28	8	4	11	1	59	334	340	105	588	29	1946			
8:00 AM to 8:15 AM	520	16	39	10	6	17	1	82	451	416	141	744	43	2486			
8:15 AM to 8:30 AM	610	25	59	14	6	26	1	109	562	503	183	908	57	3063			
8:30 AM to 8:45 AM	699	25	80	19	6	38	1	121	689	581	217	1076	64	3616			
8:45 AM to 9:00 AM	794	27	95	21	6	49	1	135	810	676	247	1274	74	4209			
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	61	4	8	0	1	0	1	0	9	55	72	0	9	97	4	321
7:15 AM to 7:30 AM	0	82	4	5	0	3	1	2	0	10	74	72	0	21	119	1	394
7:30 AM to 7:45 AM	0	123	0	5	0	3	2	3	0	9	93	89	0	34	142	9	512
7:45 AM to 8:00 AM	0	161	4	10	0	1	1	5	1	31	112	107	0	41	230	15	719
8:00 AM to 8:15 AM	0	93	4	11	0	2	2	6	0	23	117	76	0	36	156	14	540
8:15 AM to 8:30 AM	0	90	9	20	0	4	0	9	0	27	111	87	0	42	164	14	577
8:30 AM to 8:45 AM	0	89	0	21	0	5	0	12	0	12	127	78	0	34	168	7	553
8:45 AM to 9:00 AM	0	95	2	15	0	2	0	11	0	14	121	95	0	30	198	10	593
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	427	12	28	0	8	4	11	1	59	334	340	0	105	588	29	1946
7:15 AM to 8:15 AM	0	459	12	31	0	9	6	16	1	73	396	344	0	132	647	39	2165
7:30 AM to 8:30 AM	0	467	17	46	0	10	5	23	1	90	433	359	0	153	692	52	2348
7:45 AM to 8:45 AM	0	433	17	62	0	12	3	32	1	93	467	348	0	153	718	50	2389
8:00 AM to 9:00 AM	0	367	15	67	0	13	2	38	0	76	476	336	0	142	686	45	2263
<b>PEAK HOUR SUMMARY</b>																	
7:45 AM to 8:45 AM	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR		WBU	WBL	WBT	WBR
VOLUME	0	433	17	62	0	12	3	32	1	93	467	348	0	153	718	50	2389
PHF BY MOVEMENT	0.00	0.67	0.47	0.74	0.00	0.60	0.38	0.67	0.25	0.75	0.92	0.81	0.00	0.91	0.78	0.83	OVERALL
PHF BY APPROACH	0.73			0.69			0.91			0.81			0.83				
TRUCK	IN		OUT		IN		OUT		IN		OUT		IN		OUT		OVERALL
TRUCK VOLUMES	14	4	2	10	39	35	45	51	100								
TRUCK PERCENTAGE	2.7%	2.5%	4.3%	2.0%	4.3%	6.5%	4.9%	4.3%	4.2%								
BICYCLE	0																
PEDESTRIAN BY DIR:	4																
	N-LEG			S-LEG			E-LEG			W-LEG			8				
PEDESTRIAN BY LEG	2		2		0		4		0		4		8				
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**B. A. Y. M. E. T. R. I. C. S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:45 AM to 8:45 AM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL				
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT					
7:00 AM to 7:15 AM	1	0	0	1	0	0	0	1	0	0	3	1	7				
7:15 AM to 7:30 AM	1	1	0	3	0	0	0	3	0	0	7	1	16				
7:30 AM to 7:45 AM	1	1	0	3	0	0	0	4	2	0	9	1	21				
7:45 AM to 8:00 AM	1	1	1	3	0	0	1	9	2	0	15	1	34				
8:00 AM to 8:15 AM	3	1	2	3	0	3	16	3	1	29	1	62					
8:15 AM to 8:30 AM	8	1	4	3	0	3	25	6	3	41	1	95					
8:30 AM to 8:45 AM	10	1	5	5	0	4	32	9	3	51	1	121					
8:45 AM to 9:00 AM	11	1	6	5	2	4	36	15	3	60	3	146					
<b>TOTAL BY PERIOD</b>																	
7:00 AM to 7:15 AM	0	1	0	0	0	1	0	0	0	0	3	1	7				
7:15 AM to 7:30 AM	0	0	1	0	0	2	0	0	0	0	4	0	9				
7:30 AM to 7:45 AM	0	0	0	0	0	0	0	0	0	1	2	0	5				
7:45 AM to 8:00 AM	0	0	0	1	0	0	0	0	0	1	5	0	13				
8:00 AM to 8:15 AM	0	2	0	1	0	0	0	0	0	2	7	1	28				
8:15 AM to 8:30 AM	0	5	0	2	0	0	0	0	0	9	3	0	33				
8:30 AM to 8:45 AM	0	2	0	1	0	2	0	0	0	1	7	3	26				
8:45 AM to 9:00 AM	0	1	0	1	0	0	0	2	0	4	6	0	25				
<b>HOURLY TOTALS</b>																	
7:00 AM to 8:00 AM	0	1	1	1	0	3	0	0	0	1	9	2	0	15	1	34	
7:15 AM to 8:15 AM	0	2	1	2	0	2	0	0	0	3	15	3	0	1	26	0	55
7:30 AM to 8:30 AM	0	7	0	4	0	0	0	0	0	3	22	6	0	3	34	0	79
7:45 AM to 8:45 AM	0	9	0	5	0	2	0	0	0	4	28	7	0	3	42	0	100
8:00 AM to 9:00 AM	0	10	0	5	0	2	0	2	0	3	27	13	0	3	45	2	112
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7:45 AM to 8:45 AM	NB		SB		EB		WB		OVERALL INTERSECTION
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
TRUCK VOLUMES	14	4	2	10	39	35	45	51	100
TRUCK PERCENTAGE	2.7%	2.5%	4.3%	2.0%	4.3%	6.5%	4.9%	4.3%	4.2%

**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:45 AM TO 8:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 3		S-LEG TOTAL: 0	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 0 0	0 0 1	0 0 0	0 1 0	2
8:30 AM to 8:45 AM	0 0 0	0 0 1	0 1 0	0 1 0	3
8:45 AM to 9:00 AM	0 1 0	0 0 1	0 1 0	0 1 0	4
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 0 0	0 0 1	0 0 0	0 1 0	2
8:30 AM to 8:45 AM	0 0 0	0 0 0	0 1 0	0 0 0	1
8:45 AM to 9:00 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 8:30 AM	0 0 0	0 0 1	0 0 0	0 1 0	2
7:45 AM to 8:45 AM	0 0 0	0 0 1	0 1 0	0 1 0	3
8:00 AM to 9:00 AM	0 1 0	0 0 1	0 1 0	0 1 0	4

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7:45 AM TO 8:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 3		S-LEG TOTAL: 0	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 0 0	0 0 1	0 0 0	0 1 0	2
8:30 AM to 8:45 AM	0 0 0	0 0 1	0 1 0	0 1 0	3
8:45 AM to 9:00 AM	0 1 0	0 0 1	0 1 0	0 1 0	4

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**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:45 AM TO 08:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 4		S-LEG TOTAL: 1	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:30 AM --- 07:45 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:45 AM --- 08:00 AM	0 3 0 0	0 0 0 0	1 2 0 0	2 2 0 0	8
08:00 AM --- 08:15 AM	1 3 0 0	0 0 0 0	1 2 2 0	2 0 0 0	9
08:15 AM --- 08:30 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:30 AM --- 08:45 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:45 AM --- 09:00 AM	4 3 0 0	0 0 0 0	3 4 7 0	7 0 0 0	21
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 1 0 0	0 0 0 0	0 2 0 0	0 0 0 0	3
07:30 AM --- 07:45 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:45 AM --- 08:00 AM	0 1 0 0	0 0 0 0	1 0 2 0	2 0 0 0	4
08:00 AM --- 08:15 AM	1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
08:15 AM --- 08:30 AM	0 0 0 0	0 0 0 0	1 0 2 0	2 0 0 0	3
08:30 AM --- 08:45 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
08:45 AM --- 09:00 AM	3 0 0 0	0 0 0 0	1 2 3 0	3 0 0 0	9
HOURLY TOTALS					
07:00 AM --- 08:00 AM	0 3 0 0	0 0 0 0	1 2 2 0	2 0 0 0	8
07:15 AM --- 08:15 AM	1 2 0 0	0 0 0 0	1 2 2 0	2 0 0 0	8
07:30 AM --- 08:30 AM	1 1 0 0	0 0 0 0	2 0 4 0	4 0 0 0	8
07:45 AM --- 08:45 AM	1 1 0 0	0 0 0 0	2 0 4 0	4 0 0 0	8
08:00 AM --- 09:00 AM	4 0 0 0	0 0 0 0	2 2 5 0	5 0 0 0	13

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7:45 AM TO 8:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 4		S-LEG TOTAL: 1	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
07:00 AM --- 07:15 AM	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:30 AM --- 07:45 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:45 AM --- 08:00 AM	0 3 0 0	0 0 0 0	1 2 0 0	2 2 0 0	8
08:00 AM --- 08:15 AM	1 3 0 0	0 0 0 0	1 2 2 0	2 0 0 0	9
08:15 AM --- 08:30 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:30 AM --- 08:45 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:45 AM --- 09:00 AM	4 3 0 0	0 0 0 0	3 4 7 0	7 0 0 0	21

Tel: (510) 232-1271      Fax: (510) 232-1272

7:45 AM TO 8:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 4		S-LEG TOTAL: 1	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
07:00 AM --- 07:15 AM	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:30 AM --- 07:45 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:45 AM --- 08:00 AM	0 3 0 0	0 0 0 0	1 2 0 0	2 2 0 0	8
08:00 AM --- 08:15 AM	1 3 0 0	0 0 0 0	1 2 2 0	2 0 0 0	9
08:15 AM --- 08:30 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:30 AM --- 08:45 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:45 AM --- 09:00 AM	4 3 0 0	0 0 0 0	3 4 7 0	7 0 0 0	21

Tel: (510) 232-1271      Fax: (510) 232-1272

7:45 AM TO 8:45 AM		NORTH	
		ARRIVAL / DEPARTURE VOLUMES	
N-LEG TOTAL: 1		E-LEG TOTAL: 2	
W-LEG TOTAL: 4		S-LEG TOTAL: 1	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
07:00 AM --- 07:15 AM	0 1 0 0	0 0 0 0	0 0 0 0	0 0 0 0	1
07:15 AM --- 07:30 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:30 AM --- 07:45 AM	0 2 0 0	0 0 0 0	0 2 0 0	0 0 0 0	4
07:45 AM --- 08:00 AM	0 3 0 0	0 0 0 0	1 2 0 0	2 2 0 0	8
08:00 AM --- 08:15 AM	1 3 0 0	0 0 0 0	1 2 2 0	2 0 0 0	9
08:15 AM --- 08:30 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:30 AM --- 08:45 AM	1 3 0 0	0 0 0 0	2 2 4 0	4 0 0 0	12
08:45 AM --- 09:00 AM	4 3 0 0	0 0 0 0	3 4 7 0	7 0 0 0	21

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
4:00 PM to 4:15 PM	89	5	44	15	5	13	0	13	181	117	23	182	11	698
4:15 PM to 4:30 PM	174	6	75	24	11	30	0	19	368	220	43	347	22	1339
4:30 PM to 4:45 PM	279	10	115	42	17	44	1	23	535	345	69	492	27	1999
4:45 PM to 5:00 PM	388	12	167	57	18	67	1	31	686	466	91	641	36	2661
5:00 PM to 5:15 PM	474	15	220	74	26	118	2	43	915	627	119	802	46	3481
5:15 PM to 5:30 PM	573	19	244	83	29	136	2	50	1090	749	148	950	55	4128
5:30 PM to 5:45 PM	651	21	283	91	33	151	2	55	1241	849	173	1089	64	4703
5:45 PM to 6:00 PM	714	22	323	95	38	162	2	60	1363	944	188	1218	69	5198

TOTAL BY PERIOD																	
4:00 PM to 4:15 PM	0	89	5	44	0	15	5	13	0	13	181	117	0	23	182	11	698
4:15 PM to 4:30 PM	0	85	1	31	0	9	6	17	0	6	187	103	0	20	165	11	641
4:30 PM to 4:45 PM	0	105	4	40	0	18	6	14	1	4	167	125	0	26	145	5	660
4:45 PM to 5:00 PM	0	109	2	52	0	15	1	23	0	8	151	121	0	22	149	9	662
5:00 PM to 5:15 PM	0	86	3	53	0	17	8	51	1	12	229	161	0	28	161	10	820
5:15 PM to 5:30 PM	0	99	4	24	0	9	3	18	0	7	175	122	0	29	148	9	647
5:30 PM to 5:45 PM	0	78	2	39	0	8	4	15	0	5	151	100	0	25	139	9	575
5:45 PM to 6:00 PM	0	63	1	40	0	4	5	11	0	5	122	95	0	15	129	5	495

HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	388	12	167	0	57	18	67	1	31	686	466	0	91	641	36	2661
4:15 PM to 5:15 PM	0	385	10	176	0	59	21	105	2	30	734	510	0	96	620	35	2783
4:30 PM to 5:30 PM	0	399	13	169	0	59	18	106	2	31	722	529	0	105	603	33	2789
4:45 PM to 5:45 PM	0	372	11	168	0	49	16	107	1	32	706	504	0	104	597	37	2704
5:00 PM to 6:00 PM	0	326	10	156	0	38	20	95	1	29	677	478	0	97	577	33	2537

PEAK HOUR SUMMARY																
4:30 PM to 5:30 PM	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL			
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR
VOLUME	0	399	13	169	0	59	18	106	2	31	722	529	0	105	603	33
PHF BY MOVEMENT	0.00	0.92	0.81	0.80	0.00	0.82	0.56	0.52	0.50	0.65	0.79	0.82	0.00	0.91	0.94	0.83
PHF BY APPROACH	0.89			0.60			0.80			0.93			0.85			
TRUCK	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	OVERALL	
TRUCK VOLUMES	2	0	0	5	15	13	18	17	35	18	17	35	35	17	35	
TRUCK PERCENTAGE	0.3%	0.0%	0.0%	0.8%	1.2%	1.4%	2.4%	1.5%	1.3%	2.4%	1.5%	1.3%	1.3%	1.5%	1.3%	
BICYCLE	2	0	0	0	0	0	0	0	0	0	0	0	0	0	5	
PEDESTRIAN BY DIR:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	
	N-LEG			S-LEG			E-LEG			W-LEG						
PEDESTRIAN BY LEG	4			4			0			0			8			

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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM to 5:30 PM		TRUCK ARRIVAL / DEPARTURE VOLUMES & PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)	

TIME PERIOD	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL	
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT		
4:00 PM to 4:15 PM	0	0	0	1	0	0	0	4	0	0	0	11	0	16
4:15 PM to 4:30 PM	0	1	1	1	0	0	0	0	4	1	0	0	6	13
4:30 PM to 4:45 PM	0	1	1	1	0	0	0	0	14	3	0	21	0	41
4:45 PM to 5:00 PM	0	1	2	1	0	0	0	0	15	4	0	28	0	51
5:00 PM to 5:15 PM	0	1	2	1	0	0	0	0	17	5	0	32	0	58
5:15 PM to 5:30 PM	0	1	3	1	0	0	0	0	19	5	1	34	0	64
5:30 PM to 5:45 PM	0	1	4	1	0	0	0	1	23	6	1	35	0	72
5:45 PM to 6:00 PM	1	1	5	1	0	0	0	1	28	6	1	36	0	80

TOTAL BY PERIOD																
4:00 PM to 4:15 PM	0	0	0	0	1	0	0	0	0	4	0	0	0	11	0	16
4:15 PM to 4:30 PM	0	0	1	1	0	0	0	0	0	4	1	0	0	6	6	13
4:30 PM to 4:45 PM	0	0	0	0	0	0	0	0	0	6	2	0	0	4	0	12
4:45 PM to 5:00 PM	0	0	0	1	0	0	0	0	0	0	1	1	0	0	7	10
5:00 PM to 5:15 PM	0	0	0	0	0	0	0	0	0	0	2	1	0	0	4	7
5:15 PM to 5:30 PM	0	0	0	1	0	0	0	0	0	0	2	0	0	1	2	6
5:30 PM to 5:45 PM	0	0	0	1	0	0	0	0	0	1	4	1	0	0	1	8
5:45 PM to 6:00 PM	0	1	0	1	0	0	0	0	0	5	0	0	0	1	0	8

HOURLY TOTALS																	
4:00 PM to 5:00 PM	0	0	1	2	0	1	0	0	0	0	15	4	0	0	28	0	51
4:15 PM to 5:15 PM	0	0	1	2	0	0	0	0	0	0	13	5	0	0	21	0	42
4:30 PM to 5:30 PM	0	0	0	2	0	0	0	0	0	0	11	4	0	1	17	0	35
4:45 PM to 5:45 PM	0	0	0	3	0	0	0	0	0	1	9	3	0	1	14	0	31
5:00 PM to 6:00 PM	0	1	0	3	0	0	0	0	0	1	13	2	0	1	8	0	29

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4:30 PM to 5:30 PM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	2	0	0	5	15	13	18	17	35
TRUCK PERCENTAGE	0.3%	0.0%	0.0%	0.8%	1.2%	1.4%	2.4%	1.5%	1.3%

**B.A.Y.M.E.T.R.I.C.S.**  
BICYCLE MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HARTNELL AVENUE		SURVEY TIME: 4:00 PM		TO 6:00 PM	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 4:30 PM TO 5:30 PM		ARRIVAL / DEPARTURE VOLUMES	

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
4:00 PM to 4:15 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 0 0	0 1 0	0 0 0	1
4:45 PM to 5:00 PM	0 0 0	0 0 0	0 2 0	0 0 0	2
5:00 PM to 5:15 PM	0 1 1	0 0 0	0 2 0	0 1 0	5
5:15 PM to 5:30 PM	0 1 1	0 0 0	0 2 0	0 1 0	5
5:30 PM to 5:45 PM	0 1 1	0 0 0	0 2 0	0 1 0	5
5:45 PM to 6:00 PM	0 1 1	0 0 0	0 2 1	0 2 0	7
TOTAL BY PERIOD					
4:00 PM to 4:15 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:15 PM to 4:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
4:30 PM to 4:45 PM	0 0 0	0 0 0	0 1 0	0 0 0	1
4:45 PM to 5:00 PM	0 0 0	0 0 0	0 1 0	0 0 0	1
5:00 PM to 5:15 PM	0 1 1	0 0 0	0 0 0	0 1 0	3
5:15 PM to 5:30 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:30 PM to 5:45 PM	0 0 0	0 0 0	0 0 0	0 0 0	0
5:45 PM to 6:00 PM	0 0 0	0 0 0	0 0 1	0 1 0	2
HOURLY TOTALS					
4:00 PM to 5:00 PM	0 0 0	0 0 0	0 2 0	0 0 0	2
4:15 PM to 5:15 PM	0 1 1	0 0 0	0 2 0	0 1 0	5
4:30 PM to 5:30 PM	0 1 1	0 0 0	0 2 0	0 1 0	5
4:45 PM to 5:45 PM	0 1 1	0 0 0	0 1 0	0 1 0	4
5:00 PM to 6:00 PM	0 1 1	0 0 0	0 0 1	0 2 0	5

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4:30 PM to 5:30 PM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	2	0	2	1	5

**B.A.Y.M.E.T.R.I.C.S.**  
PEDESTRIAN MOVEMENT SUMMARY

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016	
N-S APPROACH: HARTNELL AVENUE		DAY: THURSDAY	
E-W APPROACH: CYPRESS AVENUE		JURISDICTION: REDDING	
SURVEY PERIOD: 4:00 PM TO 6:00 PM		FILE: 3609071	

PEAK HOUR 04:30 PM TO 05:30 PM		TOTAL PEDESTRIAN VOLUMES	

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
04:00 PM --- 04:15 PM	1 1 0 0	1 0 0	1 1 1		5
04:15 PM --- 04:30 PM	1 1 0 0	1 2 0	1 1 1		7
04:30 PM --- 04:45 PM	5 1 0 0	4 3 1	1 1 1		15
04:45 PM --- 05:00 PM	5 1 0 0	4 3 1	1 1 1		15
05:00 PM --- 05:15 PM	5 1 0 0	4 3 1	1 1 1		15
05:15 PM --- 05:30 PM	5 1 0 0	4 3 1	1 1 1		15
05:30 PM --- 05:45 PM	5 1 0 0	4 4 1	1 1 1		16
05:45 PM --- 06:00 PM	5 1 0 0	4 4 1	1 1 1		16
TOTAL BY PERIOD					
04:00 PM --- 04:15 PM	1 1 0 0	1 0 0	1 1 1		5
04:15 PM --- 04:30 PM	0 0 0 0	0 2 0	0 0 0		2
04:30 PM --- 04:45 PM	4 0 0 0	3 1 0	0 0 0		8
04:45 PM --- 05:00 PM	0 0 0 0	0 0 0	0 0 0		0
05:00 PM --- 05:15 PM	0 0 0 0	0 0 0	0 0 0		0
05:15 PM --- 05:30 PM	0 0 0 0	0 0 0	0 0 0		0
05:30 PM --- 05:45 PM	0 0 0 0	0 1 0	0 0 0		1
05:45 PM --- 06:00 PM	0 0 0 0	0 0 0	0 0 0		0
HOURLY TOTALS					
04:00 PM --- 05:00 PM	5 1 0 0	4 3 1	1 1 1		15
04:15 PM --- 05:15 PM	4 0 0 0	3 3 0	0 0 0		10
04:30 PM --- 05:30 PM	4 0 0 0	3 1 0	0 0 0		8
04:45 PM --- 05:45 PM	0 0 0 0	0 1 0	0 0 0		1
05:00 PM --- 06:00 PM	0 0 0 0	0 0 0	0 0 0		1

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4:30 PM to 5:30 PM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	0	0	5	3	8
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	4	4	0	0	8

**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HENDERSON ROAD		<b>SURVEY TIME:</b> 7:00 AM		<b>TO:</b> 9:00 AM	
<b>E-W APPROACH:</b> PARKVIEW AVENUE		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:15 AM to 8:15 AM		↑ NORTH	
		<b>ARRIVAL / DEPARTURE VOLUMES</b> PHF = 0.50 PHF = 0.53 PHF = 0.38 PHF = 0.88	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	0	1		1	0	0		0	0	0		0	1	0	1	4
7:15 AM to 7:30 AM	0	0	7		2	0	0		0	1	1		0	2	0	2	15
7:30 AM to 7:45 AM	0	0	14		3	0	0		0	2	1		0	5	0	2	27
7:45 AM to 8:00 AM	0	0	22		3	2	0		0	2	1		2	8	0	5	45
8:00 AM to 8:15 AM	0	0	29		3	2	0		0	2	1		2	12	0	5	56
8:15 AM to 8:30 AM	0	0	31		3	2	0		0	2	1		2	14	0	5	60
8:30 AM to 8:45 AM	0	1	36		3	2	0		0	2	1		2	18	0	6	71
8:45 AM to 9:00 AM	0	1	38		3	2	0		0	2	1		2	22	0	6	77
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	4
7:15 AM to 7:30 AM	0	0	0	6	0	1	0	0	0	0	1	1	0	1	0	1	11
7:30 AM to 7:45 AM	0	0	0	7	0	1	0	0	0	0	1	0	0	3	0	0	12
7:45 AM to 8:00 AM	0	0	0	8	0	0	2	0	0	0	0	0	2	3	0	3	18
8:00 AM to 8:15 AM	0	0	0	7	0	0	0	0	0	0	0	0	0	4	0	0	11
8:15 AM to 8:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	4
8:30 AM to 8:45 AM	0	0	1	5	0	0	0	0	0	0	0	0	0	4	0	1	11
8:45 AM to 9:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	4	0	0	6
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	0	0	22	0	3	2	0	0	0	2	1	2	8	0	5	45
7:15 AM to 8:15 AM	0	0	0	28	0	2	2	0	0	0	2	1	2	11	0	4	52
7:30 AM to 8:30 AM	0	0	0	24	0	1	2	0	0	0	1	0	2	12	0	3	45
7:45 AM to 8:45 AM	0	0	1	22	0	0	2	0	0	0	0	0	2	13	0	4	44
8:00 AM to 9:00 AM	0	0	1	16	0	0	0	0	0	0	0	0	0	14	0	1	32
PEAK HOUR SUMMARY																	
7:15 AM to 8:15 AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	
VOLUME	0	0	0	28	0	2	2	0	0	0	2	1	2	11	0	4	52
PHF BY MOVEMENT	0.00	0.00	0.00	0.88	0.00	0.50	0.25	0.00	0.00	0.00	0.50	0.25	0.25	0.69	0.00	0.33	OVERALL
PHF BY APPROACH	0.88				0.50				0.38				0.53				0.72
TRUCK	IN	OUT			IN	OUT			IN	OUT			IN	OUT			OVERALL
TRUCK VOLUMES	2	1			0	2			0	2			3	0			5
TRUCK PERCENTAGE	7.1%	25.0%			0.0%	14.3%			0.0%	5.9%			17.6%	0.0%			9.6%
BICYCLE	0				0				0				0				0
PEDESTRIAN BY DIR:	2				1				0				0				3
	N-LEG				S-LEG				E-LEG				W-LEG				
PEDESTRIAN BY LEG	0				0				3				0				3
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**B.A.Y.M.E.T.R.I.C.S.**  
**INTERSECTION TRUCK TURNING MOVEMENT SUMMARY**

<b>PROJECT:</b> TRAFFIC COUNTS IN REDDING		<b>SURVEY DATE:</b> 9/15/2016		<b>DAY:</b> THURSDAY	
<b>N-S APPROACH:</b> HENDERSON ROAD		<b>SURVEY TIME:</b> 7:00 AM		<b>TO:</b> 9:00 AM	
<b>E-W APPROACH:</b> PARKVIEW AVENUE		<b>JURISDICTION:</b> REDDING		<b>FILE:</b> 3609071	

<b>PEAK HOUR</b> 7:15 AM to 8:15 AM		↑ NORTH	
		<b>TRUCK ARRIVAL / DEPARTURE VOLUMES &amp; PERCENTAGE (TOTAL TRUCK PERCENTAGE IN RED)</b> 0.0% 25.0% 0 1 0.0% 17.6% 0 3 0.0% 5.9% 2 2 14.3% 7.1%	

TIME PERIOD	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	U-TURN	LEFT	THRU	RIGHT	
SURVEY DATA																	
7:00 AM to 7:15 AM	0	0	0		1	0	0		0	0	0		0	0	0		1
7:15 AM to 7:30 AM	0	0	0		1	0	0		0	0	0		0	1	0	1	3
7:30 AM to 7:45 AM	0	0	2		1	0	0		0	0	0		1	0	1	0	5
7:45 AM to 8:00 AM	0	0	2		1	0	0		0	0	0		1	0	1	0	5
8:00 AM to 8:15 AM	0	0	2		1	0	0		0	0	0		2	0	1	0	6
8:15 AM to 8:30 AM	0	0	2		1	0	0		0	0	0		2	0	1	0	6
8:30 AM to 8:45 AM	0	0	2		1	0	0		0	0	0		2	0	1	0	6
8:45 AM to 9:00 AM	0	0	2		1	0	0		0	0	0		2	0	1	0	6
TOTAL BY PERIOD																	
7:00 AM to 7:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:15 AM to 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
7:30 AM to 7:45 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
7:45 AM to 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM to 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:15 AM to 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM to 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM to 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HOURLY TOTALS																	
7:00 AM to 8:00 AM	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	1	5
7:15 AM to 8:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	2	0	1	5
7:30 AM to 8:30 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	3
7:45 AM to 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
8:00 AM to 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
TEL: (510) 232 - 1271 FAX: (510) 232 - 1272																	

7:15 AM to 8:15 AM	NB		SB		EB		WB		OVERALL
DIRECTION	IN	OUT	IN	OUT	IN	OUT	IN	OUT	INTERSECTION
TRUCK VOLUMES	2	1	0	2	0	2	3	0	5
TRUCK PERCENTAGE	7.1%	25.0%	0.0%	14.3%	0.0%	5.9%	17.6%	0.0%	9.6%



**B.A.Y.M.E.T.R.I.C.S.**  
**BICYCLE MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HENDERSON ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 7:15 AM TO 8:15 AM		ARRIVAL / DEPARTURE VOLUMES									
NORTH		N-LEG TOTAL									
WEST - LEG		E-LEG TOTAL									
EAST - LEG		W-LEG TOTAL									
SOUTH - LEG		S-LEG TOTAL									

TIME PERIOD	NB (SOUTH - LEG)	SB (NORTH - LEG)	EB (WEST - LEG)	WB (EAST - LEG)	TOTAL
From To	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	LEFT THRU RIGHT	
SURVEY DATA					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:30 AM to 8:45 AM	0 1 0	0 0 0	0 0 0	0 0 1	2
8:45 AM to 9:00 AM	0 1 1	0 0 0	0 0 0	0 0 1	3
TOTAL BY PERIOD					
7:00 AM to 7:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 7:30 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 7:45 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:45 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:00 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
8:15 AM to 8:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
8:30 AM to 8:45 AM	0 0 0	0 0 0	0 0 0	0 0 1	1
8:45 AM to 9:00 AM	0 0 1	0 0 0	0 0 0	0 0 1	1
HOURLY TOTALS					
7:00 AM to 8:00 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:15 AM to 8:15 AM	0 0 0	0 0 0	0 0 0	0 0 0	0
7:30 AM to 8:30 AM	0 1 0	0 0 0	0 0 0	0 0 0	1
7:45 AM to 8:45 AM	0 1 0	0 0 0	0 0 0	0 0 1	2
8:00 AM to 9:00 AM	0 1 1	0 0 0	0 0 0	0 0 1	3

TEL: (510) 232 - 1271      FAX: (510) 232 - 1272

7:15 AM to 8:15 AM					
VOLUME BY APPROACH	NBT	SBT	EBT	WBT	TOTAL
BICYCLE	0	0	0	0	0

**B.A.Y.M.E.T.R.I.C.S.**  
**PEDESTRIAN MOVEMENT SUMMARY**

PROJECT: TRAFFIC COUNTS IN REDDING		SURVEY DATE: 9/15/2016		DAY: THURSDAY	
N-S APPROACH: HENDERSON ROAD		SURVEY TIME: 7:00 AM		TO 9:00 AM	
E-W APPROACH: PARKVIEW AVENUE		JURISDICTION: REDDING		FILE: 3609071	

PEAK HOUR 07:15 AM TO 08:15 AM		TOTAL PEDESTRIAN VOLUMES									
NORTH		N-LEG									
WEST - LEG		E-LEG									
EAST - LEG		W-LEG									
SOUTH		S-LEG									

TIME PERIOD	NORTH X-WALK	EAST X-WALK	SOUTH X-WALK	WEST X-WALK	TOTAL
From To	A B C D	E F	G H		
SURVEY DATA					
07:00 AM --- 07:15 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:45 AM --- 08:00 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
08:00 AM --- 08:15 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:15 AM --- 08:30 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:30 AM --- 08:45 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:45 AM --- 09:00 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
TOTAL BY PERIOD					
07:00 AM --- 07:15 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:15 AM --- 07:30 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:30 AM --- 07:45 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:45 AM --- 08:00 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
08:00 AM --- 08:15 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:15 AM --- 08:30 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:30 AM --- 08:45 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:45 AM --- 09:00 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
HOURLY TOTALS					
07:00 AM --- 08:00 AM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0
07:15 AM --- 08:15 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
07:30 AM --- 08:30 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
07:45 AM --- 08:45 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3
08:00 AM --- 09:00 AM	0 0 1 2	0 0 0 0	0 0 0 0	0 0 0 0	3

Tel: (510) 232-1271      Fax: (510) 232-1272

7:15 AM to 8:15 AM					
VOLUME BY DIRECTION	NB	SB	EB	WB	TOTAL
PEDESTRIAN	2	1	0	0	3
VOLUME BY LEG	N-LEG	S-LEG	E-LEG	W-LEG	TOTAL
PEDESTRIAN	0	0	3	0	3

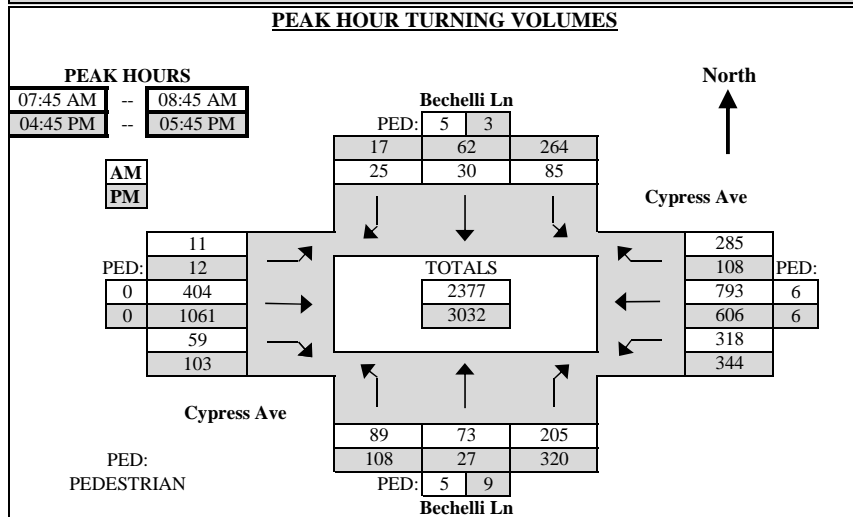




# INTERSECTION TURNING MOVEMENT TRAFFIC VOLUME SUMMARY



<b>PROJECT NAME:</b>		<b>SURVEY DATE:</b> 11/16/16 AM / 11/16/16 PM		<b>FILE:</b> T2245TCS002.xlsx	
<b>PROJECT NO:</b>		<b>TC No:</b>		<b>DAY OF WEEK:</b> Wednesday / Wednesday	
<b>NB LEG:</b> Bechelli Ln		<b>SB LEG:</b> Bechelli Ln		<b>EB LEG:</b> Cypress Ave	
				<b>WB LEG:</b> Cypress Ave	



**PEAK HOUR VOLUMES PER LEG**

**Intersection Totals**

% Trucks	1.6	0.5
PHF	0.81	0.91

PHF	0.83	0.66	0.80	0.74
% Trck	4.3	0.3	1.1	0.7
VOL	140	343	369	147

PHF	0.77	1.3	907	1396	1.3	0.74
% Trck	0.94	0.4	731	1058	0.3	0.90
VOL	0.90	1.3	474	694	1.4	0.92
PHF	0.77	0.7	1176	1645	0.5	0.83

VOL	407	509	367	455
% Trck	2.9	0.4	2.2	0.7
PHF	0.75	0.85	0.88	0.95

**SUMMARY OF MORNING (AM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES Car Trk	
	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk		
<b>RAW SURVEY DATA</b>														
07:00 AM -- 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM -- 07:30 AM	17	0	6	0	37	2	60	1	160	4	34	0	21	0
07:30 AM -- 07:45 AM	16	1	15	0	48	3	65	1	191	3	35	0	30	0
07:45 AM -- 08:00 AM	26	0	17	1	60	0	113	1	265	0	94	1	17	0
08:00 AM -- 08:15 AM	27	1	17	1	40	0	67	2	196	1	86	0	19	0
08:15 AM -- 08:30 AM	13	1	25	1	49	2	55	4	164	5	47	0	26	2
08:30 AM -- 08:45 AM	20	1	11	0	54	0	74	2	160	2	57	0	21	0
08:45 AM -- 09:00 AM	27	1	21	1	52	1	95	0	202	0	79	0	38	0
<b>TOTALS</b>	146	5	112	4	340	8	529	11	1722	2	432	1	172	2
<b>PERCENT TRUCKS</b>	3.4%		3.6%		2.4%		2.1%		1.1%		0.2%		1.2%	

**HOURLY TOTALS**

07:00 AM -- 08:00 AM	59	1	38	1	145	5	238	3	616	7	163	1	68	0
07:15 AM -- 08:15 AM	86	2	55	2	185	5	305	5	812	8	249	1	87	0
07:30 AM -- 08:30 AM	82	3	74	3	197	5	300	8	816	9	262	1	92	2
07:45 AM -- 08:45 AM	86	3	70	3	203	2	309	9	785	8	284	1	83	2
08:00 AM -- 09:00 AM	87	4	74	3	195	3	291	8	722	8	269	0	104	2

**SUMMARY OF AFTERNOON (PM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES Car Trk	
	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk	Left Car	Thru Trk	Right Car Trk		
<b>RAW SURVEY DATA</b>														
04:00 PM -- 04:15 PM	31	1	7	0	70	2	96	1	181	1	25	0	61	0
04:15 PM -- 04:30 PM	28	0	8	0	77	0	97	0	152	3	31	0	51	0
04:30 PM -- 04:45 PM	26	0	8	0	76	1	83	0	147	5	23	0	54	0
04:45 PM -- 05:00 PM	28	0	8	0	80	0	73	0	120	0	36	1	48	0
05:00 PM -- 05:15 PM	32	0	4	0	81	1	91	0	155	2	23	0	95	0
05:15 PM -- 05:30 PM	17	0	6	0	77	1	96	0	171	0	27	0	65	0
05:30 PM -- 05:45 PM	30	1	9	0	80	0	84	0	158	0	21	0	56	0
05:45 PM -- 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	192	2	50	0	541	5	620	1	1861	11	186	1	430	0
<b>PERCENT TRUCKS</b>	1.0%		0.0%		0.9%		0.2%		1.0%		0.5%		1.0%	

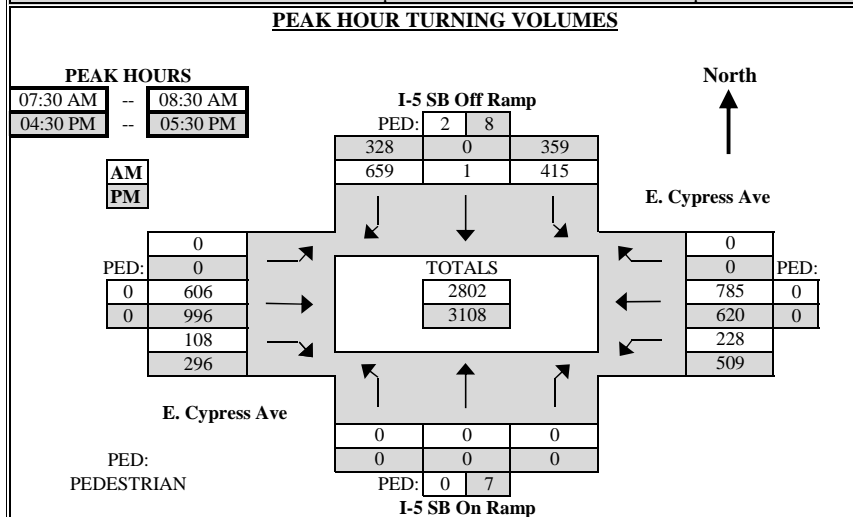
**HOURLY TOTALS**

04:00 PM -- 05:00 PM	113	1	31	0	303	3	349	1	600	9	115	1	214	0
04:15 PM -- 05:15 PM	114	0	28	0	314	2	344	0	574	10	113	1	248	0
04:30 PM -- 05:30 PM	103	0	26	0	314	3	343	0	593	7	109	1	262	0
04:45 PM -- 05:45 PM	107	1	27	0	318	2	344	0	604	2	107	1	264	0
05:00 PM -- 06:00 PM	79	1	19	0	238	2	271	0	484	2	71	0	216	0

# INTERSECTION TURNING MOVEMENT TRAFFIC VOLUME SUMMARY



<b>PROJECT NAME:</b>		<b>SURVEY DATE:</b> 11/8/16 AM / 11/8/16 PM		<b>FILE:</b> T2245TCS002.xlsx	
<b>PROJECT NO:</b>		<b>TC No:</b>		<b>DAY OF WEEK:</b> Tuesday / Tuesday	
<b>NB LEG:</b> I-5 SB On Ramp		<b>SB LEG:</b> I-5 SB Off Ramp		<b>EB LEG:</b> E. Cypress Ave	
				<b>WB LEG:</b> E. Cypress Ave	



**PEAK HOUR VOLUMES PER LEG**

**Intersection Totals**

% Trucks	2.7	0.9
PHF	0.87	0.98

**PHF**

0.86	0.87	0.00	0.00
------	------	------	------

**% Trck VOL**

2.0	1.3	0.0	0.0
1075	687	0	0

**% PHF Trck VOL**

0.86	2.1	1444	1013	3.2	0.85
0.91	0.9	948	1129	1.0	0.90
0.88	3.2	714	1021	2.6	0.84
0.89	0.7	1292	1355	0.7	0.93

**VOL % Trck PHF**

337	805	0	0
5.6	1.2	0.0	0.0
0.88	0.90	0.00	0.00

**SUMMARY OF MORNING (AM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES Car Trk	
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car		
<b>RAW SURVEY DATA</b>														
07:00 AM -- 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM -- 07:30 AM	0	0	0	25	2	121	2	0	0	109	4	0	0	534
07:30 AM -- 07:45 AM	0	0	0	55	2	198	1	0	0	101	3	0	0	686
07:45 AM -- 08:00 AM	0	0	0	56	5	230	6	0	0	127	1	1	0	784
08:00 AM -- 08:15 AM	0	0	0	54	5	174	5	0	0	89	1	0	0	635
08:15 AM -- 08:30 AM	0	0	0	48	3	166	5	0	0	90	3	0	0	621
08:30 AM -- 08:45 AM	0	0	0	50	6	178	3	0	0	72	1	0	0	563
08:45 AM -- 09:00 AM	0	0	0	56	3	178	2	0	0	89	1	0	0	632
<b>TOTALS</b>	0	0	0	344	26	###	24	0	0	677	14	1	0	4455
<b>PERCENT TRUCKS</b>	0.0%	0.0%	0.0%	7.6%	1.9%	0.0%	0.0%	2.1%	0.0%	2.3%	0.0%	3.2%	9.7%	3.1%

**HOURLY TOTALS**

07:00 AM -- 08:00 AM	0	0	0	136	9	549	9	0	0	337	8	1	0	2004
07:15 AM -- 08:15 AM	0	0	0	190	14	723	14	0	0	426	9	1	0	2639
07:30 AM -- 08:30 AM	0	0	0	213	15	768	17	0	0	407	8	1	0	2726
07:45 AM -- 08:45 AM	0	0	0	208	19	748	19	0	0	378	6	1	0	2603
08:00 AM -- 09:00 AM	0	0	0	208	17	696	15	0	0	340	6	0	0	2451

**SUMMARY OF AFTERNOON (PM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES Car Trk	
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car		
<b>RAW SURVEY DATA</b>														
04:00 PM -- 04:15 PM	0	0	0	120	3	162	5	0	0	105	2	0	0	746
04:15 PM -- 04:30 PM	0	0	0	135	0	157	0	0	0	72	1	0	0	722
04:30 PM -- 04:45 PM	0	0	0	89	3	148	0	0	0	96	1	0	0	721
04:45 PM -- 05:00 PM	0	0	0	131	2	158	1	0	0	96	1	0	0	791
05:00 PM -- 05:15 PM	0	0	0	137	1	174	2	0	0	81	1	0	0	782
05:15 PM -- 05:30 PM	0	0	0	145	1	136	1	0	0	82	1	0	0	785
05:30 PM -- 05:45 PM	0	0	0	114	2	116	1	0	0	90	0	0	0	631
05:45 PM -- 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	0	0	0	871	12	###	10	0	0	622	7	0	0	5178
<b>PERCENT TRUCKS</b>	0.0%	0.0%	0.0%	1.4%	1.0%	0.0%	0.0%	1.1%	0.0%	1.7%	0.0%	0.7%	0.7%	1.0%

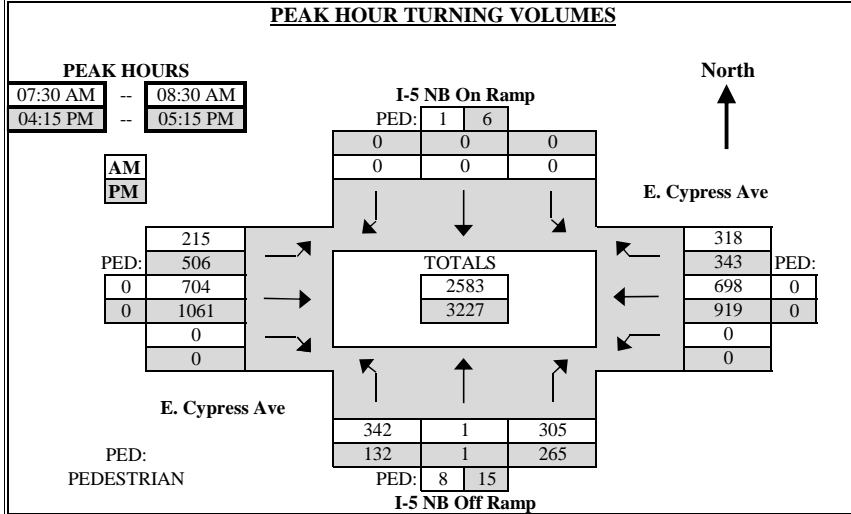
**HOURLY TOTALS**

04:00 PM -- 05:00 PM	0	0	0	475	8	625	6	0	0	369	5	0	0	2980
04:15 PM -- 05:15 PM	0	0	0	492	6	637	3	0	0	345	4	0	0	3016
04:30 PM -- 05:30 PM	0	0	0	502	7	616	4	0	0	355	4	0	0	3079
04:45 PM -- 05:45 PM	0	0	0	527	6	584	5	0	0	349	3	0	0	2989
05:00 PM -- 06:00 PM	0	0	0	396	4	426	4	0	0	253	2	0	0	2198

# INTERSECTION TURNING MOVEMENT TRAFFIC VOLUME SUMMARY



<b>PROJECT NAME:</b>		<b>SURVEY DATE:</b> 11/9/16 AM / 11/9/16 PM		<b>FILE:</b> T2245TCS002.xlsx	
<b>PROJECT NO:</b>		<b>TC No:</b>		<b>DAY OF WEEK:</b> Wednesday / Wednesday	
<b>NB LEG:</b> I-5 NB Off Ramp		<b>SB LEG:</b> I-5 NB On Ramp		<b>EB LEG:</b> E. Cypress Ave	
				<b>WB LEG:</b> E. Cypress Ave	



**PEAK HOUR VOLUMES PER LEG**

Intersection Totals

% Trucks	2.5	1.2
PHF	0.90	0.95

PHF	0.00	0.00	0.90	0.92
% Trck	0.0	0.0	3.9	1.2
VOL	0	0	534	850

PHF	0.91	2.6	1040	1016	2.9	0.86
% Trck	0.94	1.3	1051	1262	1.1	0.94
VOL	0.88	2.4	919	1009	1.7	0.80
PHF	0.94	0.6	1567	1326	1.1	0.94

VOL	0	0	648	398
% Trck	0.0	0.0	2.2	3.5
PHF	0.00	0.00	0.73	0.92

**SUMMARY OF MORNING (AM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES	
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Car	Trk
<b>RAW SURVEY DATA</b>														
07:00 AM -- 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM -- 07:30 AM	59	2	0	68	1	0	142	2	62	2	0	0	27	4
07:30 AM -- 07:45 AM	97	1	0	56	0	0	186	1	108	2	0	0	35	3
07:45 AM -- 08:00 AM	105	2	0	113	2	0	170	4	60	2	0	0	58	4
08:00 AM -- 08:15 AM	72	2	1	68	1	0	153	8	68	2	0	0	51	3
08:15 AM -- 08:30 AM	61	2	0	61	4	0	169	7	73	3	0	0	59	2
08:30 AM -- 08:45 AM	47	0	0	41	1	0	140	3	67	2	0	0	57	3
08:45 AM -- 09:00 AM	68	0	0	47	0	0	178	2	67	2	0	0	64	2
<b>TOTALS</b>	509	9	1	454	9	0	###	27	505	15	0	0	351	21
<b>PERCENT TRUCKS</b>	1.8%	0.0%	2.0%	0.0%	0.0%	2.4%	3.0%	0.0%	0.0%	0.0%	0.0%	6.0%	1.0%	0.0%

**HOURLY TOTALS**

07:00 AM -- 08:00 AM	261	5	0	237	3	0	498	7	230	6	0	0	120	11
07:15 AM -- 08:15 AM	333	7	1	305	4	0	651	15	298	8	0	0	171	14
07:30 AM -- 08:30 AM	335	7	1	298	7	0	678	20	309	9	0	0	203	12
07:45 AM -- 08:45 AM	285	6	1	283	8	0	632	22	268	9	0	0	225	12
08:00 AM -- 09:00 AM	248	4	1	217	6	0	640	20	275	9	0	0	231	10

**SUMMARY OF AFTERNOON (PM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES	
	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Left Car	Thru Trk	Right Car	Car	Trk
<b>RAW SURVEY DATA</b>														
04:00 PM -- 04:15 PM	53	1	0	39	0	0	219	1	64	2	0	0	102	3
04:15 PM -- 04:30 PM	33	2	1	51	3	0	213	2	76	1	0	0	123	1
04:30 PM -- 04:45 PM	26	0	0	74	1	0	250	4	79	2	0	0	107	2
04:45 PM -- 05:00 PM	33	1	0	70	4	0	231	1	92	3	0	0	136	0
05:00 PM -- 05:15 PM	34	3	0	62	0	0	217	1	90	0	0	0	136	1
05:15 PM -- 05:30 PM	26	1	0	47	1	0	183	1	73	0	0	0	103	1
05:30 PM -- 05:45 PM	25	1	0	59	4	0	160	1	92	1	0	0	88	0
05:45 PM -- 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	230	9	1	402	13	0	###	11	566	9	0	0	795	8
<b>PERCENT TRUCKS</b>	3.9%	0.0%	3.2%	0.0%	0.7%	1.6%	0.0%	0.0%	0.0%	0.0%	1.0%	0.9%	0.0%	1.3%

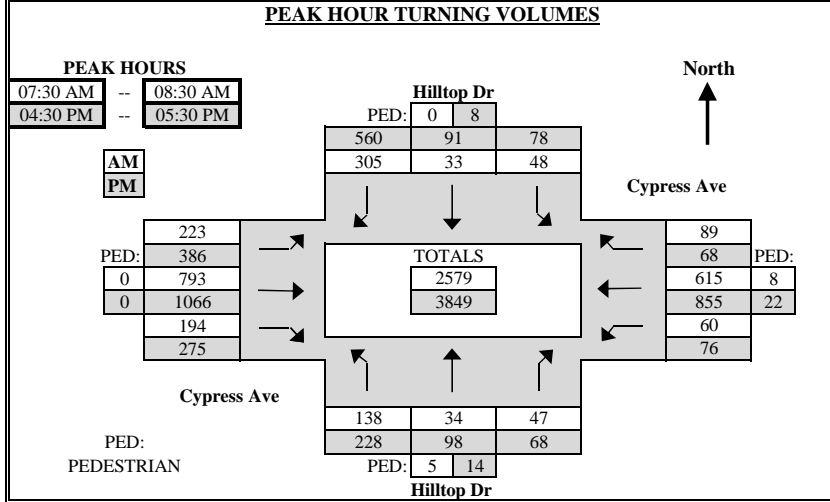
**HOURLY TOTALS**

04:00 PM -- 05:00 PM	145	4	1	234	8	0	913	8	311	8	0	0	468	6
04:15 PM -- 05:15 PM	126	6	1	257	8	0	911	8	337	6	0	0	502	4
04:30 PM -- 05:30 PM	119	5	0	253	6	0	881	7	334	5	0	0	482	4
04:45 PM -- 05:45 PM	118	6	0	238	9	0	791	4	347	4	0	0	463	2
05:00 PM -- 06:00 PM	85	5	0	168	5	0	560	3	255	1	0	0	327	2

# INTERSECTION TURNING MOVEMENT TRAFFIC VOLUME SUMMARY



<b>PROJECT NAME:</b>		<b>SURVEY DATE:</b> 11/10/16 AM / 11/10/16 PM		<b>FILE:</b> T2245TCS002.xlsx	
<b>PROJECT NO:</b>		<b>TC No:</b>		<b>DAY OF WEEK:</b> Thursday / Thursday	
<b>NB LEG:</b> Hilltop Dr		<b>SB LEG:</b> Hilltop Dr		<b>EB LEG:</b> Cypress Ave	
				<b>WB LEG:</b> Cypress Ave	



**PEAK HOUR VOLUMES PER LEG**

**Intersection Totals**

% Trucks		1.8	0.4
PHF		0.93	0.91

PHF		0.94	0.81	0.82	0.93
% Trck VOL		2.8	0.1	0.9	0.2
VOL		386	729	346	552

% PHF		0.90	2.6	1058								
% Trck VOL		0.90	0.4	1643								
VOL		0.90	1.3	1210								
% PHF		0.90	0.5	1727								

VOL		287	442	219	394
% Trck PHF		1.4	1.1	3.7	0.5

**SUMMARY OF MORNING (AM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk					
<b>RAW SURVEY DATA</b>																	
07:00 AM -- 07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM -- 07:30 AM	19	1	6	0	8	0	7	1	113	1	7	0	11	0	9	0	64
07:30 AM -- 07:45 AM	32	4	1	0	8	0	10	0	178	4	32	0	16	0	9	0	64
07:45 AM -- 08:00 AM	34	1	13	0	11	1	33	0	139	2	20	0	14	0	6	0	82
08:00 AM -- 08:15 AM	42	1	10	0	12	0	10	1	123	2	20	0	10	0	10	0	80
08:15 AM -- 08:30 AM	24	0	10	0	14	1	6	0	164	3	17	0	8	0	8	0	60
08:30 AM -- 08:45 AM	31	0	10	0	10	0	11	0	173	3	27	0	12	0	8	0	65
08:45 AM -- 09:00 AM	32	0	12	0	6	2	9	1	157	6	21	1	9	0	12	0	60
<b>TOTALS</b>	214	7	62	0	69	4	86	3	###	21	144	1	80	0	62	0	483
<b>PERCENT TRUCKS</b>	3.3%	0.0%	5.8%	3.5%	2.0%	0.7%	0.0%	3.1%	1.5%	1.4%	2.0%	1.9%					

**HOURLY TOTALS**

07:00 AM -- 08:00 AM	85	6	20	0	27	1	50	1	430	7	59	0	41	0	24	0	218
07:15 AM -- 08:15 AM	127	7	30	0	39	1	60	2	553	9	79	0	51	0	34	0	298
07:30 AM -- 08:30 AM	132	6	34	0	45	2	59	1	604	11	89	0	48	0	33	0	294
07:45 AM -- 08:45 AM	131	2	43	0	47	2	60	1	599	10	84	0	44	0	32	0	287
08:00 AM -- 09:00 AM	129	1	42	0	42	3	36	2	617	14	85	1	39	0	38	0	265

**SUMMARY OF AFTERNOON (PM) TRAFFIC VOLUMES**

TIME PERIOD From To	NORTHBOUND			WESTBOUND			SOUTHBOUND			EASTBOUND			TOTAL VOLUMES				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk	Car Trk					
<b>RAW SURVEY DATA</b>																	
04:00 PM -- 04:15 PM	35	1	20	1	24	0	28	1	181	3	21	0	17	0	15	0	102
04:15 PM -- 04:30 PM	56	0	26	0	18	0	22	0	227	1	15	0	27	0	17	0	123
04:30 PM -- 04:45 PM	44	0	23	0	21	0	17	0	226	1	18	0	20	0	20	0	147
04:45 PM -- 05:00 PM	62	1	21	0	20	0	19	0	185	1	13	0	16	0	21	0	135
05:00 PM -- 05:15 PM	66	0	27	0	10	0	19	0	222	0	12	0	21	0	34	0	169
05:15 PM -- 05:30 PM	54	1	27	0	17	0	21	0	218	2	25	0	21	0	16	0	108
05:30 PM -- 05:45 PM	44	0	26	0	18	0	20	0	203	1	21	0	11	0	14	0	98
05:45 PM -- 06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>	361	3	170	1	128	0	146	1	###	9	125	0	133	0	137	0	882
<b>PERCENT TRUCKS</b>	0.8%	0.6%	0.0%	0.7%	0.6%	0.0%	0.0%	0.3%	0.2%	0.1%	1.4%	0.4%					

**HOURLY TOTALS**

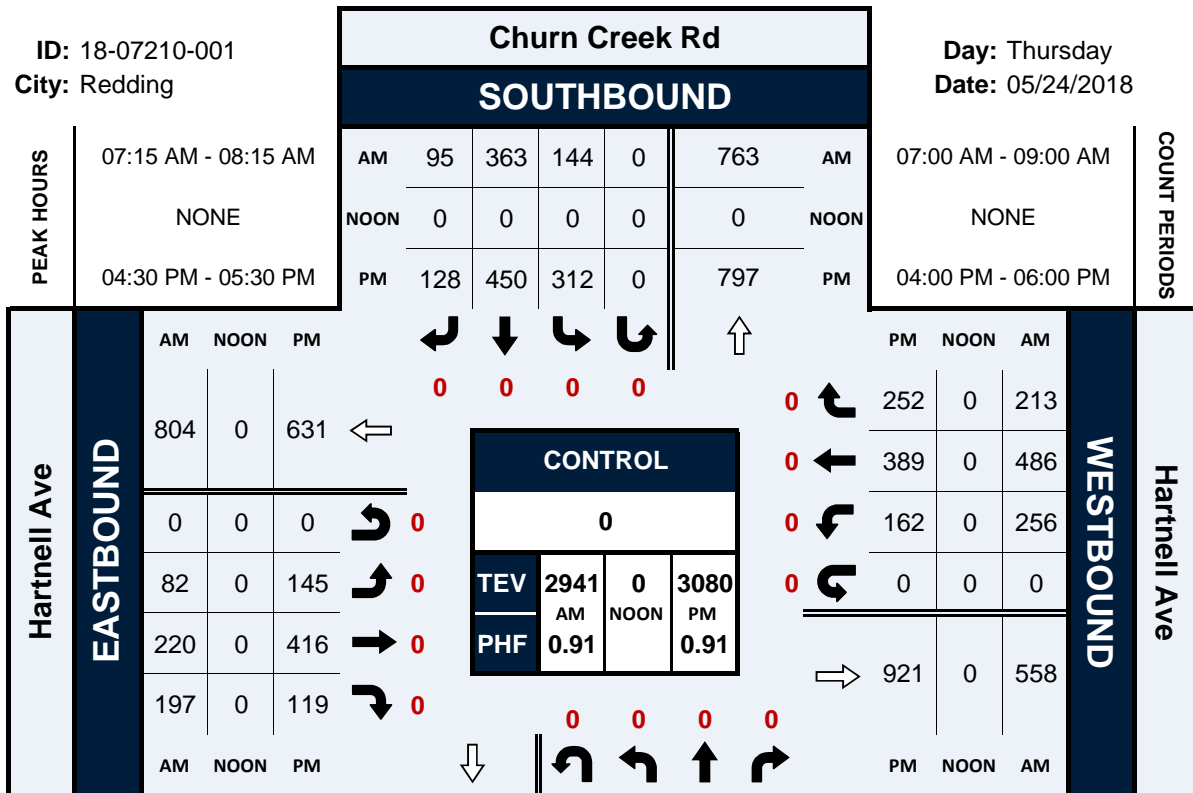
04:00 PM -- 05:00 PM	197	2	90	1	83	0	86	1	819	6	67	0	80	0	73	0	507
04:15 PM -- 05:15 PM	228	1	97	0	69	0	77	0	860	3	58	0	84	0	92	0	574
04:30 PM -- 05:30 PM	226	2	98	0	68	0	76	0	851	4	68	0	78	0	91	0	559
04:45 PM -- 05:45 PM	226	2	101	0	65	0	79	0	828	4	71	0	69	0	85	0	510
05:00 PM -- 06:00 PM	164	1	80	0	45	0	60	0	643	3	58	0	53	0	64	0	375

# Churn Creek Rd & Hartnell Ave

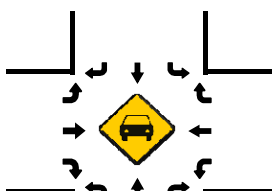
## Peak Hour Turning Movement Count

ID: 18-07210-001  
City: Redding

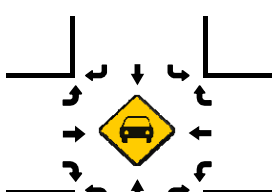
Day: Thursday  
Date: 05/24/2018



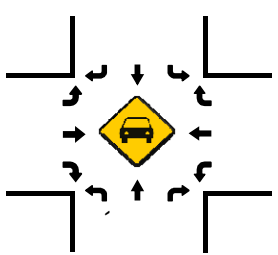
Total Vehicles (AM)



Total Vehicles (NOON)



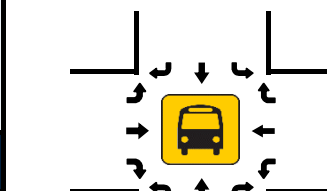
Total Vehicles (PM)



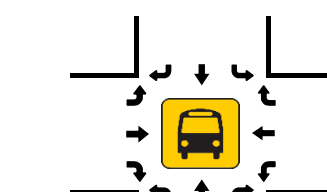
PM	731	0	114	400	193	PM
NOON	0	0	0	0	0	NOON
AM	816	0	223	468	194	AM

**NORTHBOUND**  
Churn Creek Rd

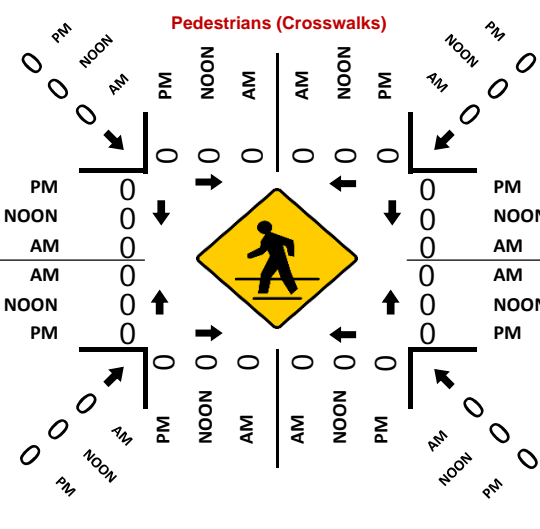
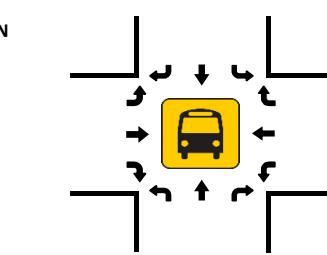
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



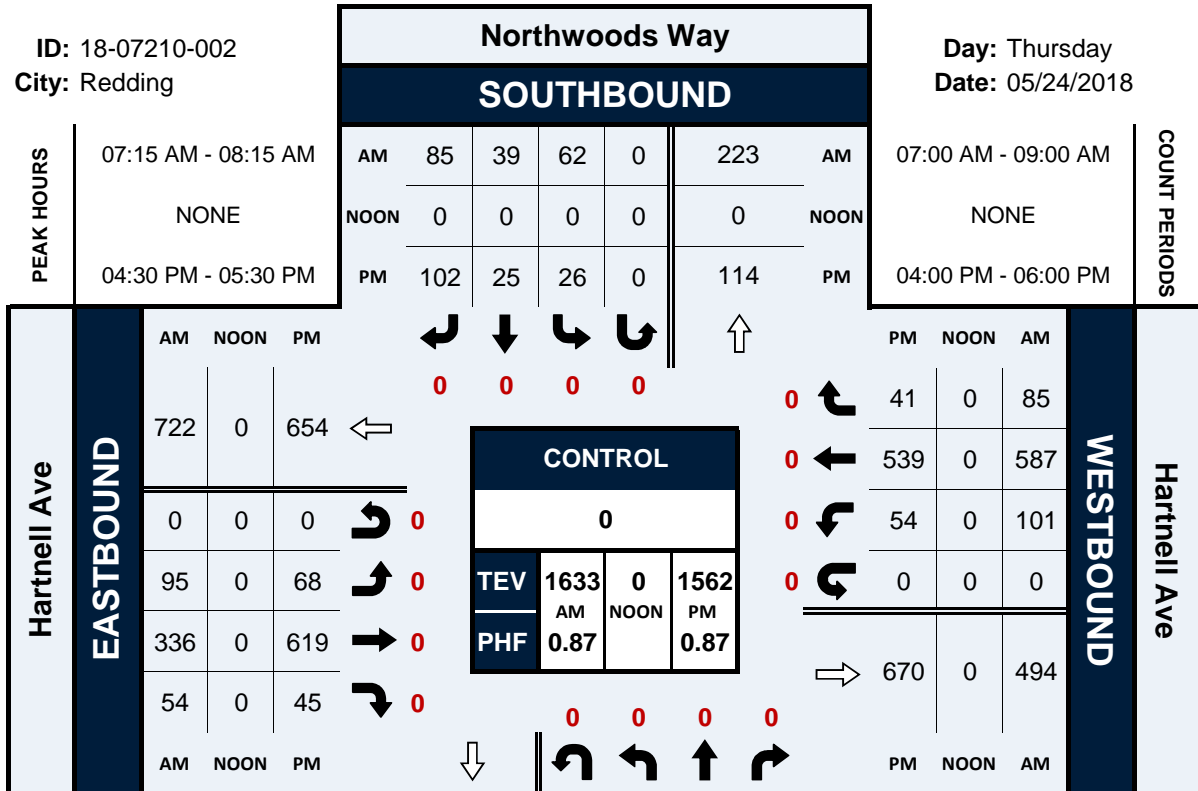


# Northwoods Way & Hartnell Ave

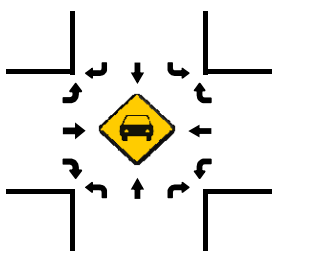
## Peak Hour Turning Movement Count

ID: 18-07210-002  
City: Redding

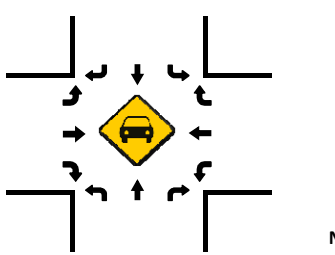
Day: Thursday  
Date: 05/24/2018



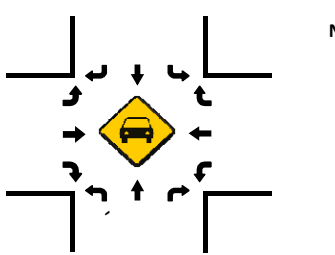
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

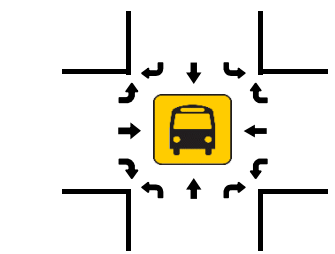


PM	124	0	13	5	25	PM
NOON	0	0	0	0	0	NOON
AM	194	0	50	43	96	AM

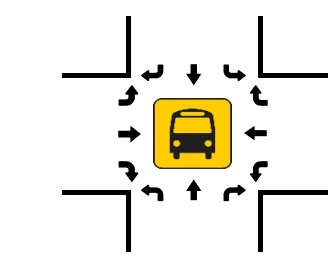
### NORTHBOUND

Northwoods Way

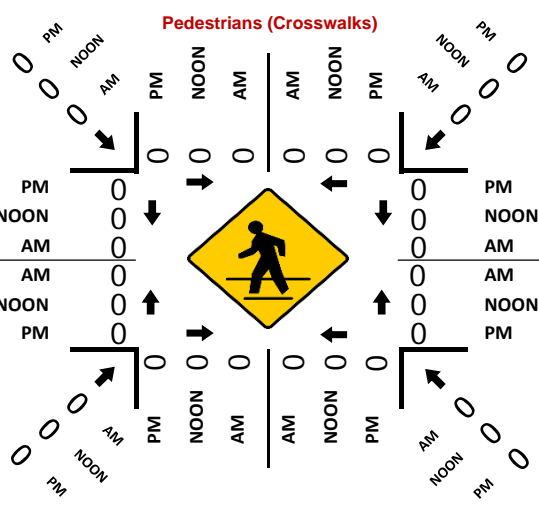
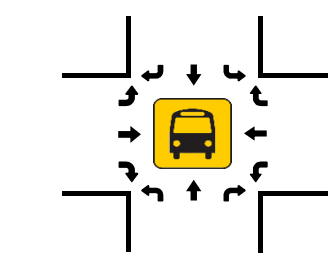
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

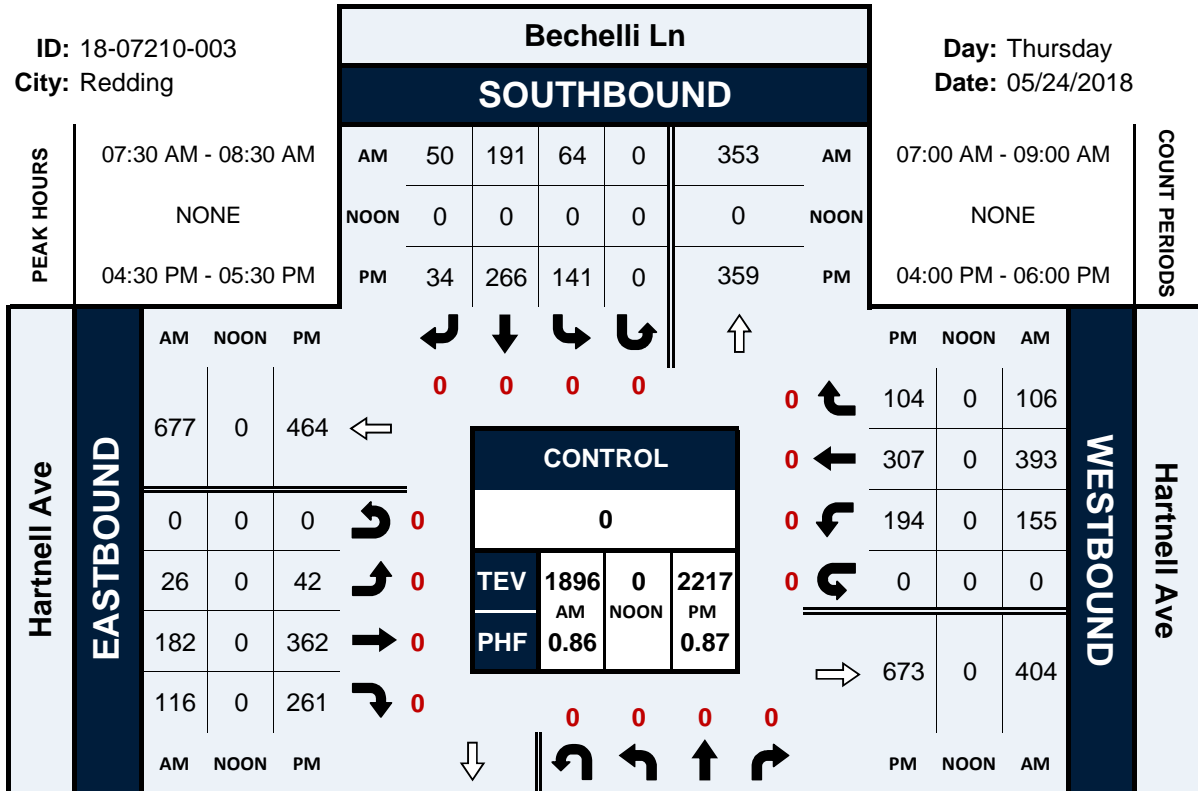


# Bechelli Ln & Hartnell Ave

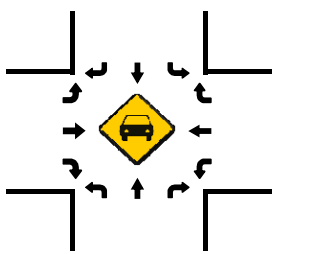
## Peak Hour Turning Movement Count

ID: 18-07210-003  
City: Redding

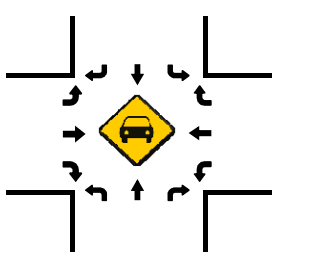
Day: Thursday  
Date: 05/24/2018



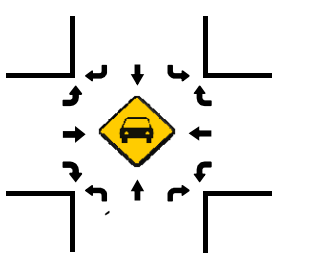
Total Vehicles (AM)



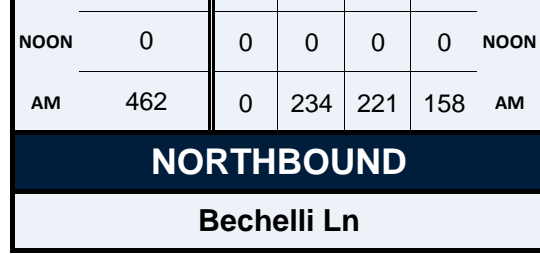
Total Vehicles (NOON)



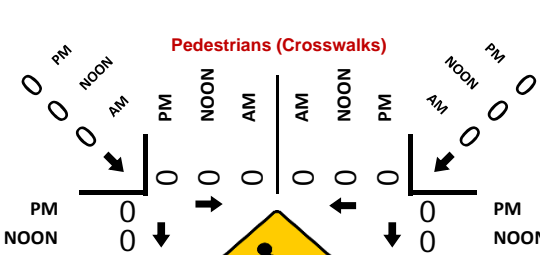
Total Vehicles (PM)



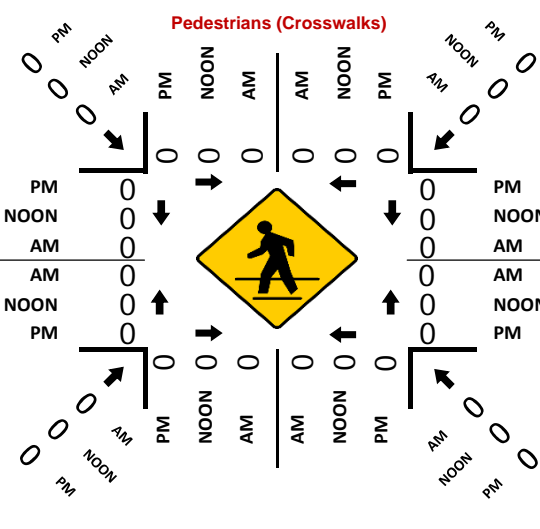
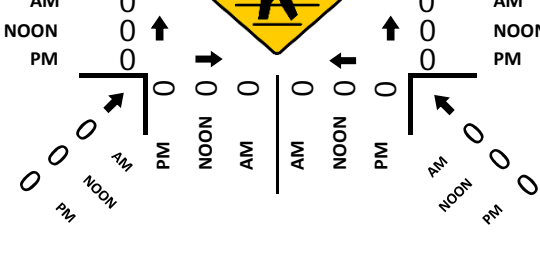
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

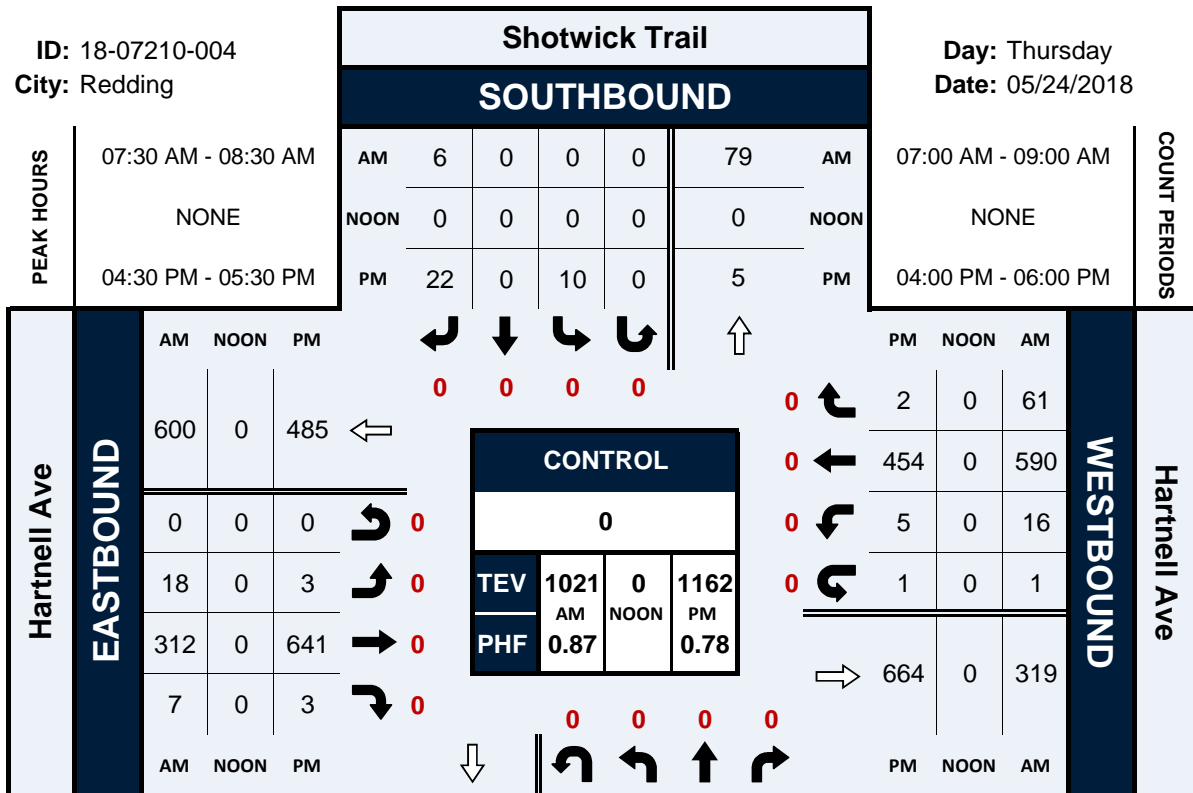


# Shotwick Trail & Hartnell Ave

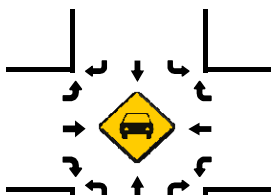
## Peak Hour Turning Movement Count

ID: 18-07210-004  
City: Redding

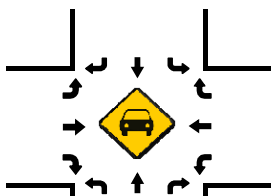
Day: Thursday  
Date: 05/24/2018



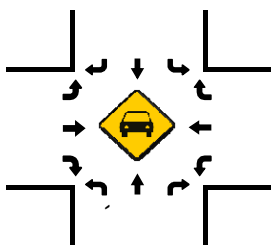
Total Vehicles (AM)



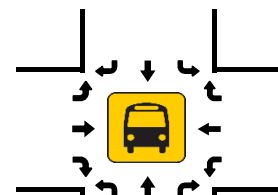
Total Vehicles (NOON)



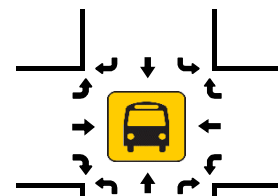
Total Vehicles (PM)



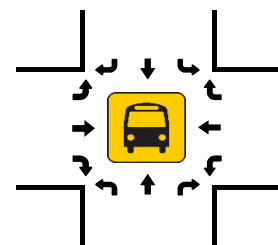
Total Vehicles (AM)



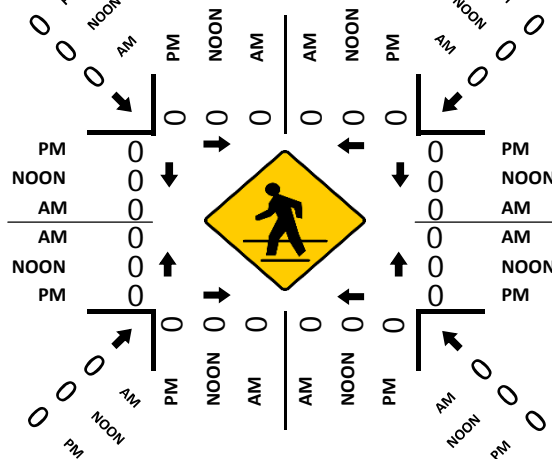
Total Vehicles (NOON)



Total Vehicles (PM)



Pedestrians (Crosswalks)

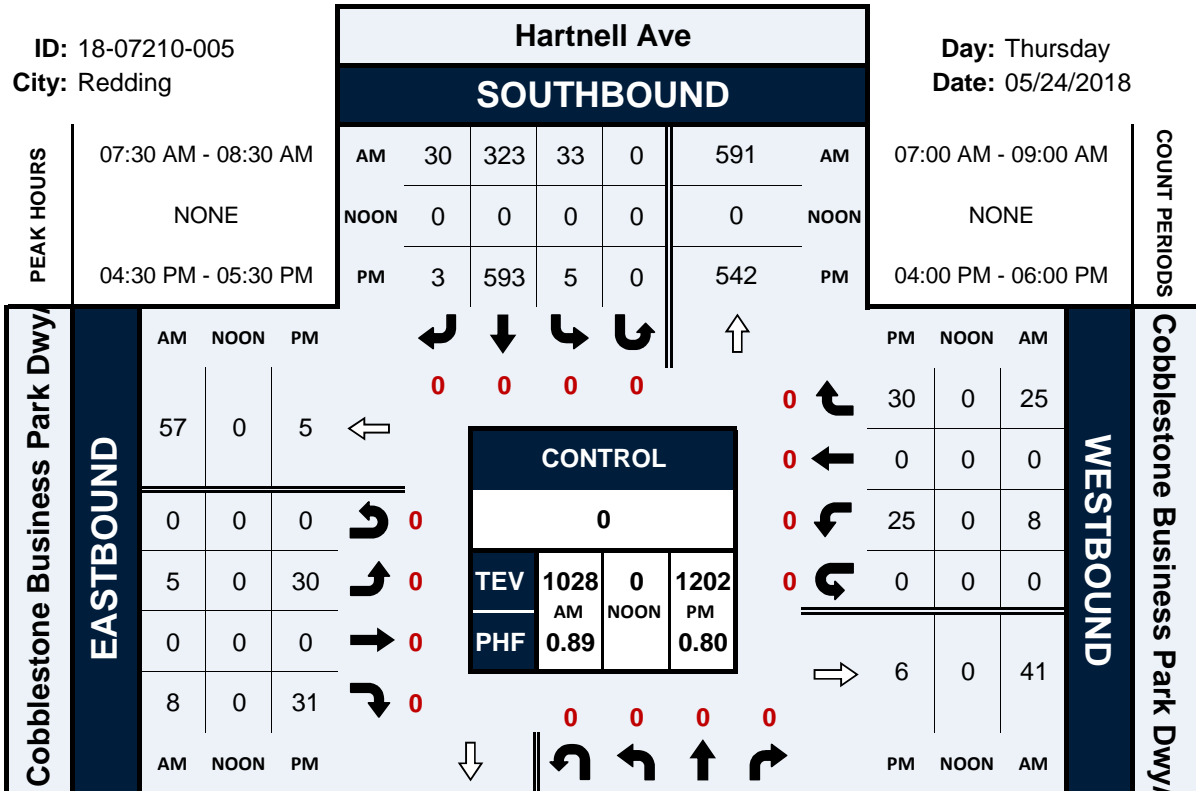


# Hartnell Ave & Cobblestone Business Park Dwy/Veterans Affairs Dwy

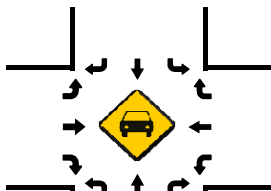
## Peak Hour Turning Movement Count

ID: 18-07210-005  
City: Redding

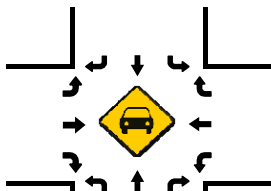
Day: Thursday  
Date: 05/24/2018



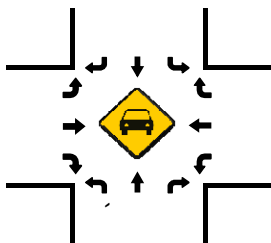
Total Vehicles (AM)



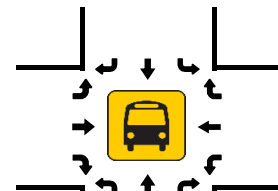
Total Vehicles (NOON)



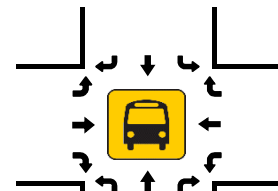
Total Vehicles (PM)



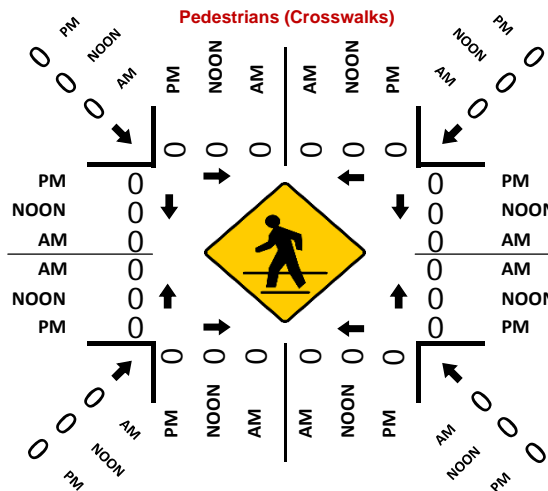
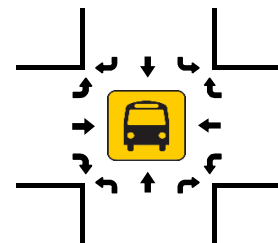
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

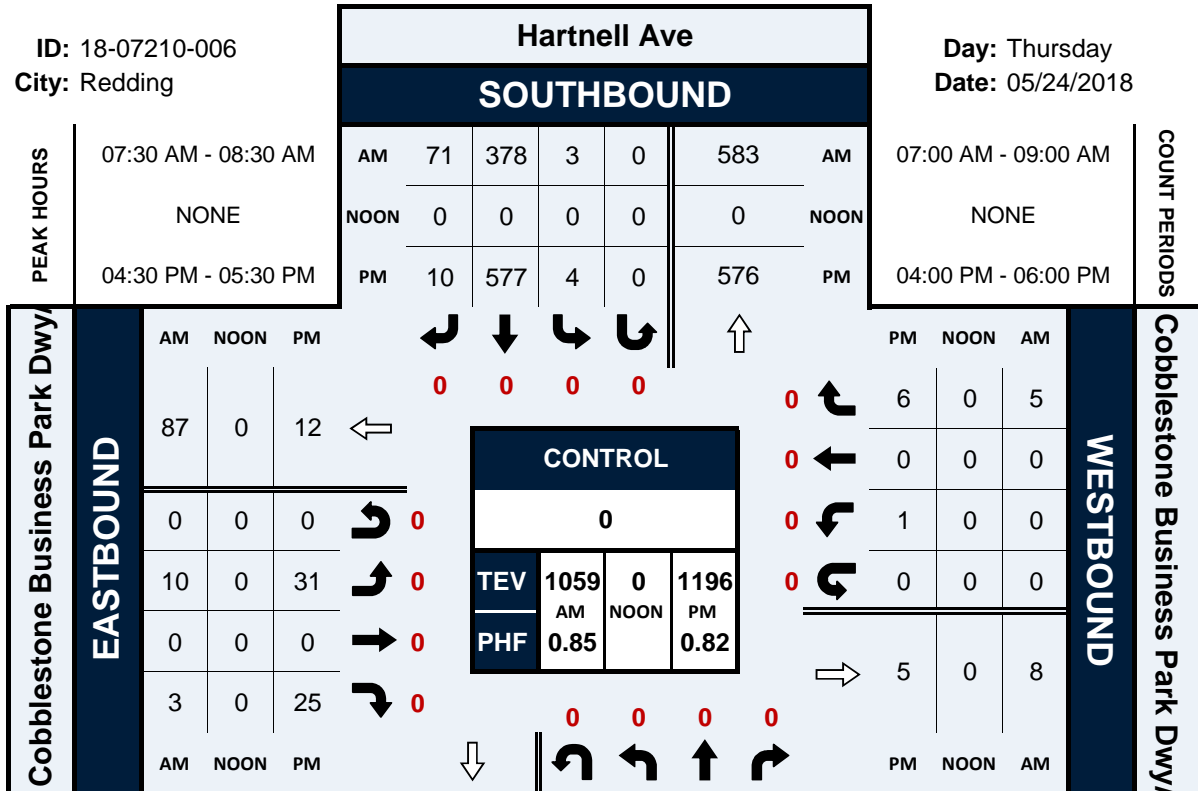


# Hartnell Ave & Cobblestone Business Park Dwy/Retirement Community Dwy

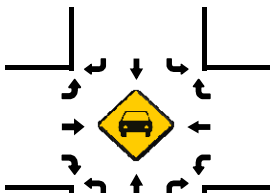
## Peak Hour Turning Movement Count

ID: 18-07210-006  
City: Redding

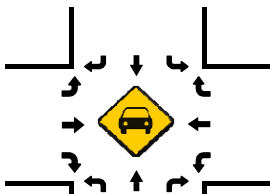
Day: Thursday  
Date: 05/24/2018



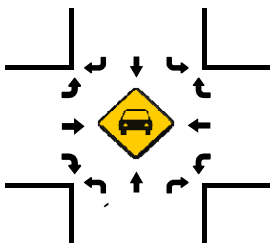
Total Vehicles (AM)



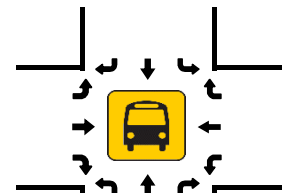
Total Vehicles (NOON)



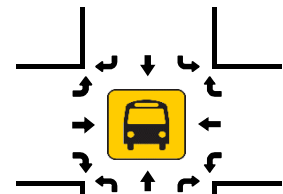
Total Vehicles (PM)



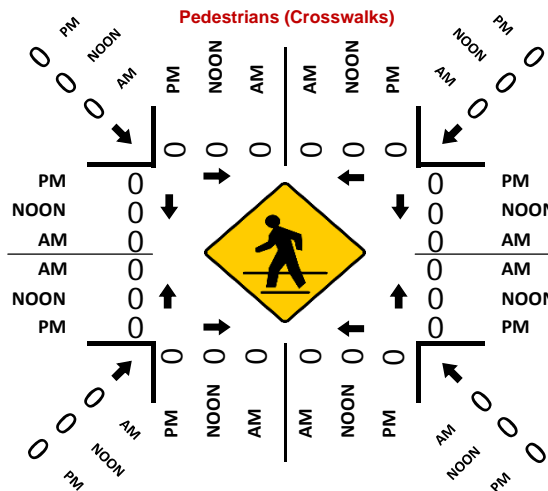
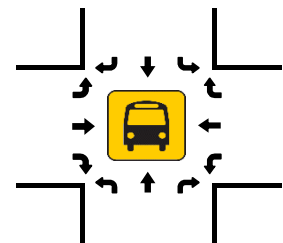
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

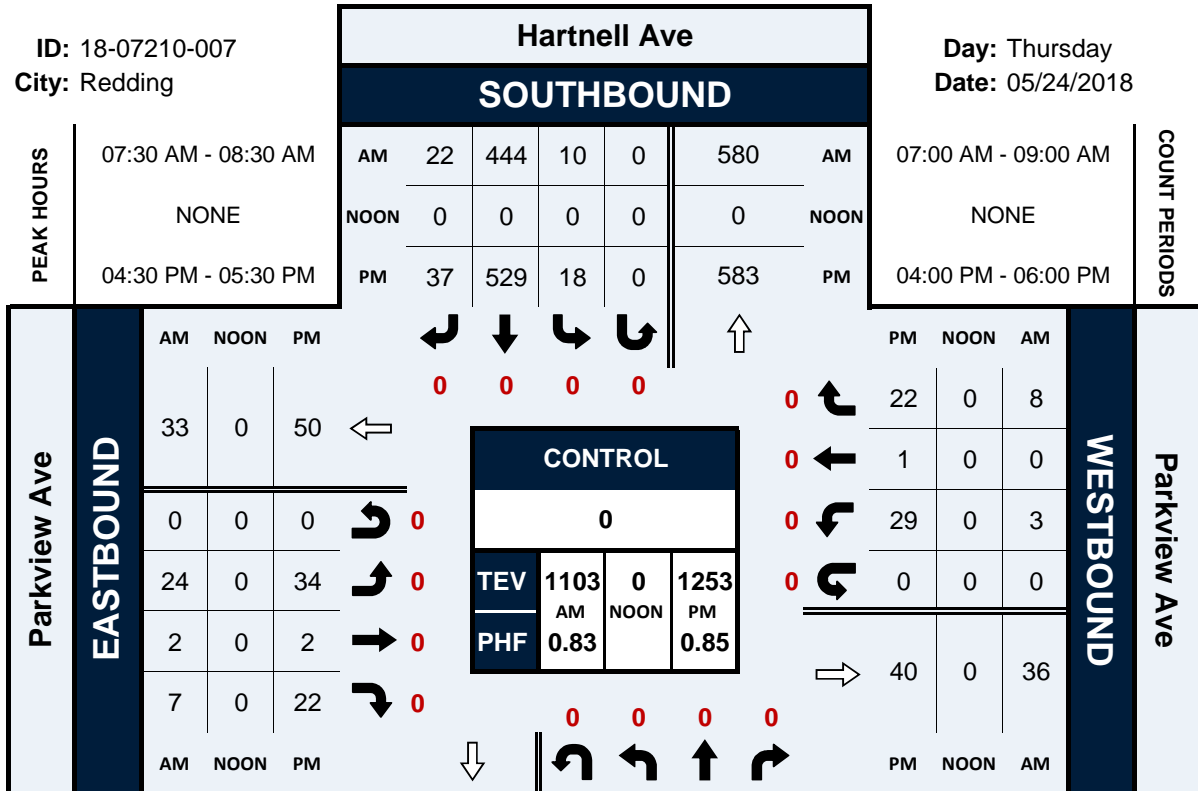


# Hartnell Ave & Parkview Ave

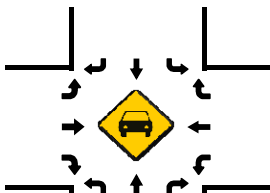
## Peak Hour Turning Movement Count

ID: 18-07210-007  
City: Redding

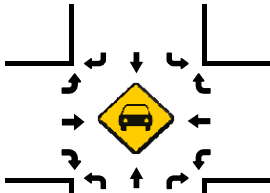
Day: Thursday  
Date: 05/24/2018



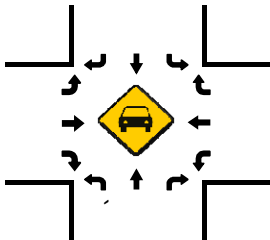
Total Vehicles (AM)



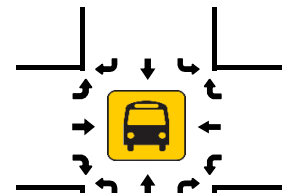
Total Vehicles (NOON)



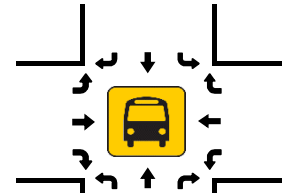
Total Vehicles (PM)



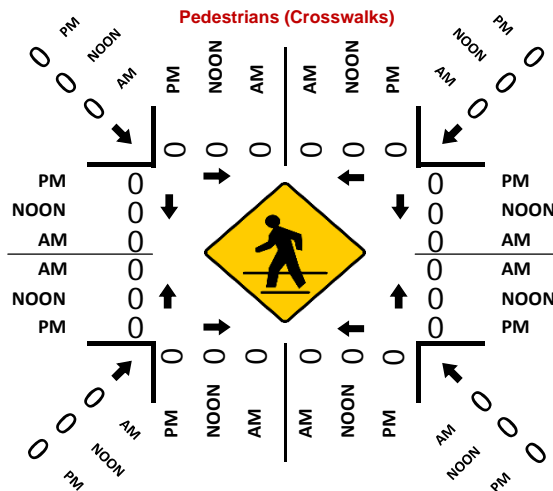
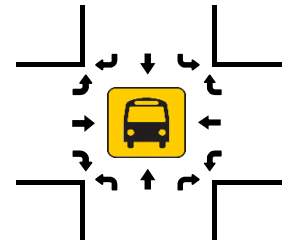
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

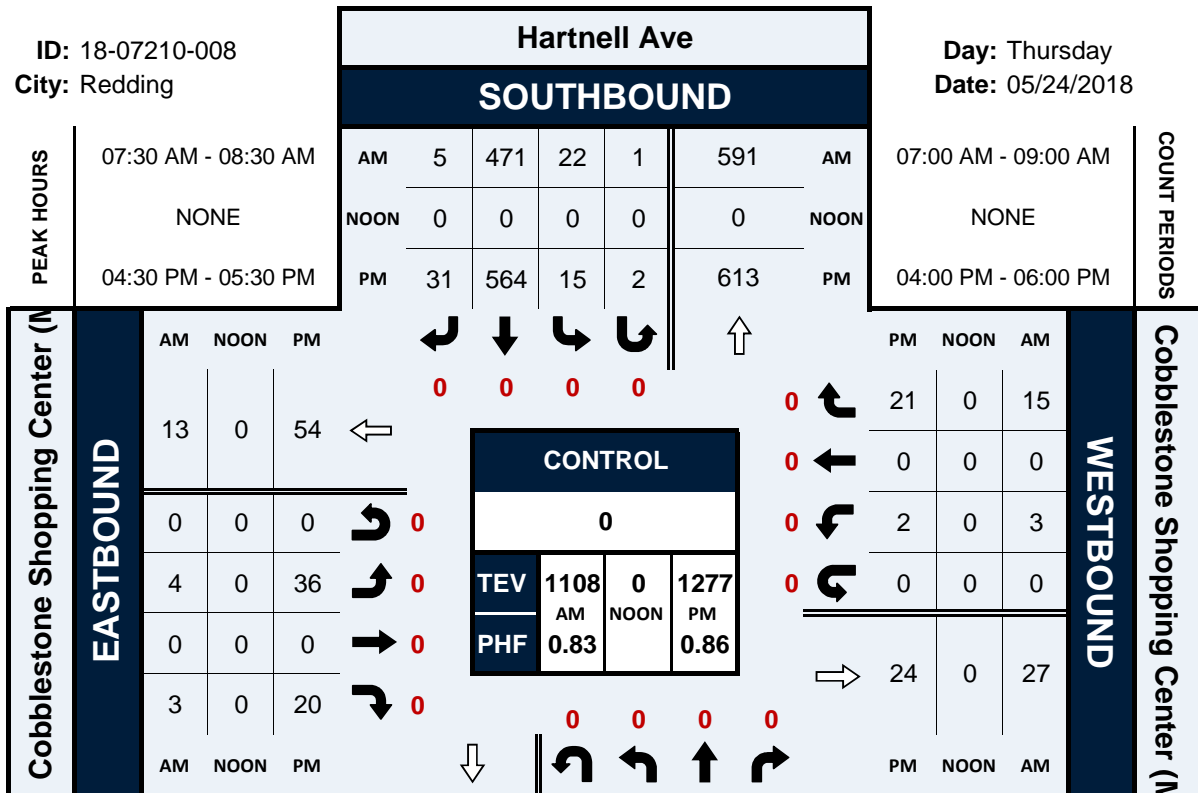


# Hartnell Ave & Cobblestone Shopping Center (Main Dwy)

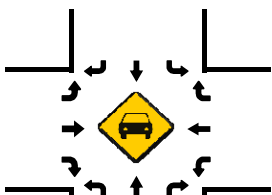
## Peak Hour Turning Movement Count

ID: 18-07210-008  
City: Redding

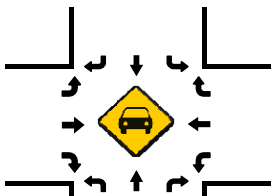
Day: Thursday  
Date: 05/24/2018



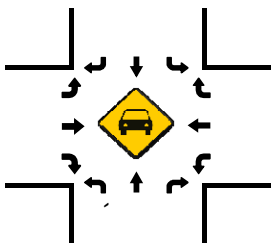
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

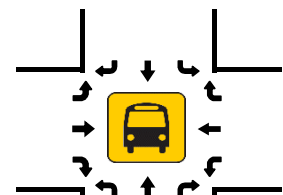


PM	586	0	23	554	9	PM
NOON	0	0	0	0	0	NOON
AM	477	0	8	571	5	AM

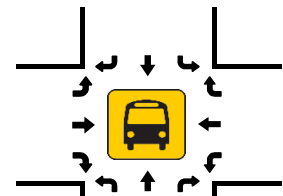
### NORTHBOUND

Hartnell Ave

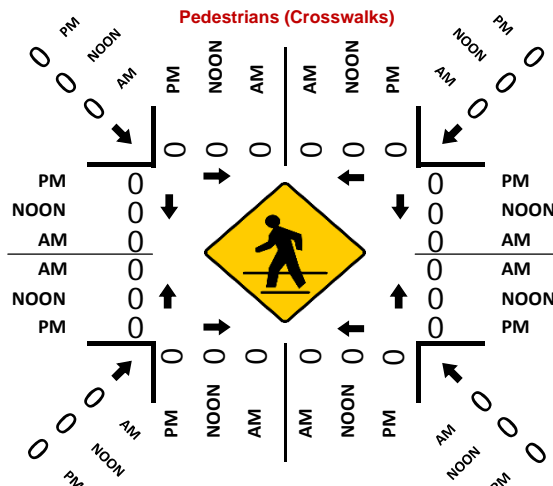
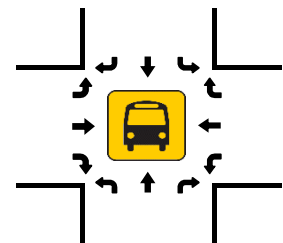
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)









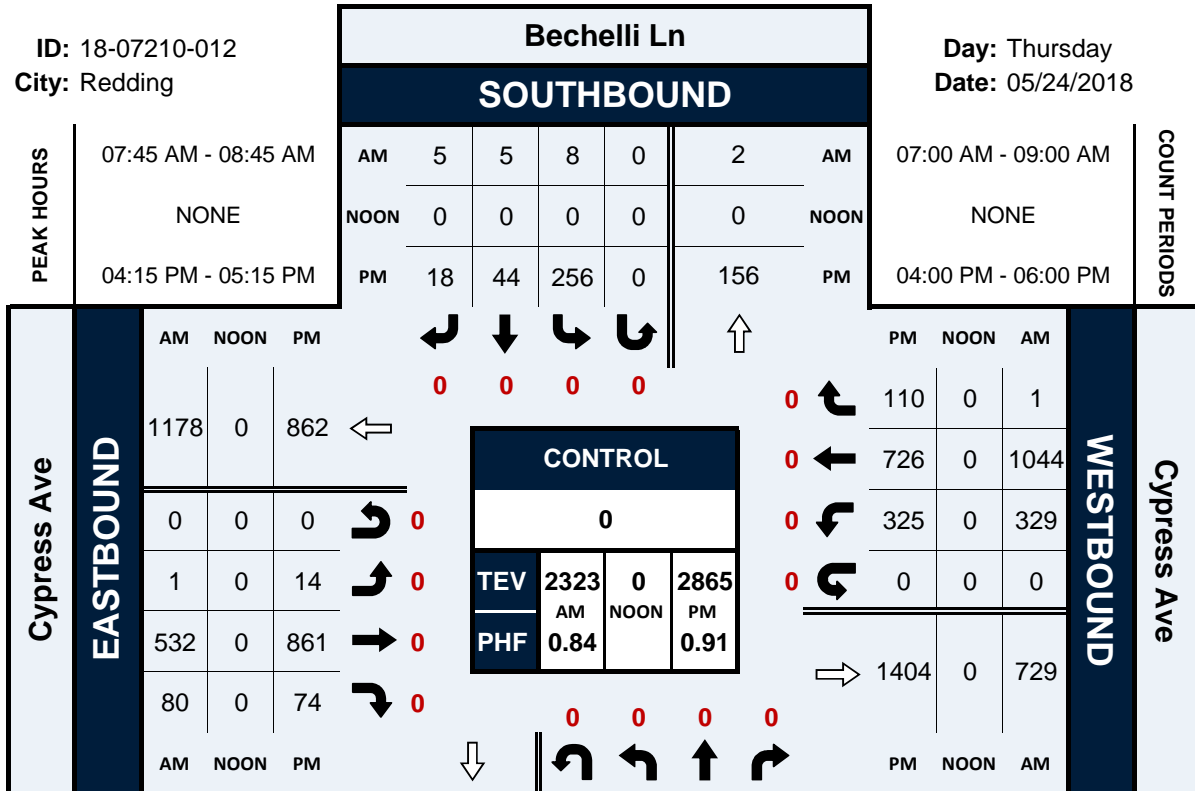


# Bechelli Ln & Cypress Ave

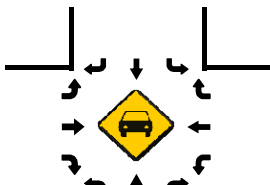
## Peak Hour Turning Movement Count

ID: 18-07210-012  
City: Redding

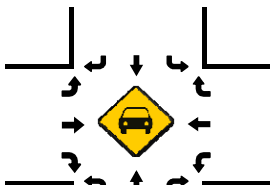
Day: Thursday  
Date: 05/24/2018



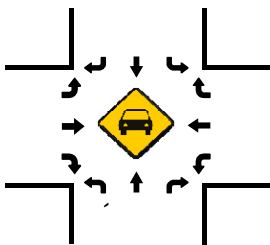
Total Vehicles (AM)



Total Vehicles (NOON)

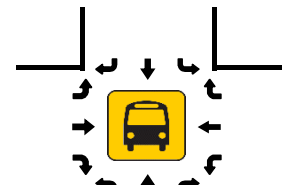


Total Vehicles (PM)

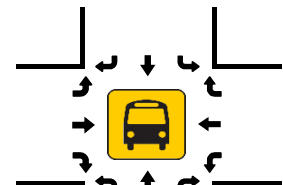


		Bechelli Ln						
		NORTHBOUND						
PM	AM	443	0	118	32	287	PM	PM
	NOON	0	0	0	0	0	NOON	
	AM	414	0	129	0	189	AM	

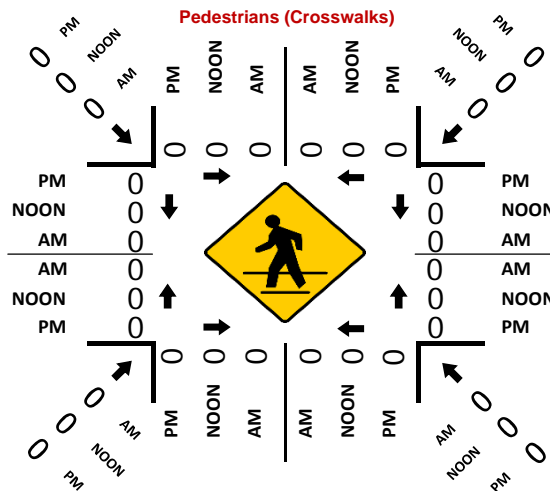
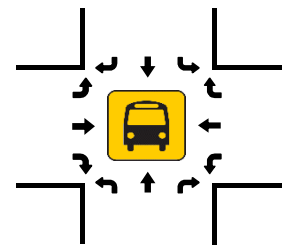
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)

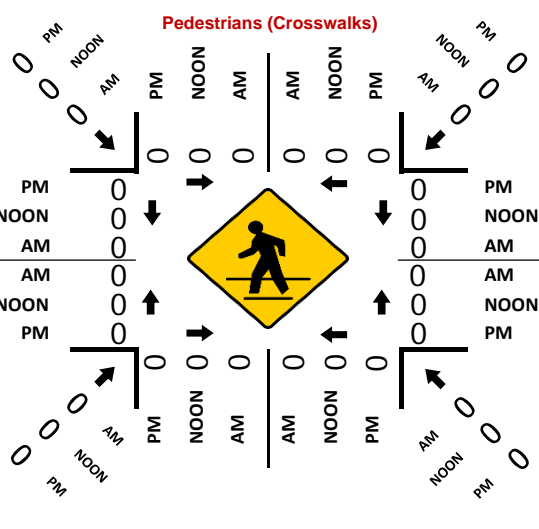
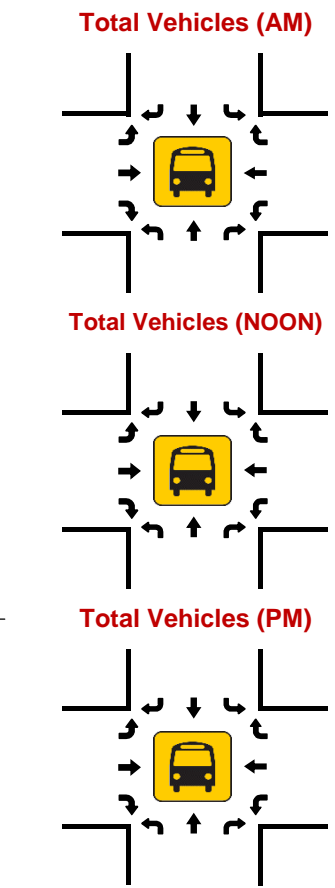
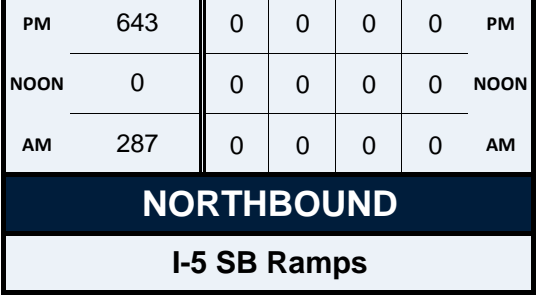
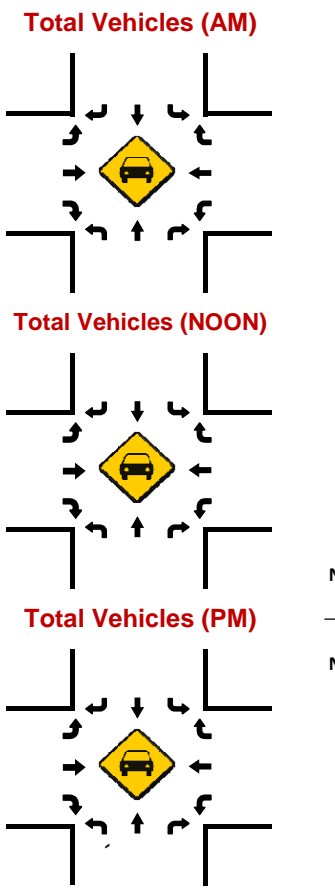
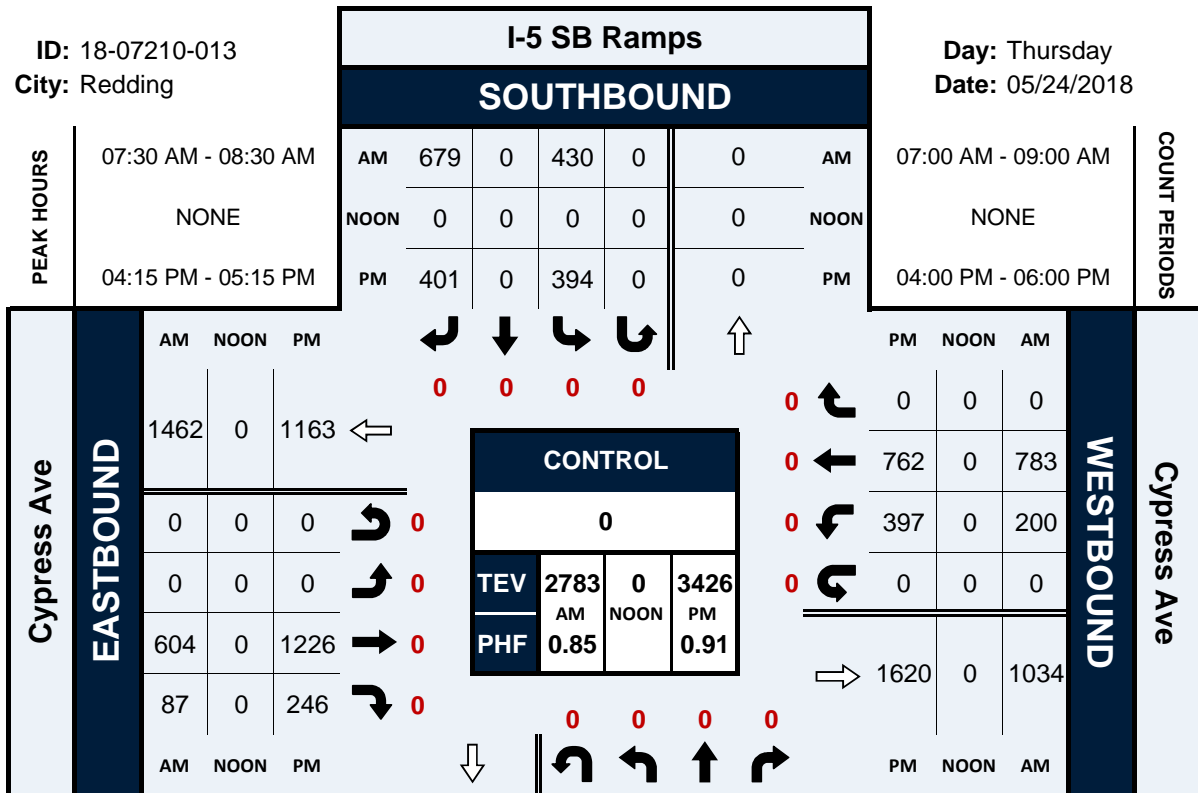


# I-5 SB Ramps & Cypress Ave

## Peak Hour Turning Movement Count

ID: 18-07210-013  
City: Redding

Day: Thursday  
Date: 05/24/2018

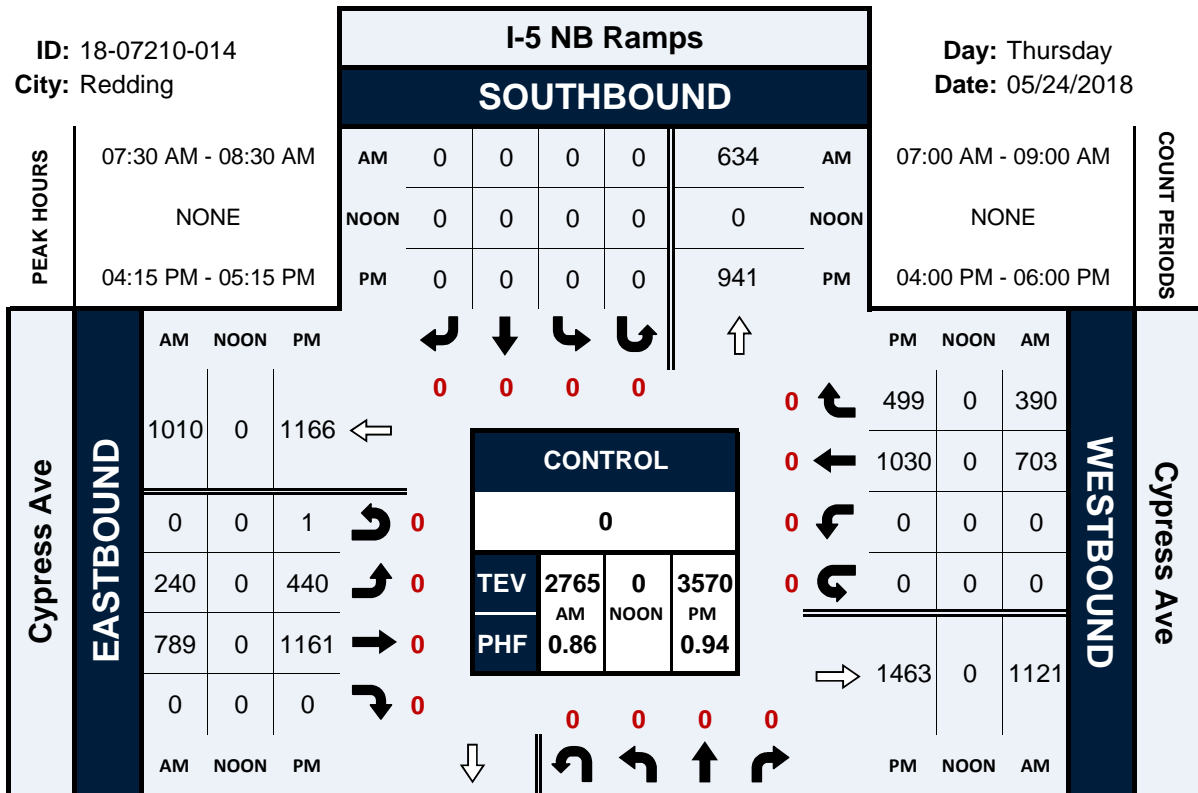


# I-5 NB Ramps & Cypress Ave

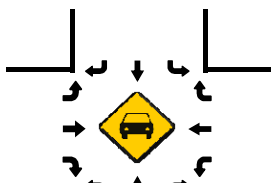
## Peak Hour Turning Movement Count

ID: 18-07210-014  
City: Redding

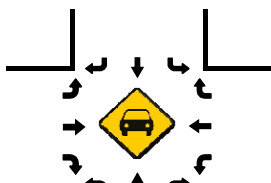
Day: Thursday  
Date: 05/24/2018



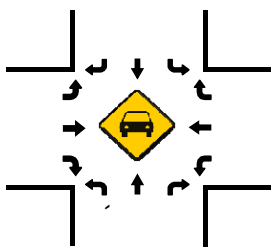
Total Vehicles (AM)



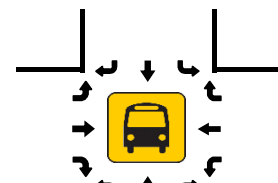
Total Vehicles (NOON)



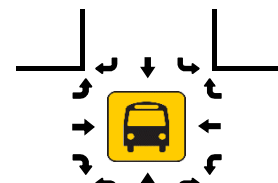
Total Vehicles (PM)



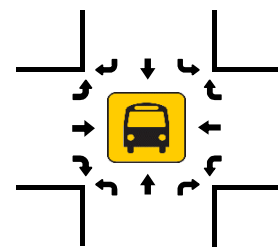
Total Vehicles (AM)



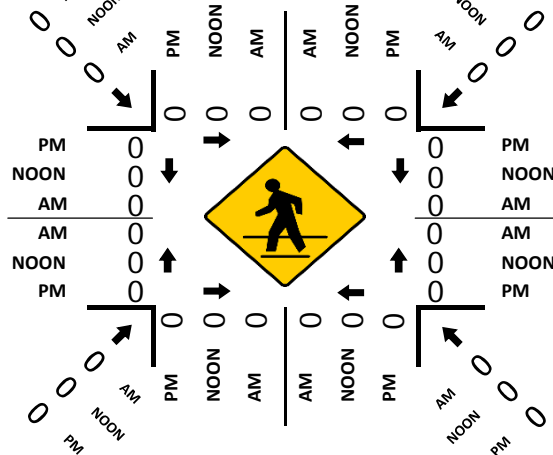
Total Vehicles (NOON)



Total Vehicles (PM)



Pedestrians (Crosswalks)































## Appendix B

### Synchro and SimTraffic Outputs

HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Existing Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	220	199	256	460	213	213	468	194	144	363	75
Future Volume (vph)	82	220	199	256	460	213	213	468	194	144	363	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1526	1770	3539	1531	1770	3349		1770	3435	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1526	1770	3539	1531	1770	3349		1770	3435	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	91	244	221	284	511	237	237	520	216	160	403	83
RTOR Reduction (vph)	0	0	171	0	0	123	0	29	0	0	13	0
Lane Group Flow (vph)	91	244	50	284	511	114	237	707	0	160	473	0
Confl. Peds. (#/hr)			24			21			19			8
Confl. Bikes (#/hr)			1			2			2			3
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	6.1	24.5	24.5	21.7	40.1	40.1	17.4	30.4		14.6	27.3	
Effective Green, g (s)	6.1	24.5	24.5	21.7	40.1	40.1	17.4	30.4		14.6	27.3	
Actuated g/C Ratio	0.06	0.23	0.23	0.20	0.37	0.37	0.16	0.28		0.14	0.25	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	194	807	348	357	1321	571	286	947		240	873	
v/s Ratio Prot	0.03	0.07		c0.16	c0.14		c0.13	c0.21		0.09	0.14	
v/s Ratio Perm			0.03			0.07						
v/c Ratio	0.47	0.30	0.14	0.80	0.39	0.20	0.83	0.75		0.67	0.54	
Uniform Delay, d1	49.1	34.4	33.1	40.7	24.6	22.8	43.6	35.0		44.1	34.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.4	0.4	10.9	0.4	0.4	16.9	3.9		5.3	1.2	
Delay (s)	49.7	34.8	33.5	51.6	25.0	23.1	60.4	38.9		49.4	35.9	
Level of Service	D	C	C	D	C	C	E	D		D	D	
Approach Delay (s)		36.7			31.9			44.1			39.2	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			37.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			107.4				Sum of lost time (s)		16.5			
Intersection Capacity Utilization			76.2%				ICU Level of Service			D		
Analysis Period (min)			15									



















c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

Existing Conditions  
AM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	100	300	75	127	527	94	64	40	100	101	52	90		
Future Volume (vph)	100	300	75	127	527	94	64	40	100	101	52	90		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5			
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00			
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00			0.98			
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00			
Frt	1.00	0.97		1.00	0.98			0.93			0.95			
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98			
Satd. Flow (prot)	1770	3392		1770	3431			1712			1694			
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.98			
Satd. Flow (perm)	1770	3392		1770	3431			1712			1694			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	109	326	82	138	573	102	70	43	109	110	57	98		
RTOR Reduction (vph)	0	22	0	0	14	0	0	34	0	0	21	0		
Lane Group Flow (vph)	109	386	0	138	661	0	0	188	0	0	244	0		
Confl. Peds. (#/hr)			24			19						57		
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA			
Protected Phases	5	2		1	6		3	3		4	4			
Permitted Phases														
Actuated Green, G (s)	8.0	21.5		9.1	22.6			13.2			19.4			
Effective Green, g (s)	8.0	21.5		9.1	22.6			13.2			19.4			
Actuated g/C Ratio	0.10	0.27		0.11	0.28			0.17			0.24			
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5			
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0			
Lane Grp Cap (vph)	177	912		201	970			282			411			
v/s Ratio Prot	0.06	0.11		c0.08	c0.19			c0.11			c0.14			
v/s Ratio Perm														
v/c Ratio	0.62	0.42		0.69	0.68			0.67			0.59			
Uniform Delay, d1	34.5	24.1		34.0	25.5			31.3			26.8			
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00			
Incremental Delay, d2	4.4	0.5		7.5	2.2			4.5			1.5			
Delay (s)	38.9	24.5		41.6	27.7			35.8			28.3			
Level of Service	D	C		D	C			D			C			
Approach Delay (s)		27.6			30.0			35.8			28.3			
Approach LOS		C			C			D			C			
<b>Intersection Summary</b>														
HCM 2000 Control Delay			29.8									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.66											
Actuated Cycle Length (s)			79.9								16.7			
Intersection Capacity Utilization			57.3%										ICU Level of Service	B
Analysis Period (min)			15											
c	Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 3: Bechelli Ln & Hartnell Ave

Existing Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑		↘	↑↑	
Traffic Volume (vph)	9	193	116	181	352	148	233	262	166	116	211	65
Future Volume (vph)	9	193	116	181	352	148	233	262	166	116	211	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1558	1770	3539	1550	1770	3312		1770	3398	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1558	1770	3539	1550	1770	3312		1770	3398	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	210	126	197	383	161	253	285	180	126	229	71
RTOR Reduction (vph)	0	0	98	0	0	100	0	90	0	0	29	0
Lane Group Flow (vph)	10	210	28	197	383	61	253	375	0	126	271	0
Confl. Peds. (#/hr)			1			9			4			6
Confl. Bikes (#/hr)			3			3			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	0.9	17.3	17.3	13.1	29.5	29.5	14.8	22.2		8.7	16.1	
Effective Green, g (s)	0.9	17.3	17.3	13.1	29.5	29.5	14.8	22.2		8.7	16.1	
Actuated g/C Ratio	0.01	0.22	0.22	0.17	0.38	0.38	0.19	0.28		0.11	0.21	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	20	781	344	296	1333	583	334	939		196	698	
v/s Ratio Prot	0.01	0.06		c0.11	c0.11		c0.14	c0.11		0.07	0.08	
v/s Ratio Perm			0.02			0.04						
v/c Ratio	0.50	0.27	0.08	0.67	0.29	0.10	0.76	0.40		0.64	0.39	
Uniform Delay, d1	38.5	25.3	24.2	30.5	17.1	15.8	30.1	22.7		33.3	26.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0	0.4	0.2	4.3	0.3	0.2	8.4	0.6		5.3	0.7	
Delay (s)	45.5	25.7	24.4	34.9	17.3	16.0	38.5	23.3		38.6	27.6	
Level of Service	D	C	C	C	B	B	D	C		D	C	
Approach Delay (s)		25.8			21.7			28.6			30.9	
Approach LOS		C			C			C			C	

### Intersection Summary

HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	78.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕				↗	↖	↕		↖	↕	
Traffic Vol, veh/h	4	0	6	0	0	6	12	590	48	18	312	9
Future Vol, veh/h	4	0	6	0	0	6	12	590	48	18	312	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	75	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	0	7	0	0	7	15	728	59	22	385	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	830	1255	199	-	-	396	397	0	0	789	0	0
Stage 1	436	436	-	-	-	-	-	-	-	-	-	-
Stage 2	394	819	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	261	169	806	0	0	600	1151	-	-	820	-	-
Stage 1	566	576	-	0	0	-	-	-	-	-	-	-
Stage 2	600	385	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	250	162	805	-	-	599	1150	-	-	818	-	-
Mov Cap-2 Maneuver	250	162	-	-	-	-	-	-	-	-	-	-
Stage 1	558	560	-	-	-	-	-	-	-	-	-	-
Stage 2	585	379	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.7		11.1		0.2		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	426	599	818	-	-
HCM Lane V/C Ratio	0.013	-	-	0.029	0.012	0.027	-	-
HCM Control Delay (s)	8.2	-	-	13.7	11.1	9.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	-	-

# HCM Signalized Intersection Capacity Analysis

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (vph)	5	0	8	8	0	25	27	561	12	33	323	25
Future Volume (vph)	5	0	8	8	0	25	27	561	12	33	323	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1671			1637		1770	3526		1770	3495	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1671			1637		1770	3526		1770	3495	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	9	9	0	27	29	610	13	36	351	27
RTOR Reduction (vph)	0	14	0	0	33	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	3	0	29	622	0	36	375	0
Confl. Peds. (#/hr)						2			2			4
Confl. Bikes (#/hr)									2			2
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		0.5			4.2		0.8	31.1		2.2	32.5	
Effective Green, g (s)		0.5			4.2		0.8	31.1		2.2	32.5	
Actuated g/C Ratio		0.01			0.08		0.01	0.57		0.04	0.60	
Clearance Time (s)		3.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		15			126		25	2012		71	2084	
v/s Ratio Prot		c0.00			c0.00		0.02	c0.18		c0.02	0.11	
v/s Ratio Perm												
v/c Ratio		0.01			0.02		1.16	0.31		0.51	0.18	
Uniform Delay, d1		26.8			23.3		26.9	6.1		25.6	5.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		233.2	0.2		2.1	0.1	
Delay (s)		26.8			23.3		260.0	6.3		27.7	5.1	
Level of Service		C			C		F	A		C	A	
Approach Delay (s)		26.8			23.3			17.6			7.0	
Approach LOS		C			C			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.0				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			54.5			Sum of lost time (s)			16.5			
Intersection Capacity Utilization			35.3%			ICU Level of Service			A			
Analysis Period (min)			15									

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	3	0	0	5	16	568	7	3	378	73
Future Vol, veh/h	10	0	3	0	0	5	16	568	7	3	378	73
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	0	0	6	20	693	9	4	461	89

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	904	1261	278	979	1301	353	553	0	0	704	0	0
Stage 1	517	517	-	740	740	-	-	-	-	-	-	-
Stage 2	387	744	-	239	561	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	232	169	719	204	160	643	1013	-	-	890	-	-
Stage 1	509	532	-	375	421	-	-	-	-	-	-	-
Stage 2	608	420	-	743	508	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	225	164	717	199	155	642	1010	-	-	888	-	-
Mov Cap-2 Maneuver	225	164	-	199	155	-	-	-	-	-	-	-
Stage 1	497	528	-	367	412	-	-	-	-	-	-	-
Stage 2	590	411	-	736	504	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.3		10.7		0.2		0.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1010	-	-	267	642	888	-	-
HCM Lane V/C Ratio	0.019	-	-	0.059	0.009	0.004	-	-
HCM Control Delay (s)	8.6	-	-	19.3	10.7	9.1	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0	-	-

# HCM Signalized Intersection Capacity Analysis

## 7: Hartnell Ave & Parkview Ave

Existing Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	2	7	3	0	8	11	548	24	4	444	29
Future Volume (vph)	24	2	7	3	0	8	11	548	24	4	444	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.90		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1635		1770	3513		1770	3501	
Flt Permitted		0.78			0.90		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1401			1495		1770	3513		1770	3501	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	27	2	8	3	0	9	12	616	27	4	499	33
RTOR Reduction (vph)	0	7	0	0	11	0	0	2	0	0	4	0
Lane Group Flow (vph)	0	30	0	0	1	0	12	641	0	4	528	0
Confl. Peds. (#/hr)			3			7			3			2
Confl. Bikes (#/hr)									3			3
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		5.0			5.0		0.9	30.5		0.6	30.2	
Effective Green, g (s)		5.0			5.0		0.9	30.5		0.6	30.2	
Actuated g/C Ratio		0.10			0.10		0.02	0.62		0.01	0.62	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		142			152		32	2182		21	2153	
v/s Ratio Prot							c0.01	c0.18		0.00	c0.15	
v/s Ratio Perm		c0.02			0.00							
v/c Ratio		0.21			0.01		0.38	0.29		0.19	0.25	
Uniform Delay, d1		20.2			19.8		23.8	4.3		24.0	4.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.0		2.7	0.2		1.6	0.1	
Delay (s)		20.5			19.8		26.5	4.5		25.6	4.4	
Level of Service		C			B		C	A		C	A	
Approach Delay (s)		20.5			19.8			4.9			4.6	
Approach LOS		C			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			5.3				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.28									
Actuated Cycle Length (s)			49.1				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			33.0%				ICU Level of Service			A		
Analysis Period (min)			15									
c Critical Lane Group												

HCM 2010 TWSC  
8: Hartnell Ave & Raleys Shopping Center/Roundtable Driveway

Existing Conditions  
AM Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	4	0	3	3	0	11	8	567	5	22	471	16
Future Vol, veh/h	4	0	3	3	0	11	8	567	5	22	471	16
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	0	3	3	0	12	9	623	5	24	518	18

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	907	1225	270	953	1232	316	538	0	0	630	0	0
Stage 1	577	577	-	646	646	-	-	-	-	-	-	-
Stage 2	330	648	-	307	586	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	229	176	725	212	174	677	1019	-	-	942	-	-
Stage 1	467	497	-	424	463	-	-	-	-	-	-	-
Stage 2	654	462	-	675	493	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	219	169	724	205	167	676	1017	-	-	940	-	-
Mov Cap-2 Maneuver	219	169	-	205	167	-	-	-	-	-	-	-
Stage 1	462	483	-	419	458	-	-	-	-	-	-	-
Stage 2	637	457	-	655	479	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.8		13.2		0.1		0.4	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1017	-	-	312	453	940	-	-
HCM Lane V/C Ratio	0.009	-	-	0.025	0.034	0.026	-	-
HCM Control Delay (s)	8.6	-	-	16.8	13.2	8.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-	-

Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖↖↖	↗	
Traffic Vol, veh/h	0	1	0	582	508	7
Future Vol, veh/h	0	1	0	582	508	7
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	0	728	635	9

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	642	646	0	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-
Pot Cap-1 Maneuver	0	473	937	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	472	935	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

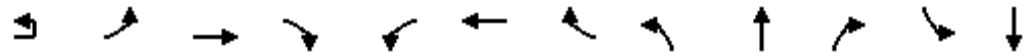
Approach	EB	NB	SB
HCM Control Delay, s	12.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	935	-	472	-	-
HCM Lane V/C Ratio	-	-	0.003	-	-
HCM Control Delay (s)	0	-	12.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-



HCM Signalized Intersection Capacity Analysis  
10: Hartnell Ave & Cypress Ave

Existing Conditions  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↔	↑↑↑	↗	↖	↑↑↑	↗	↖↖	↑	↗		↖	
Traffic Volume (vph)	1	93	467	355	156	718	50	450	20	112	12	4	
Future Volume (vph)	1	93	467	355	156	718	50	450	20	112	12	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (prot)		1736	4988	1534	1736	4988	1509	3367	1827	1553		1762	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.96	
Satd. Flow (perm)		1736	4988	1534	1736	4988	1509	3367	1827	1553		1762	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	
Adj. Flow (vph)	1	112	563	428	188	865	60	542	24	135	14	5	
RTOR Reduction (vph)	0	0	0	217	0	0	42	0	0	101	0	0	
Lane Group Flow (vph)	0	113	563	211	188	865	18	542	24	34	0	19	
Confl. Peds. (#/hr)				2			2						
Confl. Bikes (#/hr)				1			1						
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	5	2	3	1	6		3	3		4	4	
Permitted Phases				2			6			3			
Actuated Green, G (s)		12.0	21.7	45.0	17.9	27.6	27.6	23.3	23.3	23.3		10.7	
Effective Green, g (s)		12.0	21.7	45.0	17.9	27.6	27.6	23.3	23.3	23.3		10.7	
Actuated g/C Ratio		0.13	0.24	0.49	0.20	0.30	0.30	0.25	0.25	0.25		0.12	
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)		227	1184	755	339	1506	455	858	465	395		206	
v/s Ratio Prot		0.07	0.11	0.07	c0.11	c0.17		c0.16	0.01			c0.01	
v/s Ratio Perm				0.07			0.01			0.02			
v/c Ratio		0.50	0.48	0.28	0.55	0.57	0.04	0.63	0.05	0.09		0.09	
Uniform Delay, d1		36.9	30.0	13.7	33.2	26.9	22.5	30.2	25.7	25.9		36.0	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.6	0.6	0.1	2.4	0.8	0.1	1.1	0.0	0.0		0.1	
Delay (s)		37.5	30.6	13.7	35.6	27.8	22.6	31.4	25.7	26.0		36.1	
Level of Service		D	C	B	D	C	C	C	C	C		D	
Approach Delay (s)			24.8			28.8			30.1			35.9	
Approach LOS			C			C			C			D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.54										
Actuated Cycle Length (s)			91.4		Sum of lost time (s)					17.8			
Intersection Capacity Utilization			58.7%		ICU Level of Service					B			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Existing Conditions  
 AM Peak Hour

Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	32
Future Volume (vph)	32
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1527
Flt Permitted	1.00
Satd. Flow (perm)	1527
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	39
RTOR Reduction (vph)	34
Lane Group Flow (vph)	5
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	4%
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	10.7
Effective Green, g (s)	10.7
Actuated g/C Ratio	0.12
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	178
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.03
Uniform Delay, d1	35.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	35.8
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

Intersection							
Int Delay, s/veh	3.4						
Movement	WBU	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	2	11	4	0	28	2	2
Future Vol, veh/h	2	11	4	0	28	2	2
Conflicting Peds, #/hr	0	0	0	0	3	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	0	-	-	0
Grade, %	-	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72	72
Heavy Vehicles, %	10	10	10	10	10	10	10
Mvmt Flow	3	15	6	0	39	3	3

Major/Minor	Minor1	Major1		Major2	
Conflicting Flow All	0	32	23	0	42
Stage 1	0	23	-	-	-
Stage 2	0	9	-	-	-
Critical Hdwy	-	6.5	6.3	-	4.2
Critical Hdwy Stg 1	-	5.5	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	-
Follow-up Hdwy	-	3.59	3.39	-	2.29
Pot Cap-1 Maneuver	0	962	1031	-	1517
Stage 1	0	979	-	-	-
Stage 2	0	994	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	0	957	1028	-	1513
Mov Cap-2 Maneuver	0	957	-	-	-
Stage 1	0	974	-	-	-
Stage 2	0	994	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1513
HCM Lane V/C Ratio	-	-	0.021	0.002
HCM Control Delay (s)	-	-	8.8	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM Signalized Intersection Capacity Analysis  
12: Bechelli Lane & Cypress Ave

Existing Conditions  
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	447	59	339	845	303	89	73	205	85	30	25
Future Volume (vph)	11	447	59	339	845	303	89	73	205	85	30	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	4.9		4.3	4.3	4.3	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (prot)	1770	4985		3433	4842		1681	1759	1553	1681	1657	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (perm)	1770	4985		3433	4842		1681	1759	1553	1681	1657	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	14	552	73	419	1043	374	110	90	253	105	37	31
RTOR Reduction (vph)	0	11	0	0	38	0	0	0	221	0	19	0
Lane Group Flow (vph)	14	614	0	419	1379	0	98	102	32	87	67	0
Confl. Peds. (#/hr)			5			5			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	50.8		17.4	65.0		14.0	14.0	14.0	11.1	11.1	
Effective Green, g (s)	3.2	50.8		17.4	65.0		14.0	14.0	14.0	11.1	11.1	
Actuated g/C Ratio	0.03	0.46		0.16	0.59		0.13	0.13	0.13	0.10	0.10	
Clearance Time (s)	3.5	4.9		3.5	4.9		4.3	4.3	4.3	4.0	4.0	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	51	2302		543	2861		213	223	197	169	167	
v/s Ratio Prot	0.01	0.12		c0.12	c0.28		c0.06	0.06		c0.05	0.04	
v/s Ratio Perm									0.02			
v/c Ratio	0.27	0.27		0.77	0.48		0.46	0.46	0.16	0.51	0.40	
Uniform Delay, d1	52.3	18.2		44.4	12.9		44.5	44.5	42.8	46.9	46.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3		6.1	0.6		0.6	0.5	0.1	1.1	0.6	
Delay (s)	53.3	18.5		50.5	13.5		45.1	45.0	42.9	48.0	46.9	
Level of Service	D	B		D	B		D	D	D	D	D	
Approach Delay (s)		19.2			21.9			43.9			47.5	
Approach LOS		B			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			26.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			16.7		
Intersection Capacity Utilization			55.2%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave

Existing Conditions  
 AM Peak Hour



























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑					↑	↑	↑
Traffic Volume (vph)	0	629	108	241	828	0	0	0	0	430	1	659
Future Volume (vph)	0	629	108	241	828	0	0	0	0	430	1	659
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (prot)		5036	1568	1752	5036					1665	1453	1490
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (perm)		5036	1568	1752	5036					1665	1453	1490
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	684	117	262	900	0	0	0	0	467	1	716
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	0	0	123	123
Lane Group Flow (vph)	0	684	67	262	900	0	0	0	0	411	263	264
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		25.9	25.9	18.3	48.4					41.6	41.6	41.6
Effective Green, g (s)		25.9	25.9	18.3	48.4					41.6	41.6	41.6
Actuated g/C Ratio		0.26	0.26	0.18	0.48					0.42	0.42	0.42
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1304	406	320	2437					692	604	619
v/s Ratio Prot		c0.14		c0.15	0.18					c0.25	0.18	
v/s Ratio Perm			0.04									0.18
v/c Ratio		0.52	0.16	0.82	0.37					0.59	0.44	0.43
Uniform Delay, d1		31.8	28.7	39.3	16.2					22.6	20.8	20.7
Progression Factor		1.00	1.00	0.67	0.95					1.00	1.00	1.00
Incremental Delay, d2		1.5	0.9	13.6	0.4					1.1	0.4	0.3
Delay (s)		33.3	29.5	39.9	15.7					23.8	21.2	21.1
Level of Service		C	C	D	B					C	C	C
Approach Delay (s)		32.7			21.2			0.0			22.1	
Approach LOS		C			C			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				14.2		
Intersection Capacity Utilization			57.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis






















## 14: I-5 NB Ramps & Cypress Ave

Existing Conditions  
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  			  			 					
Traffic Volume (vph)	215	844	0	0	727	331	342	1	366	0	0	0	
Future Volume (vph)	215	844	0	0	727	331	342	1	366	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.91	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.98	1.00				
Satd. Flow (prot)	1752	5036			5036	1568	1665	1499	1490				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.98	1.00				
Satd. Flow (perm)	1752	5036			5036	1568	1665	1499	1490				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Adj. Flow (vph)	239	938	0	0	808	368	380	1	407	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	89	0	48	160	0	0	0	
Lane Group Flow (vph)	239	938	0	0	808	279	274	214	92	0	0	0	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm				
Protected Phases	5	2			6		8	8					
Permitted Phases						6			8				
Actuated Green, G (s)	18.1	66.9			44.6	44.6	23.1	23.1	23.1				
Effective Green, g (s)	18.1	66.9			44.6	44.6	23.1	23.1	23.1				
Actuated g/C Ratio	0.18	0.67			0.45	0.45	0.23	0.23	0.23				
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5				
Lane Grp Cap (vph)	317	3369			2246	699	384	346	344				
v/s Ratio Prot	c0.14	0.19			0.16		c0.16	0.14					
v/s Ratio Perm						c0.18			0.06				
v/c Ratio	0.75	0.28			0.36	0.40	0.71	0.62	0.27				
Uniform Delay, d1	38.8	6.7			18.3	18.7	35.4	34.5	31.5				
Progression Factor	0.20	0.24			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.5	0.2			0.4	1.7	5.8	2.8	0.3				
Delay (s)	16.3	1.8			18.7	20.4	41.2	37.3	31.8				
Level of Service	B	A			B	C	D	D	C				
Approach Delay (s)		4.7			19.2			36.9			0.0		
Approach LOS		A			B			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			18.2		HCM 2000 Level of Service				B				
HCM 2000 Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization			57.5%		ICU Level of Service				B				
Analysis Period (min)			15										
c Critical Lane Group													

























HCM Signalized Intersection Capacity Analysis  
 15: Hilltop Dr & Cypress Ave

Existing Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	793	194	60	615	89	138	34	47	48	33	305
Future Volume (vph)	223	793	194	60	615	89	138	34	47	48	33	305
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.88	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4919		3433	4989		1610	3134		1681	1475	1482
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4919		3433	4989		1610	3134		1681	1475	1482
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	240	853	209	65	661	96	148	37	51	52	35	328
RTOR Reduction (vph)	0	23	0	0	12	0	0	44	0	0	130	162
Lane Group Flow (vph)	240	1039	0	65	745	0	80	112	0	47	58	18
Confl. Peds. (#/hr)			4						8			1
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	12.1	61.6		5.8	54.8		14.7	14.7		10.8	10.8	10.8
Effective Green, g (s)	12.1	61.6		5.8	54.8		14.7	14.7		10.8	10.8	10.8
Actuated g/C Ratio	0.11	0.56		0.05	0.50		0.13	0.13		0.10	0.10	0.10
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	377	2754		181	2485		215	418		165	144	145
v/s Ratio Prot	c0.07	c0.21		0.02	0.15		c0.05	0.04		0.03	c0.04	
v/s Ratio Perm												0.01
v/c Ratio	0.64	0.38		0.36	0.30		0.37	0.27		0.28	0.40	0.12
Uniform Delay, d1	46.8	13.5		50.3	16.3		43.4	42.8		46.0	46.6	45.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.6	0.4		0.4	0.3		0.4	0.1		0.3	0.7	0.1
Delay (s)	49.4	13.9		50.8	16.6		43.8	42.9		46.4	47.3	45.4
Level of Service	D	B		D	B		D	D		D	D	D
Approach Delay (s)		20.4			19.3			43.2			46.4	
Approach LOS		C			B			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.9				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			17.6		
Intersection Capacity Utilization			64.8%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	166	446	99	189	380	262	99	373	171	348	506	141
Future Volume (vph)	166	446	99	189	380	262	99	373	171	348	506	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1544	1770	3539	1545	1770	3341		1770	3402	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1544	1770	3539	1545	1770	3341		1770	3402	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	175	469	104	199	400	276	104	393	180	366	533	148
RTOR Reduction (vph)	0	0	76	0	0	198	0	37	0	0	16	0
Lane Group Flow (vph)	175	469	28	199	400	78	104	536	0	366	665	0
Confl. Peds. (#/hr)			11			10			14			15
Confl. Bikes (#/hr)			2			3			2			1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	10.4	24.1	24.1	17.3	31.0	31.0	11.1	25.6		27.0	41.2	
Effective Green, g (s)	10.4	24.1	24.1	17.3	31.0	31.0	11.1	25.6		27.0	41.2	
Actuated g/C Ratio	0.09	0.22	0.22	0.16	0.28	0.28	0.10	0.23		0.25	0.37	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	323	773	337	277	995	434	178	776		433	1271	
v/s Ratio Prot	0.05	c0.13		c0.11	0.11		0.06	c0.16		c0.21	0.20	
v/s Ratio Perm			0.02			0.05						
v/c Ratio	0.54	0.61	0.08	0.72	0.40	0.18	0.58	0.69		0.85	0.52	
Uniform Delay, d1	47.6	38.8	34.3	44.1	32.1	30.0	47.3	38.7		39.6	26.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	2.0	0.2	7.2	0.6	0.4	3.1	3.4		13.5	0.7	
Delay (s)	48.6	40.8	34.5	51.4	32.6	30.4	50.5	42.1		53.1	27.6	
Level of Service	D	D	C	D	C	C	D	D		D	C	
Approach Delay (s)		41.7			36.2			43.4			36.5	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			39.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			110.2				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			80.3%				ICU Level of Service			D		
Analysis Period (min)			15									























c Critical Lane Group



# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

























Existing Conditions  
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	92	661	21	13	574	33	19	11	25	25	8	123	
Future Volume (vph)	92	661	21	13	574	33	19	11	25	25	8	123	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.99			0.94			0.89		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (prot)	1770	3519		1770	3506			1719			1631		
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (perm)	1770	3519		1770	3506			1719			1631		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	99	711	23	14	617	35	20	12	27	27	9	132	
RTOR Reduction (vph)	0	1	0	0	3	0	0	25	0	0	117	0	
Lane Group Flow (vph)	99	733	0	14	649	0	0	34	0	0	51	0	
Confl. Peds. (#/hr)			9			5						6	
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA		
Protected Phases	5	2		1	6		3	3		4	4		
Permitted Phases													
Actuated Green, G (s)	6.6	30.2		0.9	24.5			3.5			6.6		
Effective Green, g (s)	6.6	30.2		0.9	24.5			3.5			6.6		
Actuated g/C Ratio	0.11	0.52		0.02	0.42			0.06			0.11		
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5		
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0		
Lane Grp Cap (vph)	201	1835		27	1483			103			185		
v/s Ratio Prot	c0.06	c0.21		0.01	0.19			c0.02			c0.03		
v/s Ratio Perm													
v/c Ratio	0.49	0.40		0.52	0.44			0.33			0.28		
Uniform Delay, d1	24.1	8.4		28.3	11.8			26.1			23.5		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.7	0.2		6.8	0.3			0.7			0.3		
Delay (s)	24.8	8.6		35.1	12.1			26.7			23.8		
Level of Service	C	A		D	B			C			C		
Approach Delay (s)		10.5			12.6			26.7			23.8		
Approach LOS		B			B			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			13.2									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			57.9									Sum of lost time (s)	16.7
Intersection Capacity Utilization			46.8%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Bechelli Ln & Hartnell Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	409	263	269	327	120	128	253	183	182	268	42
Future Volume (vph)	40	409	263	269	327	120	128	253	183	182	268	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1560	1770	3539	1563	1770	3296		1770	3459	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1560	1770	3539	1563	1770	3296		1770	3459	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	454	292	299	363	133	142	281	203	202	298	47
RTOR Reduction (vph)	0	0	222	0	0	80	0	131	0	0	12	0
Lane Group Flow (vph)	44	454	70	299	363	53	142	353	0	202	333	0
Confl. Peds. (#/hr)			1						2			2
Confl. Bikes (#/hr)			2			2			1			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	4.3	20.8	20.8	17.9	34.4	34.4	11.7	17.0		14.2	19.5	
Effective Green, g (s)	4.3	20.8	20.8	17.9	34.4	34.4	11.7	17.0		14.2	19.5	
Actuated g/C Ratio	0.05	0.24	0.24	0.21	0.40	0.40	0.13	0.20		0.16	0.22	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	87	847	373	364	1400	618	238	644		289	776	
v/s Ratio Prot	0.02	c0.13		c0.17	0.10		0.08	c0.11		c0.11	0.10	
v/s Ratio Perm			0.04			0.03						
v/c Ratio	0.51	0.54	0.19	0.82	0.26	0.09	0.60	0.55		0.70	0.43	
Uniform Delay, d1	40.3	28.8	26.3	33.0	17.7	16.4	35.4	31.5		34.3	28.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	1.2	0.5	13.2	0.2	0.1	2.7	1.7		5.9	0.8	
Delay (s)	41.9	30.0	26.8	46.2	17.9	16.5	38.0	33.2		40.2	29.7	
Level of Service	D	C	C	D	B	B	D	C		D	C	
Approach Delay (s)		29.5			28.3			34.3			33.6	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.1		HCM 2000 Level of Service						C	
HCM 2000 Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			86.9		Sum of lost time (s)					17.0		
Intersection Capacity Utilization			65.4%		ICU Level of Service					C		
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	25	10	0	16	3	492	2	6	677	6
Future Vol, veh/h	10	0	25	10	0	16	3	492	2	6	677	6
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	29	12	0	19	4	579	2	7	796	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1115	1406	405	1000	1408	291	806	0	0	581	0	0
Stage 1	817	817	-	588	588	-	-	-	-	-	-	-
Stage 2	298	589	-	412	820	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	163	138	595	197	138	706	814	-	-	989	-	-
Stage 1	337	388	-	462	494	-	-	-	-	-	-	-
Stage 2	686	494	-	588	387	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	157	136	593	186	136	706	812	-	-	989	-	-
Mov Cap-2 Maneuver	157	136	-	186	136	-	-	-	-	-	-	-
Stage 1	334	384	-	460	492	-	-	-	-	-	-	-
Stage 2	664	492	-	555	383	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.4		16.6		0.1		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	812	-	-	331	340	989	-
HCM Lane V/C Ratio	0.004	-	-	0.124	0.09	0.007	-
HCM Control Delay (s)	9.5	-	-	17.4	16.6	8.7	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.3	0	-

# HCM Signalized Intersection Capacity Analysis

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↕			↕			↕	↕		↕	↕	
Traffic Volume (vph)	35	0	40	25	0	39	1	2	515	0	5	623	
Future Volume (vph)	35	0	40	25	0	39	1	2	515	0	5	623	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5			4.5			3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00			1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99			1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00	
Frt		0.93			0.92			1.00	1.00		1.00	1.00	
Flt Protected		0.98			0.98			0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1689			1661			1770	3539		1770	3533	
Flt Permitted		0.98			0.98			0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1689			1661			1770	3539		1770	3533	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	
Adj. Flow (vph)	42	0	48	30	0	47	1	2	620	0	6	751	
RTOR Reduction (vph)	0	83	0	0	71	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	7	0	0	6	0	0	3	620	0	6	759	
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)						1				2			
Turn Type	Split	NA		Split	NA		Prot	Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	5	2		1	6	
Permitted Phases													
Actuated Green, G (s)		3.8			3.8			0.7	25.5		0.7	25.5	
Effective Green, g (s)		3.8			3.8			0.7	25.5		0.7	25.5	
Actuated g/C Ratio		0.08			0.08			0.01	0.51		0.01	0.51	
Clearance Time (s)		3.5			4.5			3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0			2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		127			125			24	1794		24	1791	
v/s Ratio Prot		c0.00			c0.00			0.00	0.18		c0.00	c0.21	
v/s Ratio Perm													
v/c Ratio		0.05			0.05			0.12	0.35		0.25	0.42	
Uniform Delay, d1		21.6			21.6			24.5	7.4		24.5	7.8	
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.1			0.9	0.2		2.0	0.3	
Delay (s)		21.6			21.6			25.4	7.7		26.5	8.1	
Level of Service		C			C			C	A		C	A	
Approach Delay (s)		21.6			21.6				7.7			8.3	
Approach LOS		C			C				A			A	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			9.5									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.34										
Actuated Cycle Length (s)			50.3									Sum of lost time (s)	16.5
Intersection Capacity Utilization			31.1%									ICU Level of Service	A
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	7
Future Volume (vph)	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	8
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Confl. Bikes (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection													
Int Delay, s/veh	1.6												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕	
Traffic Vol, veh/h	41	0	23	3	0	3	8	578	3	1	6	609	11
Future Vol, veh/h	41	0	23	3	0	3	8	578	3	1	6	609	11
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	0	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	0	27	3	0	3	9	672	3	1	7	708	13

Major/Minor	Minor2		Minor1		Major1		Major2						
Conflicting Flow All	1088	1428	364	1063	1433	339	724	0	0	676	676	0	0
Stage 1	734	734	-	693	693	-	-	-	-	-	-	-	-
Stage 2	354	694	-	370	740	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	170	134	633	177	133	657	874	-	-	535	911	-	-
Stage 1	378	424	-	400	443	-	-	-	-	-	-	-	-
Stage 2	636	442	-	622	421	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	166	131	631	167	130	656	872	-	-	826	826	-	-
Mov Cap-2 Maneuver	166	131	-	167	130	-	-	-	-	-	-	-	-
Stage 1	373	418	-	396	438	-	-	-	-	-	-	-	-
Stage 2	626	437	-	590	416	-	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	28.6		18.9		0.1		0.1	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	872	-	-	226	266	826	-
HCM Lane V/C Ratio	0.011	-	-	0.329	0.026	0.01	-
HCM Control Delay (s)	9.2	-	-	28.6	18.9	9.4	-
HCM Lane LOS	A	-	-	D	C	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	0.1	0	-

# HCM Signalized Intersection Capacity Analysis

## 7: Hartnell Ave & Parkview Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	0	17	25	2	25	13	589	21	21	585	54
Future Volume (vph)	42	0	17	25	2	25	13	589	21	21	585	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.93		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1730			1689		1770	3518		1770	3488	
Flt Permitted		0.75			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1340			1402		1770	3518		1770	3488	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	51	0	20	30	2	30	16	710	25	25	705	65
RTOR Reduction (vph)	0	61	0	0	26	0	0	2	0	0	6	0
Lane Group Flow (vph)	0	10	0	0	36	0	16	733	0	25	764	0
Confl. Peds. (#/hr)							3			1		
Confl. Bikes (#/hr)										2		2
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		6.7			6.7		0.8	28.8		0.8	28.8	
Effective Green, g (s)		6.7			6.7		0.8	28.8		0.8	28.8	
Actuated g/C Ratio		0.14			0.14		0.02	0.58		0.02	0.58	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		182			190		28	2055		28	2037	
v/s Ratio Prot							c0.01	0.21		c0.01	c0.22	
v/s Ratio Perm		0.01			c0.03							
v/c Ratio		0.05			0.19		0.57	0.36		0.89	0.38	
Uniform Delay, d1		18.5			18.9		24.1	5.4		24.2	5.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.2		16.3	0.2		121.8	0.2	
Delay (s)		18.6			19.1		40.4	5.6		146.0	5.7	
Level of Service		B			B		D	A		F	A	
Approach Delay (s)		18.6			19.1			6.3			10.1	
Approach LOS		B			B			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.1				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.35									
Actuated Cycle Length (s)			49.3				Sum of lost time (s)				13.0	
Intersection Capacity Utilization			31.7%				ICU Level of Service				A	
Analysis Period (min)			15									

c Critical Lane Group

HCM 2010 TWSC  
 8: Hartnell Ave & Raleys Shopping Center/Roundtable Driveway

Existing Conditions  
 PM Peak Hour

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	0	14	6	0	27	9	637	10	18	640	20
Future Vol, veh/h	20	0	14	6	0	27	9	637	10	18	640	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	17	7	0	32	11	758	12	21	762	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1217	1608	393	1209	1614	385	786	0	0	770	0	0
Stage 1	816	816	-	786	786	-	-	-	-	-	-	-
Stage 2	401	792	-	423	828	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	137	104	606	139	103	613	829	-	-	840	-	-
Stage 1	337	389	-	351	401	-	-	-	-	-	-	-
Stage 2	597	399	-	579	384	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	126	100	606	131	99	613	829	-	-	840	-	-
Mov Cap-2 Maneuver	126	100	-	131	99	-	-	-	-	-	-	-
Stage 1	333	379	-	346	396	-	-	-	-	-	-	-
Stage 2	558	394	-	549	374	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	29.5		16		0.1		0.2	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	829	-	-	187	367	840	-	-
HCM Lane V/C Ratio	0.013	-	-	0.216	0.107	0.026	-	-
HCM Control Delay (s)	9.4	-	-	29.5	16	9.4	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.8	0.4	0.1	-	-



Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T		T		T	
Traffic Vol, veh/h	2	7	2	682	671	17
Future Vol, veh/h	2	7	2	682	671	17
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	8	2	758	746	19

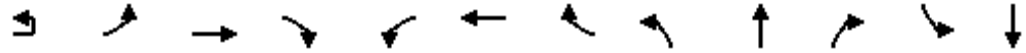
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1064	757	766	0	-	0
Stage 1	757	-	-	-	-	-
Stage 2	307	-	-	-	-	-
Critical Hdwy	6.08	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	267	407	845	-	-	-
Stage 1	449	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	265	407	844	-	-	-
Mov Cap-2 Maneuver	265	-	-	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	682	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	844	-	364	-	-
HCM Lane V/C Ratio	0.003	-	0.027	-	-
HCM Control Delay (s)	9.3	0	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Existing Conditions  
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↔	↑↑↑	↗	↖	↑↑↑	↗	↖↗	↑	↗		↖	
Traffic Volume (vph)	2	42	733	571	77	689	45	486	14	184	69	40	
Future Volume (vph)	2	42	733	571	77	689	45	486	14	184	69	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00	
Frbp, ped/bikes		1.00	1.00	0.98	1.00	1.00	0.96	1.00	1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (prot)		1770	5085	1559	1770	5085	1527	3433	1863	1562		1806	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (perm)		1770	5085	1559	1770	5085	1527	3433	1863	1562		1806	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	2	49	862	672	91	811	53	572	16	216	81	47	
RTOR Reduction (vph)	0	0	0	303	0	0	35	0	0	158	0	0	
Lane Group Flow (vph)	0	51	862	369	91	811	18	572	16	58	0	128	
Confl. Peds. (#/hr)				4			4						
Confl. Bikes (#/hr)				2			1			2			
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	5	2	3	1	6		3	3		4	4	
Permitted Phases				2			6			3			
Actuated Green, G (s)		6.6	27.0	52.6	12.3	32.7	32.7	25.6	25.6	25.6		13.0	
Effective Green, g (s)		6.6	27.0	52.6	12.3	32.7	32.7	25.6	25.6	25.6		13.0	
Actuated g/C Ratio		0.07	0.28	0.55	0.13	0.34	0.34	0.27	0.27	0.27		0.14	
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)		122	1434	856	227	1737	521	918	498	417		245	
v/s Ratio Prot		0.03	c0.17	0.12	c0.05	0.16		c0.17	0.01			c0.07	
v/s Ratio Perm				0.12			0.01			0.04			
v/c Ratio		0.42	0.60	0.43	0.40	0.47	0.03	0.62	0.03	0.14		0.52	
Uniform Delay, d1		42.7	29.7	12.7	38.3	24.7	21.0	30.8	25.9	26.7		38.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		0.8	1.0	0.1	1.6	0.4	0.1	1.0	0.0	0.1		0.9	
Delay (s)		43.6	30.7	12.9	39.9	25.1	21.0	31.8	25.9	26.7		39.4	
Level of Service		D	C	B	D	C	C	C	C	C		D	
Approach Delay (s)			23.6			26.3			30.3			38.1	
Approach LOS			C			C			C			D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			27.0		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.56										
Actuated Cycle Length (s)			95.7		Sum of lost time (s)					17.8			
Intersection Capacity Utilization			62.7%		ICU Level of Service					B			
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Existing Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	146
Future Volume (vph)	146
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	172
RTOR Reduction (vph)	119
Lane Group Flow (vph)	53
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	13.0
Effective Green, g (s)	13.0
Actuated g/C Ratio	0.14
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	215
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.25
Uniform Delay, d1	37.0
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	37.2
Level of Service	D
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	4.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y		T			T
Traffic Vol, veh/h	32	3	1	26	4	3
Future Vol, veh/h	32	3	1	26	4	3
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	3	1	30	5	3

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	30	17	0	0	32	0
Stage 1	17	-	-	-	-	-
Stage 2	13	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	984	1062	-	-	1580	-
Stage 1	1006	-	-	-	-	-
Stage 2	1010	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	980	1061	-	-	1578	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	1010	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	4.2
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	986	1578
HCM Lane V/C Ratio	-	-	0.041	0.003
HCM Control Delay (s)	-	-	8.8	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM Signalized Intersection Capacity Analysis  
12: Bechelli Lane & Cypress Ave













Existing Conditions  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1120	103	344	606	108	108	27	320	264	62	17
Future Volume (vph)	12	1120	103	344	606	108	108	27	320	264	62	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5011		3433	4949		1681	1718	1552	1681	1697	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5011		3433	4949		1681	1718	1552	1681	1697	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	13	1231	113	378	666	119	119	30	352	290	68	19
RTOR Reduction (vph)	0	7	0	0	14	0	0	0	233	0	3	0
Lane Group Flow (vph)	13	1337	0	378	771	0	74	75	119	188	186	0
Confl. Peds. (#/hr)			9			3			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	53.8		16.5	67.1		15.2	15.2	15.2	17.6	17.6	
Effective Green, g (s)	3.2	53.8		16.5	67.1		15.2	15.2	15.2	17.6	17.6	
Actuated g/C Ratio	0.03	0.45		0.14	0.56		0.13	0.13	0.13	0.15	0.15	
Clearance Time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	47	2246		472	2767		212	217	196	246	248	
v/s Ratio Prot	0.01	c0.27		c0.11	0.16		0.04	0.04		c0.11	0.11	
v/s Ratio Perm									c0.08			
v/c Ratio	0.28	0.60		0.80	0.28		0.35	0.35	0.61	0.76	0.75	
Uniform Delay, d1	57.3	24.9		50.2	13.8		47.9	47.9	49.6	49.2	49.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.2		8.9	0.3		0.4	0.4	3.6	11.9	10.3	
Delay (s)	58.4	26.1		59.1	14.1		48.2	48.2	53.2	61.1	59.4	
Level of Service	E	C		E	B		D	D	D	E	E	
Approach Delay (s)		26.4			28.7			51.7			60.3	
Approach LOS		C			C			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.9			
Intersection Capacity Utilization			65.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c	Critical Lane Group											

# HCM Signalized Intersection Capacity Analysis




















## 13: I-5 SB Ramps & Cypress Ave

Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖	↔	↗
Traffic Volume (vph)	0	1408	296	509	730	0	0	0	0	459	0	328
Future Volume (vph)	0	1408	296	509	730	0	0	0	0	459	0	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.95	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		5085	1517	1770	5085					1681	1562	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		5085	1517	1770	5085					1681	1562	1504
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1437	302	519	745	0	0	0	0	468	0	335
RTOR Reduction (vph)	0	0	42	0	0	0	0	0	0	0	51	206
Lane Group Flow (vph)	0	1437	260	519	745	0	0	0	0	281	220	45
Confl. Peds. (#/hr)			7			8						
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		43.1	43.1	33.0	80.3					19.7	19.7	19.7
Effective Green, g (s)		43.1	43.1	33.0	80.3					19.7	19.7	19.7
Actuated g/C Ratio		0.39	0.39	0.30	0.73					0.18	0.18	0.18
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1992	594	531	3712					301	279	269
v/s Ratio Prot		c0.28		c0.29	0.15					c0.17	0.14	
v/s Ratio Perm			0.17									0.03
v/c Ratio		0.72	0.44	0.98	0.20					0.93	0.79	0.17
Uniform Delay, d1		28.4	24.6	38.1	4.7					44.5	43.2	38.2
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		2.3	2.3	32.8	0.1					34.6	13.3	0.2
Delay (s)		30.7	26.9	70.9	4.8					79.1	56.4	38.4
Level of Service		C	C	E	A					E	E	D
Approach Delay (s)		30.0			32.0			0.0			58.7	
Approach LOS		C			C			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			36.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				14.2		
Intersection Capacity Utilization			83.3%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave
































Existing Conditions  
 PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	506	1361	0	0	1107	536	132	1	369	0	0	0	
Future Volume (vph)	506	1361	0	0	1107	536	132	1	369	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (prot)	1770	5085			5085	1583	1681	1455	1504				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (perm)	1770	5085			5085	1583	1681	1455	1504				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	533	1433	0	0	1165	564	139	1	388	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	94	0	101	101	0	0	0	
Lane Group Flow (vph)	533	1433	0	0	1165	470	125	100	101	0	0	0	
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm				
Protected Phases	5	2			6		8	8					
Permitted Phases						6			8				
Actuated Green, G (s)	35.6	88.6			48.8	48.8	10.4	10.4	10.4				
Effective Green, g (s)	35.6	88.6			48.8	48.8	10.4	10.4	10.4				
Actuated g/C Ratio	0.33	0.81			0.45	0.45	0.10	0.10	0.10				
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5				
Lane Grp Cap (vph)	578	4133			2276	708	160	138	143				
v/s Ratio Prot	c0.30	0.28			0.23		c0.07	0.07					
v/s Ratio Perm						c0.30			0.07				
v/c Ratio	0.92	0.35			0.51	0.66	0.78	0.72	0.70				
Uniform Delay, d1	35.4	2.7			21.6	23.6	48.2	47.9	47.8				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	20.1	0.2			0.8	4.9	20.8	16.0	13.6				
Delay (s)	55.4	2.9			22.4	28.5	69.0	63.9	61.4				
Level of Service	E	A			C	C	E	E	E				
Approach Delay (s)		17.1			24.4			64.2			0.0		
Approach LOS		B			C			E			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			26.0		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.77										
Actuated Cycle Length (s)			109.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization			83.3%		ICU Level of Service				E				
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
15: Hilltop Dr & Cypress Ave




























Existing Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  			 		 	 	 
Traffic Volume (vph)	389	1066	275	76	855	68	228	98	68	78	91	560
Future Volume (vph)	389	1066	275	76	855	68	228	98	68	78	91	560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.96		1.00	0.89	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4929		3433	5020		1610	3169		1681	1483	1460
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4929		3433	5020		1610	3169		1681	1483	1460
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	427	1171	302	84	940	75	251	108	75	86	100	615
RTOR Reduction (vph)	0	35	0	0	7	0	0	30	0	0	63	272
Lane Group Flow (vph)	427	1438	0	84	1008	0	146	258	0	77	304	85
Confl. Peds. (#/hr)						8			22			14
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	18.3	44.4		6.2	31.8		23.7	23.7		28.6	28.6	28.6
Effective Green, g (s)	18.3	44.4		6.2	31.8		23.7	23.7		28.6	28.6	28.6
Actuated g/C Ratio	0.15	0.37		0.05	0.27		0.20	0.20		0.24	0.24	0.24
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	523	1823		177	1330		317	625		400	353	347
v/s Ratio Prot	c0.12	c0.29		0.02	0.20		c0.09	0.08		0.05	c0.20	
v/s Ratio Perm												0.06
v/c Ratio	0.82	0.79		0.47	0.76		0.46	0.41		0.19	0.86	0.25
Uniform Delay, d1	49.2	33.6		55.3	40.6		42.5	42.1		36.5	43.8	37.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.1	3.6		0.7	4.1		0.4	0.2		0.1	18.2	0.1
Delay (s)	58.3	37.2		56.0	44.6		42.9	42.2		36.6	62.0	37.1
Level of Service	E	D		E	D		D	D		D	E	D
Approach Delay (s)		41.9			45.5			42.4			48.5	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			44.1				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			17.6		
Intersection Capacity Utilization			76.1%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Existing Plus Project Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Traffic Volume (vph)	83	227	202	256	485	213	223	468	194	144	363	77
Future Volume (vph)	83	227	202	256	485	213	223	468	194	144	363	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1526	1770	3539	1531	1770	3349		1770	3432	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1526	1770	3539	1531	1770	3349		1770	3432	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	92	252	224	284	539	237	248	520	216	160	403	86
RTOR Reduction (vph)	0	0	173	0	0	116	0	29	0	0	13	0
Lane Group Flow (vph)	92	252	51	284	539	121	248	707	0	160	476	0
Confl. Peds. (#/hr)			24			21			19			8
Confl. Bikes (#/hr)			1			2			2			3
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	6.1	24.6	24.6	21.7	40.2	40.2	17.4	30.4		14.6	27.3	
Effective Green, g (s)	6.1	24.6	24.6	21.7	40.2	40.2	17.4	30.4		14.6	27.3	
Actuated g/C Ratio	0.06	0.23	0.23	0.20	0.37	0.37	0.16	0.28		0.14	0.25	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	194	809	349	357	1323	572	286	947		240	871	
v/s Ratio Prot	0.03	0.07		c0.16	c0.15		c0.14	c0.21		0.09	0.14	
v/s Ratio Perm			0.03			0.08						
v/c Ratio	0.47	0.31	0.15	0.80	0.41	0.21	0.87	0.75		0.67	0.55	
Uniform Delay, d1	49.1	34.4	33.1	40.8	24.9	22.9	43.9	35.0		44.1	34.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5	0.4	10.9	0.4	0.4	22.4	3.9		5.3	1.2	
Delay (s)	49.8	34.9	33.5	51.7	25.3	23.3	66.3	38.9		49.5	36.0	
Level of Service	D	C	C	D	C	C	E	D		D	D	
Approach Delay (s)		36.7			31.9			45.8			39.3	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.4				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			107.5				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			76.2%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

Existing Plus Project Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	311	75	127	564	94	64	40	100	101	52	90
Future Volume (vph)	100	311	75	127	564	94	64	40	100	101	52	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (prot)	1770	3395		1770	3436			1712			1693	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.98	
Satd. Flow (perm)	1770	3395		1770	3436			1712			1693	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	109	338	82	138	613	102	70	43	109	110	57	98
RTOR Reduction (vph)	0	21	0	0	13	0	0	35	0	0	20	0
Lane Group Flow (vph)	109	399	0	138	702	0	0	187	0	0	245	0
Confl. Peds. (#/hr)			24			19						57
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	8.0	22.2		9.0	23.2			13.2			22.4	
Effective Green, g (s)	8.0	22.2		9.0	23.2			13.2			22.4	
Actuated g/C Ratio	0.10	0.27		0.11	0.28			0.16			0.27	
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0	
Lane Grp Cap (vph)	169	902		190	954			270			454	
v/s Ratio Prot	0.06	0.12		c0.08	c0.20			c0.11			c0.14	
v/s Ratio Perm												
v/c Ratio	0.64	0.44		0.73	0.74			0.69			0.54	
Uniform Delay, d1	36.4	25.5		36.1	27.4			33.2			26.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	6.2	0.5		11.1	3.2			6.1			0.6	
Delay (s)	42.6	26.0		47.1	30.6			39.4			26.7	
Level of Service	D	C		D	C			D			C	
Approach Delay (s)		29.4			33.3			39.4			26.7	
Approach LOS		C			C			D			C	

### Intersection Summary
























HCM 2000 Control Delay	32.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	83.5	Sum of lost time (s)	16.7
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

## 3: Bechelli Ln & Hartnell Ave

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	204	121	181	389	148	253	262	166	116	211	67
Future Volume (vph)	10	204	121	181	389	148	253	262	166	116	211	67
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1558	1770	3539	1550	1770	3312		1770	3395	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1558	1770	3539	1550	1770	3312		1770	3395	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	222	132	197	423	161	275	285	180	126	229	73
RTOR Reduction (vph)	0	0	103	0	0	101	0	88	0	0	30	0
Lane Group Flow (vph)	11	222	29	197	423	60	275	377	0	126	272	0
Confl. Peds. (#/hr)			1			9			4			6
Confl. Bikes (#/hr)			3			3			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	0.9	17.4	17.4	13.2	29.7	29.7	16.0	23.4		8.8	16.2	
Effective Green, g (s)	0.9	17.4	17.4	13.2	29.7	29.7	16.0	23.4		8.8	16.2	
Actuated g/C Ratio	0.01	0.22	0.22	0.17	0.37	0.37	0.20	0.29		0.11	0.20	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	19	771	339	292	1317	576	354	971		195	689	
v/s Ratio Prot	0.01	0.06		c0.11	c0.12		c0.16	c0.11		0.07	0.08	
v/s Ratio Perm			0.02			0.04						
v/c Ratio	0.58	0.29	0.08	0.67	0.32	0.10	0.78	0.39		0.65	0.39	
Uniform Delay, d1	39.3	26.0	24.9	31.3	17.9	16.4	30.2	22.5		34.0	27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	23.8	0.4	0.2	4.8	0.3	0.2	9.4	0.5		5.4	0.8	
Delay (s)	63.1	26.5	25.1	36.1	18.2	16.5	39.6	23.0		39.4	28.3	
Level of Service	E	C	C	D	B	B	D	C		D	C	
Approach Delay (s)		27.1			22.3			29.2			31.6	
Approach LOS		C			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			79.8			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			57.4%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕				↗	↖	↕		↖	↕	
Traffic Vol, veh/h	4	0	6	0	0	6	12	649	48	18	329	9
Future Vol, veh/h	4	0	6	0	0	6	12	649	48	18	329	9
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	75	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	5	0	7	0	0	7	15	801	59	22	406	11

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	888	1349	210	-	-	432	418	0	0	862	0	0
Stage 1	457	457	-	-	-	-	-	-	-	-	-	-
Stage 2	431	892	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	237	148	793	0	0	569	1130	-	-	769	-	-
Stage 1	550	563	-	0	0	-	-	-	-	-	-	-
Stage 2	570	356	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	226	141	792	-	-	568	1129	-	-	768	-	-
Mov Cap-2 Maneuver	226	141	-	-	-	-	-	-	-	-	-	-
Stage 1	542	546	-	-	-	-	-	-	-	-	-	-
Stage 2	555	351	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.4		11.4		0.1		0.5	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1129	-	-	396	568	768	-	-
HCM Lane V/C Ratio	0.013	-	-	0.031	0.013	0.029	-	-
HCM Control Delay (s)	8.2	-	-	14.4	11.4	9.8	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	-	-

# HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	↗
Traffic Volume (vph)	5	0	8	8	0	25	27	620	12	33	340	25
Future Volume (vph)	5	0	8	8	0	25	27	620	12	33	340	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			5.0		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.90		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1671			1637		1770	3528		1770	3497	
Flt Permitted		0.98			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1671			1637		1770	3528		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	9	9	0	27	29	674	13	36	370	27
RTOR Reduction (vph)	0	14	0	0	33	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	3	0	29	686	0	36	394	0
Confl. Peds. (#/hr)							2		2			4
Confl. Bikes (#/hr)									2			2
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		0.5			4.3		0.8	32.4		2.2	33.8	
Effective Green, g (s)		0.5			4.3		0.8	32.4		2.2	33.8	
Actuated g/C Ratio		0.01			0.08		0.01	0.57		0.04	0.59	
Clearance Time (s)		4.0			5.0		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		14			123		24	2008		68	2077	
v/s Ratio Prot		c0.00			c0.00		0.02	c0.19		c0.02	0.11	
v/s Ratio Perm												
v/c Ratio		0.01			0.02		1.21	0.34		0.53	0.19	
Uniform Delay, d1		28.0			24.4		28.1	6.5		26.8	5.3	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		254.2	0.2		3.4	0.1	
Delay (s)		28.0			24.4		282.2	6.8		30.2	5.4	
Level of Service		C			C		F	A		C	A	
Approach Delay (s)		28.0			24.4			17.9			7.4	
Approach LOS		C			C			B			A	

### Intersection Summary

HCM 2000 Control Delay	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	56.9	Sum of lost time (s)	17.5
Intersection Capacity Utilization	37.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	3	0	0	5	16	627	7	3	395	73
Future Vol, veh/h	10	0	3	0	0	5	16	627	7	3	395	73
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	4	0	0	6	20	765	9	4	482	89



















Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	961	1354	289	1061	1394	389	574	0	0	776	0	0
Stage 1	538	538	-	812	812	-	-	-	-	-	-	-
Stage 2	423	816	-	249	582	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	211	148	708	178	140	610	995	-	-	836	-	-
Stage 1	495	521	-	339	390	-	-	-	-	-	-	-
Stage 2	579	389	-	733	497	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	204	144	706	173	136	609	992	-	-	834	-	-
Mov Cap-2 Maneuver	204	144	-	173	136	-	-	-	-	-	-	-
Stage 1	484	517	-	332	381	-	-	-	-	-	-	-
Stage 2	562	380	-	726	493	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.8		11		0.2		0.1	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	992	-	-	244	609	834	-	-
HCM Lane V/C Ratio	0.02	-	-	0.065	0.01	0.004	-	-
HCM Control Delay (s)	8.7	-	-	20.8	11	9.3	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0	0	-	-

HCM Signalized Intersection Capacity Analysis  
7: Hartnell Ave & Parkview Ave

Existing Plus Project Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	2	21	3	0	8	70	548	24	4	447	50
Future Volume (vph)	73	2	21	3	0	8	70	548	24	4	447	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.90		1.00	0.99		1.00	0.98	
Flt Protected		0.96			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1736			1635		1770	3513		1770	3477	
Flt Permitted		0.77			0.93		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1388			1536		1770	3513		1770	3477	
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	82	2	24	3	0	9	79	616	27	4	502	56
RTOR Reduction (vph)	0	14	0	0	10	0	0	3	0	0	9	0
Lane Group Flow (vph)	0	94	0	0	2	0	79	640	0	4	549	0
Confl. Peds. (#/hr)			3			7			3			2
Confl. Bikes (#/hr)									3			3
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		9.2			9.2		6.0	29.5		0.6	24.1	
Effective Green, g (s)		9.2			9.2		6.0	29.5		0.6	24.1	
Actuated g/C Ratio		0.18			0.18		0.11	0.56		0.01	0.46	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		244			270		203	1981		20	1602	
v/s Ratio Prot							c0.04	0.18		0.00	c0.16	
v/s Ratio Perm		c0.07			0.00							
v/c Ratio		0.39			0.01		0.39	0.32		0.20	0.34	
Uniform Delay, d1		19.1			17.8		21.5	6.1		25.6	9.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.0		0.5	0.2		1.8	0.3	
Delay (s)		19.4			17.8		21.9	6.3		27.4	9.3	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		19.4			17.8			8.0			9.4	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.5				HCM 2000 Level of Service				A	
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			52.3			Sum of lost time (s)				13.0		
Intersection Capacity Utilization			44.6%			ICU Level of Service				A		
Analysis Period (min)			15									
c Critical Lane Group												

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	4	0	3	3	0	11	8	616	5	22	495	16
Future Vol, veh/h	4	0	3	3	0	11	8	616	5	22	495	16
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	0	3	3	0	12	9	677	5	24	544	18

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	960	1305	283	1020	1312	343	564	0	0	684	0	0
Stage 1	603	603	-	700	700	-	-	-	-	-	-	-
Stage 2	357	702	-	320	612	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	210	158	711	189	156	650	997	-	-	898	-	-
Stage 1	450	484	-	394	437	-	-	-	-	-	-	-
Stage 2	631	436	-	663	480	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	200	152	710	183	150	649	995	-	-	896	-	-
Mov Cap-2 Maneuver	200	152	-	183	150	-	-	-	-	-	-	-
Stage 1	445	470	-	390	432	-	-	-	-	-	-	-
Stage 2	614	431	-	642	466	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.8		13.9		0.1		0.4	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	995	-	-	289	420	896	-
HCM Lane V/C Ratio	0.009	-	-	0.027	0.037	0.027	-
HCM Control Delay (s)	8.7	-	-	17.8	13.9	9.1	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0.1	-



Intersection						
Int Delay, s/veh	0					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖↖↖	↗	
Traffic Vol, veh/h	0	4	0	631	529	172
Future Vol, veh/h	0	4	0	631	529	172
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	0	789	661	215

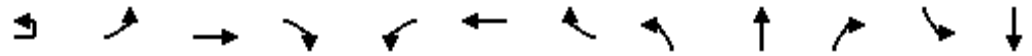
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	771	878	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	399	767	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	398	766	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	766	-	398	-	-
HCM Lane V/C Ratio	-	-	0.013	-	-
HCM Control Delay (s)	0	-	14.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM Signalized Intersection Capacity Analysis  
10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔↔↔	↔	↔	↔↔↔	↔	↔↔	↑	↔		↔
Traffic Volume (vph)	1	93	467	424	268	718	50	468	21	142	12	9
Future Volume (vph)	1	93	467	424	268	718	50	468	21	142	12	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (prot)		1736	4988	1535	1736	4988	1508	3367	1827	1553		1777
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (perm)		1736	4988	1535	1736	4988	1508	3367	1827	1553		1777
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	1	112	563	511	323	865	60	564	25	171	14	11
RTOR Reduction (vph)	0	0	0	283	0	0	38	0	0	130	0	0
Lane Group Flow (vph)	0	113	563	228	323	865	22	564	25	41	0	25
Confl. Peds. (#/hr)				2			2					
Confl. Bikes (#/hr)				1			1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	5	5	2	3	1	6		3	3		4	4
Permitted Phases				2			6			3		
Actuated Green, G (s)		11.9	21.2	46.0	28.1	37.4	37.4	24.8	24.8	24.8		11.1
Effective Green, g (s)		11.9	21.2	46.0	28.1	37.4	37.4	24.8	24.8	24.8		11.1
Actuated g/C Ratio		0.12	0.21	0.45	0.27	0.36	0.36	0.24	0.24	0.24		0.11
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		200	1026	685	473	1811	547	810	439	373		191
v/s Ratio Prot		0.07	c0.11	0.08	c0.19	0.17		c0.17	0.01			c0.01
v/s Ratio Perm				0.07			0.01			0.03		
v/c Ratio		0.56	0.55	0.33	0.68	0.48	0.04	0.70	0.06	0.11		0.13
Uniform Delay, d1		43.1	36.6	18.5	33.5	25.3	21.2	35.7	30.1	30.5		41.6
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		2.2	1.0	0.1	4.4	0.4	0.1	2.1	0.0	0.0		0.1
Delay (s)		45.3	37.6	18.6	37.9	25.7	21.3	37.8	30.1	30.5		41.7
Level of Service		D	D	B	D	C	C	D	C	C		D
Approach Delay (s)			30.2			28.6			35.9			41.4
Approach LOS			C			C			D			D
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			103.0			Sum of lost time (s)			17.8			
Intersection Capacity Utilization			63.3%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
 AM Peak Hour

Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	32
Future Volume (vph)	32
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	39
RTOR Reduction (vph)	35
Lane Group Flow (vph)	4
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	4%
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.1
Effective Green, g (s)	11.1
Actuated g/C Ratio	0.11
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	164
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.03
Uniform Delay, d1	41.1
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	41.1
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

Intersection							
Int Delay, s/veh	7.2						
Movement	WBU	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	2	11	84	0	28	65	2
Future Vol, veh/h	2	11	84	0	28	65	2
Conflicting Peds, #/hr	0	0	0	0	3	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	0	-	-	0
Grade, %	-	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72	72
Heavy Vehicles, %	10	10	10	10	10	10	10
Mvmt Flow	3	15	117	0	39	90	3

Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	0	206	23	0	0	42
Stage 1	0	23	-	-	-	-
Stage 2	0	183	-	-	-	-
Critical Hdwy	-	6.5	6.3	-	-	4.2
Critical Hdwy Stg 1	-	5.5	-	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	-	-
Follow-up Hdwy	-	3.59	3.39	-	-	2.29
Pot Cap-1 Maneuver	0	765	1031	-	-	1517
Stage 1	0	979	-	-	-	-
Stage 2	0	829	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	0	717	1028	-	-	1513
Mov Cap-2 Maneuver	0	717	-	-	-	-
Stage 1	0	917	-	-	-	-
Stage 2	0	829	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.2	0	7.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	979	1513
HCM Lane V/C Ratio	-	-	0.135	0.06
HCM Control Delay (s)	-	-	9.2	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.2

HCM Signalized Intersection Capacity Analysis  
12: Bechelli Lane & Cypress Ave

Existing Plus Project Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	477	59	339	957	303	89	73	205	85	30	25
Future Volume (vph)	11	477	59	339	957	303	89	73	205	85	30	25
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.5	4.5	4.5	4.1	4.1	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (prot)	1770	4991		3433	4864		1681	1759	1553	1681	1657	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (perm)	1770	4991		3433	4864		1681	1759	1553	1681	1657	
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	14	589	73	419	1181	374	110	90	253	105	37	31
RTOR Reduction (vph)	0	10	0	0	34	0	0	0	221	0	19	0
Lane Group Flow (vph)	14	652	0	419	1521	0	98	102	32	87	67	0
Confl. Peds. (#/hr)			5			5			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	50.1		17.2	64.1		14.0	14.0	14.0	11.1	11.1	
Effective Green, g (s)	3.2	50.1		17.2	64.1		14.0	14.0	14.0	11.1	11.1	
Actuated g/C Ratio	0.03	0.46		0.16	0.58		0.13	0.13	0.13	0.10	0.10	
Clearance Time (s)	4.0	5.0		4.0	5.0		4.5	4.5	4.5	4.1	4.1	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	51	2273		536	2834		213	223	197	169	167	
v/s Ratio Prot	0.01	0.13		c0.12	c0.31		c0.06	0.06		c0.05	0.04	
v/s Ratio Perm									0.02			
v/c Ratio	0.27	0.29		0.78	0.54		0.46	0.46	0.16	0.51	0.40	
Uniform Delay, d1	52.3	18.8		44.6	13.9		44.5	44.5	42.8	46.9	46.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	0.3		6.8	0.7		0.6	0.5	0.1	1.1	0.6	
Delay (s)	53.3	19.1		51.3	14.7		45.1	45.0	42.9	48.0	46.9	
Level of Service	D	B		D	B		D	D	D	D	D	
Approach Delay (s)		19.8			22.5			43.9			47.5	
Approach LOS		B			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.58	C
Actuated Cycle Length (s)	110.0	Sum of lost time (s)
Intersection Capacity Utilization	56.4%	17.6
Analysis Period (min)	15	ICU Level of Service
		B
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave


























Existing Plus Project Conditions  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑	↑↑↑					↑	↑	↑
Traffic Volume (vph)	0	646	121	241	891	0	0	0	0	430	1	708
Future Volume (vph)	0	646	121	241	891	0	0	0	0	430	1	708
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.3	5.3	5.2	5.3					5.7	5.7	5.7
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (prot)		5036	1568	1752	5036					1665	1448	1490
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (perm)		5036	1568	1752	5036					1665	1448	1490
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	702	132	262	968	0	0	0	0	467	1	770
RTOR Reduction (vph)	0	0	65	0	0	0	0	0	0	0	109	109
Lane Group Flow (vph)	0	702	67	262	968	0	0	0	0	420	301	299
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		24.9	24.9	18.1	48.2					40.8	40.8	40.8
Effective Green, g (s)		24.9	24.9	18.1	48.2					40.8	40.8	40.8
Actuated g/C Ratio		0.25	0.25	0.18	0.48					0.41	0.41	0.41
Clearance Time (s)		5.3	5.3	5.2	5.3					5.7	5.7	5.7
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1253	390	317	2427					679	590	607
v/s Ratio Prot		c0.14		c0.15	0.19					c0.25	0.21	
v/s Ratio Perm			0.04									0.20
v/c Ratio		0.56	0.17	0.83	0.40					0.62	0.51	0.49
Uniform Delay, d1		32.8	29.5	39.4	16.6					23.4	22.1	21.9
Progression Factor		1.00	1.00	0.64	0.83					1.00	1.00	1.00
Incremental Delay, d2		1.8	1.0	14.5	0.4					1.4	0.6	0.5
Delay (s)		34.6	30.4	39.7	14.3					24.9	22.7	22.4
Level of Service		C	C	D	B					C	C	C
Approach Delay (s)		33.9			19.7			0.0			23.3	
Approach LOS		C			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			24.7			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)				16.2		
Intersection Capacity Utilization			60.1%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												






















HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave

Existing Plus Project Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  			 				
Traffic Volume (vph)	228	848	0	0	741	331	391	1	366	0	0	0
Future Volume (vph)	228	848	0	0	741	331	391	1	366	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.93	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.98	1.00			
Satd. Flow (prot)	1752	5036			5036	1568	1665	1517	1490			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.98	1.00			
Satd. Flow (perm)	1752	5036			5036	1568	1665	1517	1490			
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	253	942	0	0	823	368	434	1	407	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	92	0	31	155	0	0	0
Lane Group Flow (vph)	253	942	0	0	823	276	291	251	115	0	0	0
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	18.9	65.0			41.9	41.9	25.0	25.0	25.0			
Effective Green, g (s)	18.9	65.0			41.9	41.9	25.0	25.0	25.0			
Actuated g/C Ratio	0.19	0.65			0.42	0.42	0.25	0.25	0.25			
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5			
Lane Grp Cap (vph)	331	3273			2110	656	416	379	372			
v/s Ratio Prot	c0.14	0.19			0.16		c0.17	0.17				
v/s Ratio Perm						c0.18			0.08			
v/c Ratio	0.76	0.29			0.39	0.42	0.70	0.66	0.31			
Uniform Delay, d1	38.4	7.5			20.2	20.5	34.1	33.7	30.5			
Progression Factor	0.18	0.22			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	8.9	0.2			0.5	2.0	4.7	3.9	0.3			
Delay (s)	15.7	1.9			20.7	22.5	38.8	37.6	30.8			
Level of Service	B	A			C	C	D	D	C			
Approach Delay (s)		4.8			21.3			35.8			0.0	
Approach LOS		A			C			D			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			19.0		HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				14.2			
Intersection Capacity Utilization			60.1%		ICU Level of Service				B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
15: Hilltop Dr & Cypress Ave




























Existing Plus Project Conditions  
AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	224	796	194	60	627	89	138	34	47	48	33	307	
Future Volume (vph)	224	796	194	60	627	89	138	34	47	48	33	307	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		5.1	5.1	5.1	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.88	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	3433	4920		3433	4990		1610	3134		1681	1475	1482	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	3433	4920		3433	4990		1610	3134		1681	1475	1482	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	241	856	209	65	674	96	148	37	51	52	35	330	
RTOR Reduction (vph)	0	24	0	0	12	0	0	44	0	0	130	163	
Lane Group Flow (vph)	241	1041	0	65	758	0	80	112	0	47	59	18	
Confl. Peds. (#/hr)			4						8			1	
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm	
Protected Phases	5	2		1	6		3	3		4	4		
Permitted Phases												4	
Actuated Green, G (s)	12.1	61.1		5.8	54.3		14.7	14.7		10.8	10.8	10.8	
Effective Green, g (s)	12.1	61.1		5.8	54.3		14.7	14.7		10.8	10.8	10.8	
Actuated g/C Ratio	0.11	0.56		0.05	0.49		0.13	0.13		0.10	0.10	0.10	
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		5.1	5.1	5.1	
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7	
Lane Grp Cap (vph)	377	2732		181	2463		215	418		165	144	145	
v/s Ratio Prot	c0.07	c0.21		0.02	0.15		c0.05	0.04		0.03	c0.04		
v/s Ratio Perm												0.01	
v/c Ratio	0.64	0.38		0.36	0.31		0.37	0.27		0.28	0.41	0.12	
Uniform Delay, d1	46.9	13.8		50.3	16.6		43.4	42.8		46.0	46.6	45.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	2.6	0.4		0.4	0.3		0.4	0.1		0.3	0.7	0.1	
Delay (s)	49.5	14.2		50.8	17.0		43.8	42.9		46.4	47.3	45.4	
Level of Service	D	B		D	B		D	D		D	D	D	
Approach Delay (s)		20.7			19.6			43.2			46.4		
Approach LOS		C			B			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			26.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			110.0									Sum of lost time (s)	18.1
Intersection Capacity Utilization			65.2%									ICU Level of Service	C
Analysis Period (min)			15										
c	Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Existing Plus Project Conditions  
PM Peak Hour




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Traffic Volume (vph)	169	472	109	189	388	262	102	373	171	348	506	142
Future Volume (vph)	169	472	109	189	388	262	102	373	171	348	506	142
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1544	1770	3539	1545	1770	3341		1770	3401	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1544	1770	3539	1545	1770	3341		1770	3401	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	178	497	115	199	408	276	107	393	180	366	533	149
RTOR Reduction (vph)	0	0	75	0	0	197	0	37	0	0	16	0
Lane Group Flow (vph)	178	497	40	199	408	79	107	536	0	366	666	0
Confl. Peds. (#/hr)			11			10			14			15
Confl. Bikes (#/hr)			2			3			2			1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	10.5	25.2	25.2	17.4	32.1	32.1	11.3	25.8		27.0	41.2	
Effective Green, g (s)	10.5	25.2	25.2	17.4	32.1	32.1	11.3	25.8		27.0	41.2	
Actuated g/C Ratio	0.09	0.23	0.23	0.16	0.29	0.29	0.10	0.23		0.24	0.37	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	322	799	348	275	1017	444	179	772		428	1255	
v/s Ratio Prot	0.05	c0.14		c0.11	0.12		0.06	c0.16		c0.21	0.20	
v/s Ratio Perm			0.03			0.05						
v/c Ratio	0.55	0.62	0.11	0.72	0.40	0.18	0.60	0.69		0.86	0.53	
Uniform Delay, d1	48.3	38.9	34.3	44.8	32.0	29.9	48.0	39.3		40.4	27.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	2.1	0.3	7.7	0.5	0.4	3.5	3.5		14.8	0.8	
Delay (s)	49.5	41.0	34.6	52.6	32.6	30.3	51.5	42.7		55.2	28.4	
Level of Service	D	D	C	D	C	C	D	D		E	C	
Approach Delay (s)		42.0			36.3			44.1			37.8	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			39.7				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			111.6			Sum of lost time (s)				16.5		
Intersection Capacity Utilization			80.8%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

Existing Plus Project Conditions  
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	92	700	21	13	586	33	19	11	25	25	8	123	
Future Volume (vph)	92	700	21	13	586	33	19	11	25	25	8	123	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	5.0		3.5	5.0			4.3			4.5		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.99			0.94			0.89		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (prot)	1770	3520		1770	3506			1719			1631		
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (perm)	1770	3520		1770	3506			1719			1631		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	99	753	23	14	630	35	20	12	27	27	9	132	
RTOR Reduction (vph)	0	1	0	0	3	0	0	25	0	0	117	0	
Lane Group Flow (vph)	99	775	0	14	662	0	0	34	0	0	51	0	
Confl. Peds. (#/hr)			9			5						6	
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA		
Protected Phases	5	2		1	6		3	3		4	4		
Permitted Phases													
Actuated Green, G (s)	6.7	30.9		0.9	25.1			3.5			6.6		
Effective Green, g (s)	6.7	30.9		0.9	25.1			3.5			6.6		
Actuated g/C Ratio	0.11	0.52		0.02	0.42			0.06			0.11		
Clearance Time (s)	3.5	5.0		3.5	5.0			4.3			4.5		
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0		
Lane Grp Cap (vph)	200	1837		26	1486			101			181		
v/s Ratio Prot	c0.06	c0.22		0.01	0.19			c0.02			c0.03		
v/s Ratio Perm													
v/c Ratio	0.49	0.42		0.54	0.45			0.33			0.28		
Uniform Delay, d1	24.7	8.7		28.9	12.1			26.7			24.1		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	0.7	0.2		10.3	0.3			0.7			0.3		
Delay (s)	25.4	8.9		39.3	12.4			27.4			24.4		
Level of Service	C	A		D	B			C			C		
Approach Delay (s)		10.8			13.0			27.4			24.4		
Approach LOS		B			B			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			13.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43										
Actuated Cycle Length (s)			59.2									Sum of lost time (s)	17.3
Intersection Capacity Utilization			47.6%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

## 3: Bechelli Ln & Hartnell Ave

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	448	284	269	339	120	134	253	183	182	268	43
Future Volume (vph)	43	448	284	269	339	120	134	253	183	182	268	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1560	1770	3539	1563	1770	3296		1770	3458	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1560	1770	3539	1563	1770	3296		1770	3458	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	48	498	316	299	377	133	149	281	203	202	298	48
RTOR Reduction (vph)	0	0	238	0	0	80	0	131	0	0	13	0
Lane Group Flow (vph)	48	498	78	299	377	53	149	353	0	202	333	0
Confl. Peds. (#/hr)			1						2			2
Confl. Bikes (#/hr)			2			2			1			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	4.5	21.6	21.6	18.0	35.1	35.1	12.2	17.2		14.2	19.2	
Effective Green, g (s)	4.5	21.6	21.6	18.0	35.1	35.1	12.2	17.2		14.2	19.2	
Actuated g/C Ratio	0.05	0.25	0.25	0.20	0.40	0.40	0.14	0.20		0.16	0.22	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	90	868	382	362	1411	623	245	644		285	754	
v/s Ratio Prot	0.03	c0.14		c0.17	0.11		0.08	c0.11		c0.11	0.10	
v/s Ratio Perm			0.05			0.03						
v/c Ratio	0.53	0.57	0.20	0.83	0.27	0.09	0.61	0.55		0.71	0.44	
Uniform Delay, d1	40.7	29.2	26.4	33.5	17.8	16.5	35.7	31.9		34.9	29.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	1.5	0.6	13.6	0.2	0.1	2.9	1.7		6.4	0.9	
Delay (s)	43.7	30.6	26.9	47.1	18.0	16.6	38.6	33.6		41.4	30.6	
Level of Service	D	C	C	D	B	B	D	C		D	C	
Approach Delay (s)		30.0			28.5			34.8			34.6	
Approach LOS		C			C			C			C	

### Intersection Summary

HCM 2000 Control Delay	31.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	25	10	0	16	3	511	2	6	740	6
Future Vol, veh/h	10	0	25	10	0	16	3	511	2	6	740	6
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	29	12	0	19	4	601	2	7	871	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1201	1503	442	1060	1505	302	881	0	0	603	0	0
Stage 1	892	892	-	610	610	-	-	-	-	-	-	-
Stage 2	309	611	-	450	895	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	140	120	563	178	120	694	763	-	-	971	-	-
Stage 1	303	358	-	448	483	-	-	-	-	-	-	-
Stage 2	676	482	-	558	357	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	135	118	561	167	118	694	761	-	-	971	-	-
Mov Cap-2 Maneuver	135	118	-	167	118	-	-	-	-	-	-	-
Stage 1	301	354	-	446	481	-	-	-	-	-	-	-
Stage 2	654	480	-	525	353	-	-	-	-	-	-	-

Approach	EB		WB		NB			SB		
HCM Control Delay, s	19.2		17.7		0.1			0.1		
HCM LOS	C		C							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	761	-	-	295	313	971	-
HCM Lane V/C Ratio	0.005	-	-	0.14	0.098	0.007	-
HCM Control Delay (s)	9.8	-	-	19.2	17.7	8.7	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-

# HCM Signalized Intersection Capacity Analysis

Existing Plus Project Conditions

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (vph)	35	0	40	25	0	39	1	2	534	0	5	686
Future Volume (vph)	35	0	40	25	0	39	1	2	534	0	5	686
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			4.5			4.0	5.0		4.0	5.0
Lane Util. Factor		1.00			1.00			1.00	0.95		1.00	0.95
Frbp, ped/bikes		1.00			0.99			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.93			0.92			1.00	1.00		1.00	1.00
Flt Protected		0.98			0.98			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1689			1661			1770	3539		1770	3533
Flt Permitted		0.98			0.98			0.95	1.00		0.95	1.00
Satd. Flow (perm)		1689			1661			1770	3539		1770	3533
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	42	0	48	30	0	47	1	2	643	0	6	827
RTOR Reduction (vph)	0	83	0	0	72	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	7	0	0	5	0	0	3	643	0	6	835
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)						1				2		
Turn Type	Split	NA		Split	NA		Prot	Prot	NA		Prot	NA
Protected Phases	4	4		3	3		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)		3.8			3.7			0.7	27.2		0.8	27.3
Effective Green, g (s)		3.8			3.7			0.7	27.2		0.8	27.3
Actuated g/C Ratio		0.07			0.07			0.01	0.52		0.02	0.52
Clearance Time (s)		3.5			4.5			4.0	5.0		4.0	5.0
Vehicle Extension (s)		2.0			2.0			2.0	5.0		2.0	5.0
Lane Grp Cap (vph)		122			117			23	1833		26	1837
v/s Ratio Prot		c0.00			c0.00			0.00	0.18		c0.00	c0.24
v/s Ratio Perm												
v/c Ratio		0.05			0.05			0.13	0.35		0.23	0.45
Uniform Delay, d1		22.7			22.8			25.6	7.5		25.5	7.9
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1			0.9	0.2		1.7	0.4
Delay (s)		22.7			22.8			26.5	7.7		27.2	8.3
Level of Service		C			C			C	A		C	A
Approach Delay (s)		22.7			22.8			7.8				8.4
Approach LOS		C			C			A				A
<b>Intersection Summary</b>												
HCM 2000 Control Delay			9.6				HCM 2000 Level of Service		A			
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			52.5			Sum of lost time (s)		17.0				
Intersection Capacity Utilization			32.8%			ICU Level of Service		A				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Plus Project Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	7
Future Volume (vph)	7
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.83
Adj. Flow (vph)	8
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Confl. Bikes (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection													
Int Delay, s/veh	1.8												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕	
Traffic Vol, veh/h	41	0	23	3	0	3	8	597	3	1	6	672	11
Future Vol, veh/h	41	0	23	3	0	3	8	597	3	1	6	672	11
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	0	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	48	0	27	3	0	3	9	694	3	1	7	781	13



















Major/Minor	Minor2		Minor1		Major1		Major2						
Conflicting Flow All	1172	1523	400	1122	1528	350	797	0	0	698	698	0	0
Stage 1	807	807	-	715	715	-	-	-	-	-	-	-	-
Stage 2	365	716	-	407	813	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	148	117	600	161	116	646	821	-	-	518	894	-	-
Stage 1	341	392	-	388	433	-	-	-	-	-	-	-	-
Stage 2	627	432	-	592	390	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	144	114	598	151	113	645	819	-	-	809	809	-	-
Mov Cap-2 Maneuver	144	114	-	151	113	-	-	-	-	-	-	-	-
Stage 1	336	387	-	383	428	-	-	-	-	-	-	-	-
Stage 2	617	427	-	560	385	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	33.7		20.1		0.1		0.1	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	819	-	-	198	245	809	-
HCM Lane V/C Ratio	0.011	-	-	0.376	0.028	0.01	-
HCM Control Delay (s)	9.4	-	-	33.7	20.1	9.5	-
HCM Lane LOS	A	-	-	D	C	A	-
HCM 95th %tile Q(veh)	0	-	-	1.6	0.1	0	-

HCM Signalized Intersection Capacity Analysis  
7: Hartnell Ave & Parkview Ave

Existing Plus Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	233	0	71	25	2	25	32	589	21	21	594	62
Future Volume (vph)	233	0	71	25	2	25	32	589	21	21	594	62
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.93		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1737			1689		1770	3518		1770	3482	
Flt Permitted		0.74			0.82		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1327			1418		1770	3518		1770	3482	
Peak-hour factor, PHF	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Adj. Flow (vph)	281	0	86	30	2	30	39	710	25	25	716	75
RTOR Reduction (vph)	0	99	0	0	21	0	0	3	0	0	9	0
Lane Group Flow (vph)	0	268	0	0	41	0	39	732	0	25	782	0
Confl. Peds. (#/hr)							3			1		
Confl. Bikes (#/hr)										2		2
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		17.5			17.5		2.3	24.2		2.0	23.9	
Effective Green, g (s)		17.5			17.5		2.3	24.2		2.0	23.9	
Actuated g/C Ratio		0.31			0.31		0.04	0.43		0.04	0.42	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		409			437		71	1501		62	1467	
v/s Ratio Prot							0.02	c0.21		0.01	c0.22	
v/s Ratio Perm		c0.20			0.03							
v/c Ratio		0.66			0.09		0.55	0.49		0.40	0.53	
Uniform Delay, d1		17.0			14.0		26.7	11.8		26.8	12.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.9			0.0		4.6	0.5		1.6	0.7	
Delay (s)		19.9			14.0		31.3	12.3		28.3	12.9	
Level of Service		B			B		C	B		C	B	
Approach Delay (s)		19.9			14.0			13.2			13.4	
Approach LOS		B			B			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.5				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			56.7				Sum of lost time (s)				13.0	
Intersection Capacity Utilization			56.9%				ICU Level of Service				B	
Analysis Period (min)			15									

c Critical Lane Group



Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	0	14	6	0	27	9	828	10	18	657	20
Future Vol, veh/h	20	0	14	6	0	27	9	828	10	18	657	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	0	17	7	0	32	11	986	12	21	782	24

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1351	1856	403	1447	1862	499	806	0	0	998	0	0
Stage 1	836	836	-	1014	1014	-	-	-	-	-	-	-
Stage 2	515	1020	-	433	848	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	109	73	597	92	72	517	814	-	-	689	-	-
Stage 1	328	381	-	256	314	-	-	-	-	-	-	-
Stage 2	511	312	-	571	376	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	99	70	597	86	69	517	814	-	-	689	-	-
Mov Cap-2 Maneuver	99	70	-	86	69	-	-	-	-	-	-	-
Stage 1	323	370	-	252	310	-	-	-	-	-	-	-
Stage 2	473	308	-	538	365	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	37.4		20.5		0.1		0.3	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	814	-	-	151	271	689	-
HCM Lane V/C Ratio	0.013	-	-	0.268	0.145	0.031	-
HCM Control Delay (s)	9.5	-	-	37.4	20.5	10.4	-
HCM Lane LOS	A	-	-	E	C	B	-
HCM 95th %tile Q(veh)	0	-	-	1	0.5	0.1	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↖↖↖	↗	
Traffic Vol, veh/h	0	16	0	875	679	70
Future Vol, veh/h	0	16	0	875	679	70
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	0	972	754	78























Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	794	833	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	387	798	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	387	797	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	797	-	387	-	-
HCM Lane V/C Ratio	-	-	0.046	-	-
HCM Control Delay (s)	0	-	14.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM Signalized Intersection Capacity Analysis  
10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
PM Peak Hour

													
Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations													
Traffic Volume (vph)	2	42	733	593	114	689	45	556	19	300	69	42	
Future Volume (vph)	2	42	733	593	114	689	45	556	19	300	69	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.96	1.00	1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (prot)		1770	5085	1560	1770	5085	1525	3433	1863	1562		1806	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (perm)		1770	5085	1560	1770	5085	1525	3433	1863	1562		1806	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	2	49	862	698	134	811	53	654	22	353	81	49	
RTOR Reduction (vph)	0	0	0	302	0	0	35	0	0	251	0	0	
Lane Group Flow (vph)	0	51	862	396	134	811	18	654	22	102	0	130	
Confl. Peds. (#/hr)				4			4						
Confl. Bikes (#/hr)				2			1			2			
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	5	2	3	1	6		3	3		4	4	
Permitted Phases				2			6			3			
Actuated Green, G (s)		6.7	28.1	58.3	15.0	36.4	36.4	30.2	30.2	30.2		13.4	
Effective Green, g (s)		6.7	28.1	58.3	15.0	36.4	36.4	30.2	30.2	30.2		13.4	
Actuated g/C Ratio		0.06	0.27	0.56	0.14	0.35	0.35	0.29	0.29	0.29		0.13	
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)		113	1367	870	254	1771	531	992	538	451		231	
v/s Ratio Prot		0.03	c0.17	0.13	c0.08	0.16		c0.19	0.01			c0.07	
v/s Ratio Perm				0.12			0.01			0.07			
v/c Ratio		0.45	0.63	0.46	0.53	0.46	0.03	0.66	0.04	0.23		0.56	
Uniform Delay, d1		47.1	33.6	13.7	41.5	26.4	22.5	32.6	26.7	28.3		42.8	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		1.0	1.3	0.1	2.6	0.4	0.1	1.2	0.0	0.1		1.9	
Delay (s)		48.2	34.9	13.8	44.0	26.8	22.5	33.9	26.7	28.4		44.7	
Level of Service		D	C	B	D	C	C	C	C	C		D	
Approach Delay (s)			26.2			28.9			31.8			42.8	
Approach LOS			C			C			C			D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.6		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			104.5		Sum of lost time (s)					17.8			
Intersection Capacity Utilization			64.1%		ICU Level of Service					C			
Analysis Period (min)			15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	146
Future Volume (vph)	146
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	172
RTOR Reduction (vph)	119
Lane Group Flow (vph)	53
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	13.4
Effective Green, g (s)	13.4
Actuated g/C Ratio	0.13
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	202
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.26
Uniform Delay, d1	41.1
Progression Factor	1.00
Incremental Delay, d2	0.3
Delay (s)	41.4
Level of Service	D
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Intersection						
Int Delay, s/veh	8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	32	30	1	26	249	3
Future Vol, veh/h	32	30	1	26	249	3
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	34	1	30	286	3























Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	592	17	0	0	32
Stage 1	17	-	-	-	-
Stage 2	575	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	469	1062	-	-	1580
Stage 1	1006	-	-	-	-
Stage 2	563	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	383	1061	-	-	1578
Mov Cap-2 Maneuver	383	-	-	-	-
Stage 1	822	-	-	-	-
Stage 2	563	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	7.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	554	1578
HCM Lane V/C Ratio	-	-	0.129	0.181
HCM Control Delay (s)	-	-	12.5	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.7













HCM Signalized Intersection Capacity Analysis  
12: Bechelli Lane & Cypress Ave

Existing Plus Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	1236	103	344	643	108	108	27	320	264	62	17
Future Volume (vph)	12	1236	103	344	643	108	108	27	320	264	62	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		4.5	4.5	4.5	4.1	4.1	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5017		3433	4955		1681	1718	1552	1681	1697	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5017		3433	4955		1681	1718	1552	1681	1697	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	13	1358	113	378	707	119	119	30	352	290	68	19
RTOR Reduction (vph)	0	6	0	0	13	0	0	0	233	0	3	0
Lane Group Flow (vph)	13	1465	0	378	813	0	74	75	119	188	186	0
Confl. Peds. (#/hr)			9			3			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	53.6		16.5	66.9		15.2	15.2	15.2	17.6	17.6	
Effective Green, g (s)	3.2	53.6		16.5	66.9		15.2	15.2	15.2	17.6	17.6	
Actuated g/C Ratio	0.03	0.45		0.14	0.56		0.13	0.13	0.13	0.15	0.15	
Clearance Time (s)	3.5	5.0		3.5	5.0		4.5	4.5	4.5	4.1	4.1	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	47	2240		472	2762		212	217	196	246	248	
v/s Ratio Prot	0.01	c0.29		c0.11	0.16		0.04	0.04		c0.11	0.11	
v/s Ratio Perm									c0.08			
v/c Ratio	0.28	0.65		0.80	0.29		0.35	0.35	0.61	0.76	0.75	
Uniform Delay, d1	57.3	26.0		50.2	14.1		47.9	47.9	49.6	49.2	49.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.2	1.5		8.9	0.3		0.4	0.4	3.6	11.9	10.3	
Delay (s)	58.4	27.5		59.1	14.3		48.2	48.2	53.2	61.1	59.4	
Level of Service	E	C		E	B		D	D	D	E	E	
Approach Delay (s)		27.7			28.4			51.7			60.3	
Approach LOS		C			C			D			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.8				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.69									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			17.1		
Intersection Capacity Utilization			67.9%				ICU Level of Service			C		
Analysis Period (min)			15									
c	Critical Lane Group											




















HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave

Existing Plus Project Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖	↕	↗
Traffic Volume (vph)	0	1474	346	509	751	0	0	0	0	459	0	344
Future Volume (vph)	0	1474	346	509	751	0	0	0	0	459	0	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.95	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		5085	1517	1770	5085					1681	1557	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		5085	1517	1770	5085					1681	1557	1504
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1504	353	519	766	0	0	0	0	468	0	351
RTOR Reduction (vph)	0	0	47	0	0	0	0	0	0	0	51	210
Lane Group Flow (vph)	0	1504	306	519	766	0	0	0	0	285	227	46
Confl. Peds. (#/hr)			7			8						
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		43.1	43.1	32.9	80.2					19.8	19.8	19.8
Effective Green, g (s)		43.1	43.1	32.9	80.2					19.8	19.8	19.8
Actuated g/C Ratio		0.39	0.39	0.30	0.73					0.18	0.18	0.18
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1992	594	529	3707					302	280	270
v/s Ratio Prot		c0.30		c0.29	0.15					c0.17	0.15	
v/s Ratio Perm			0.20									0.03
v/c Ratio		0.76	0.52	0.98	0.21					0.94	0.81	0.17
Uniform Delay, d1		28.9	25.5	38.2	4.8					44.5	43.3	38.2
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		2.7	3.2	34.0	0.1					36.8	15.8	0.2
Delay (s)		31.6	28.7	72.3	4.9					81.4	59.1	38.4
Level of Service		C	C	E	A					F	E	D
Approach Delay (s)		31.0			32.1			0.0			60.4	
Approach LOS		C			C			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			37.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				14.2		
Intersection Capacity Utilization			84.7%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave

Existing Plus Project Conditions  
 PM Peak Hour






















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	556	1377	0	0	1112	536	148	1	369	0	0	0	
Future Volume (vph)	556	1377	0	0	1112	536	148	1	369	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.86	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (prot)	1770	5085			5085	1583	1681	1456	1504				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00				
Satd. Flow (perm)	1770	5085			5085	1583	1681	1456	1504				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Adj. Flow (vph)	585	1449	0	0	1171	564	156	1	388	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	99	0	98	98	0	0	0	
Lane Group Flow (vph)	585	1449	0	0	1171	465	140	106	105	0	0	0	
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm				
Protected Phases	5	2			6		8	8					
Permitted Phases						6			8				
Actuated Green, G (s)	37.7	87.5			45.6	45.6	11.5	11.5	11.5				
Effective Green, g (s)	37.7	87.5			45.6	45.6	11.5	11.5	11.5				
Actuated g/C Ratio	0.35	0.80			0.42	0.42	0.11	0.11	0.11				
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5				
Lane Grp Cap (vph)	612	4081			2127	662	177	153	158				
v/s Ratio Prot	c0.33	0.28			0.23		c0.08	0.07					
v/s Ratio Perm						c0.29			0.07				
v/c Ratio	0.96	0.36			0.55	0.70	0.79	0.69	0.66				
Uniform Delay, d1	34.8	3.0			24.0	26.1	47.6	47.0	46.9				
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	25.4	0.2			1.0	6.1	20.4	11.2	9.0				
Delay (s)	60.3	3.2			25.0	32.3	67.9	58.3	55.9				
Level of Service	E	A			C	C	E	E	E				
Approach Delay (s)		19.6			27.3			59.9			0.0		
Approach LOS		B			C			E			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			27.8		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.81										
Actuated Cycle Length (s)			109.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization			84.7%		ICU Level of Service				E				
Analysis Period (min)			15										

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
15: Hilltop Dr & Cypress Ave

Existing Plus Project Conditions  
PM Peak Hour





























													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	392	1079	275	76	859	68	228	98	68	78	91	561	
Future Volume (vph)	392	1079	275	76	859	68	228	98	68	78	91	561	
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6	
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	0.97	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.99		1.00	0.96		1.00	0.89	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (prot)	3433	4930		3433	5021		1610	3169		1681	1483	1460	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00	
Satd. Flow (perm)	3433	4930		3433	5021		1610	3169		1681	1483	1460	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	431	1186	302	84	944	75	251	108	75	86	100	616	
RTOR Reduction (vph)	0	35	0	0	7	0	0	30	0	0	63	272	
Lane Group Flow (vph)	431	1453	0	84	1012	0	146	258	0	77	305	85	
Confl. Peds. (#/hr)						8			22			14	
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm	
Protected Phases	5	2		1	6		3	3		4	4		
Permitted Phases												4	
Actuated Green, G (s)	18.4	44.4		6.2	31.7		23.7	23.7		28.6	28.6	28.6	
Effective Green, g (s)	18.4	44.4		6.2	31.7		23.7	23.7		28.6	28.6	28.6	
Actuated g/C Ratio	0.15	0.37		0.05	0.26		0.20	0.20		0.24	0.24	0.24	
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6	
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7	
Lane Grp Cap (vph)	526	1824		177	1326		317	625		400	353	347	
v/s Ratio Prot	c0.13	c0.29		0.02	0.20		c0.09	0.08		0.05	c0.21		
v/s Ratio Perm												0.06	
v/c Ratio	0.82	0.80		0.47	0.76		0.46	0.41		0.19	0.86	0.25	
Uniform Delay, d1	49.2	33.8		55.3	40.7		42.5	42.1		36.5	43.8	37.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	9.2	3.7		0.7	4.2		0.4	0.2		0.1	18.5	0.1	
Delay (s)	58.4	37.5		56.0	44.9		42.9	42.2		36.6	62.4	37.1	
Level of Service	E	D		E	D		D	D		D	E	D	
Approach Delay (s)		42.2			45.7			42.4			48.6		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			44.3									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			120.0									Sum of lost time (s)	17.6
Intersection Capacity Utilization			76.4%									ICU Level of Service	D
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

Year 2040 No Project Conditions

## 1: Churn Creek Rd & Hartnell Ave

AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Traffic Volume (vph)	150	300	200	260	480	220	240	590	215	145	400	120
Future Volume (vph)	150	300	200	260	480	220	240	590	215	145	400	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1526	1770	3539	1530	1770	3366		1770	3399	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1526	1770	3539	1530	1770	3366		1770	3399	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	163	326	217	283	522	239	261	641	234	158	435	130
RTOR Reduction (vph)	0	0	135	0	0	129	0	24	0	0	21	0
Lane Group Flow (vph)	163	326	82	283	522	110	261	851	0	158	544	0
Confl. Peds. (#/hr)			24			21			19			8
Confl. Bikes (#/hr)			1			2			2			3
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	9.9	24.4	24.4	21.8	36.3	36.3	17.2	31.7		14.5	28.7	
Effective Green, g (s)	9.9	24.4	24.4	21.8	36.3	36.3	17.2	31.7		14.5	28.7	
Actuated g/C Ratio	0.09	0.22	0.22	0.20	0.33	0.33	0.16	0.29		0.13	0.26	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	312	795	342	355	1182	511	280	982		236	898	
v/s Ratio Prot	0.05	0.09		c0.16	c0.15		c0.15	c0.25		0.09	0.16	
v/s Ratio Perm			0.05			0.07						
v/c Ratio	0.52	0.41	0.24	0.80	0.44	0.21	0.93	0.87		0.67	0.61	
Uniform Delay, d1	47.1	36.0	34.5	41.3	28.2	25.9	45.1	36.4		44.8	35.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.7	0.8	11.0	0.6	0.4	35.6	8.8		5.5	1.7	
Delay (s)	47.8	36.7	35.3	52.3	28.8	26.4	80.7	45.3		50.3	36.7	
Level of Service	D	D	D	D	C	C	F	D		D	D	
Approach Delay (s)		38.8			34.6			53.4			39.7	
Approach LOS		D			C			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			42.4				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			108.6			Sum of lost time (s)				16.5		
Intersection Capacity Utilization			79.5%			ICU Level of Service				D		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

Year 2040 No Project Conditions

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	395	85	140	605	95	70	45	125	130	60	100
Future Volume (vph)	110	395	85	140	605	95	70	45	125	130	60	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3407		1770	3440			1707			1697	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (perm)	1770	3407		1770	3440			1707			1697	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	429	92	152	658	103	76	49	136	141	65	109
RTOR Reduction (vph)	0	18	0	0	12	0	0	39	0	0	19	0
Lane Group Flow (vph)	120	503	0	152	749	0	0	222	0	0	296	0
Confl. Peds. (#/hr)			24			19						57
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	8.8	22.4		12.0	25.6			14.6			23.1	
Effective Green, g (s)	8.8	22.4		12.0	25.6			14.6			23.1	
Actuated g/C Ratio	0.10	0.25		0.14	0.29			0.16			0.26	
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0	
Lane Grp Cap (vph)	175	859		239	991			280			441	
v/s Ratio Prot	0.07	0.15		c0.09	c0.22			c0.13			c0.17	
v/s Ratio Perm												
v/c Ratio	0.69	0.59		0.64	0.76			0.79			0.67	
Uniform Delay, d1	38.7	29.1		36.3	28.8			35.6			29.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	8.5	1.2		4.0	3.6			13.3			3.1	
Delay (s)	47.2	30.4		40.4	32.3			48.9			32.6	
Level of Service	D	C		D	C			D			C	
Approach Delay (s)		33.5			33.7			48.9			32.6	
Approach LOS		C			C			D			C	

### Intersection Summary

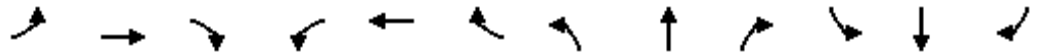
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	16.7
Intersection Capacity Utilization	65.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

Year 2040 No Project Conditions

## 3: Bechelli Ln & Hartnell Ave

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑		↘	↑↑	
Traffic Volume (vph)	15	235	120	220	380	175	270	285	200	155	220	75
Future Volume (vph)	15	235	120	220	380	175	270	285	200	155	220	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1558	1770	3539	1549	1770	3297		1770	3387	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1558	1770	3539	1549	1770	3297		1770	3387	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	255	130	239	413	190	293	310	217	168	239	82
RTOR Reduction (vph)	0	0	102	0	0	117	0	119	0	0	34	0
Lane Group Flow (vph)	16	255	28	239	413	73	293	408	0	168	287	0
Confl. Peds. (#/hr)			1			9			4			6
Confl. Bikes (#/hr)			3			3			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	1.0	18.0	18.0	15.0	32.0	32.0	17.3	20.5		12.5	15.7	
Effective Green, g (s)	1.0	18.0	18.0	15.0	32.0	32.0	17.3	20.5		12.5	15.7	
Actuated g/C Ratio	0.01	0.22	0.22	0.18	0.39	0.39	0.21	0.25		0.15	0.19	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	21	767	337	319	1364	597	368	814		266	640	
v/s Ratio Prot	0.01	0.07		c0.14	c0.12		c0.17	c0.12		0.09	0.08	
v/s Ratio Perm			0.02			0.05						
v/c Ratio	0.76	0.33	0.08	0.75	0.30	0.12	0.80	0.50		0.63	0.45	
Uniform Delay, d1	40.9	27.4	25.9	32.2	17.7	16.4	31.2	26.9		33.1	29.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	85.5	0.5	0.2	8.2	0.3	0.2	10.6	1.0		3.6	1.0	
Delay (s)	126.3	28.0	26.1	40.4	18.0	16.6	41.8	27.9		36.7	30.9	
Level of Service	F	C	C	D	B	B	D	C		D	C	
Approach Delay (s)		31.3			24.1			32.8			32.9	
Approach LOS		C			C			C			C	

Intersection Summary		
HCM 2000 Control Delay	29.7	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.61	C
Actuated Cycle Length (s)	83.0	Sum of lost time (s)
Intersection Capacity Utilization	60.6%	17.0
Analysis Period (min)	15	ICU Level of Service
		B

c Critical Lane Group

HCM 2010 TWSC  
4: Hartnell Ave & Shotwick Trail

Year 2040 No Project Conditions  
AM Peak Hour

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕				↗	↖	↕		↖	↕	
Traffic Vol, veh/h	10	0	10	0	0	15	15	630	80	70	360	15
Future Vol, veh/h	10	0	10	0	0	15	15	630	80	70	360	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	75	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	0	11	0	0	16	16	685	87	76	391	16

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	927	1358	205	-	-	388	408	0	0	774	0	0
Stage 1	552	552	-	-	-	-	-	-	-	-	-	-
Stage 2	375	806	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	222	146	798	0	0	608	1140	-	-	831	-	-
Stage 1	483	511	-	0	0	-	-	-	-	-	-	-
Stage 2	615	391	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	198	130	797	-	-	607	1139	-	-	829	-	-
Mov Cap-2 Maneuver	198	130	-	-	-	-	-	-	-	-	-	-
Stage 1	476	463	-	-	-	-	-	-	-	-	-	-
Stage 2	590	385	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17.2		11.1		0.2		1.5	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1139	-	-	317	607	829	-
HCM Lane V/C Ratio	0.014	-	-	0.069	0.027	0.092	-
HCM Control Delay (s)	8.2	-	-	17.2	11.1	9.8	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.3	-

# HCM Signalized Intersection Capacity Analysis

Year 2040 No Project Conditions

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (vph)	5	0	10	15	0	30	30	610	15	50	420	30
Future Volume (vph)	5	0	10	15	0	30	30	610	15	50	420	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1664			1652		1770	3525		1770	3497	
Flt Permitted		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1664			1652		1770	3525		1770	3497	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	11	16	0	33	33	663	16	54	457	33
RTOR Reduction (vph)	0	16	0	0	44	0	0	1	0	0	3	0
Lane Group Flow (vph)	0	0	0	0	5	0	33	678	0	54	487	0
Confl. Peds. (#/hr)							2			2		4
Confl. Bikes (#/hr)										2		2
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		0.5			5.5		0.9	30.5		2.5	32.1	
Effective Green, g (s)		0.5			5.5		0.9	30.5		2.5	32.1	
Actuated g/C Ratio		0.01			0.10		0.02	0.55		0.05	0.58	
Clearance Time (s)		3.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		14			163		28	1937		79	2022	
v/s Ratio Prot		c0.00			c0.00		0.02	c0.19		c0.03	0.14	
v/s Ratio Perm												
v/c Ratio		0.01			0.03		1.18	0.35		0.68	0.24	
Uniform Delay, d1		27.3			22.6		27.3	7.0		26.1	5.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		229.1	0.2		17.7	0.1	
Delay (s)		27.4			22.6		256.4	7.2		43.8	5.9	
Level of Service		C			C		F	A		D	A	
Approach Delay (s)		27.4			22.6			18.8			9.6	
Approach LOS		C			C			B			A	

### Intersection Summary

HCM 2000 Control Delay	15.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	55.5	Sum of lost time (s)	16.5
Intersection Capacity Utilization	37.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	10	0	5	5	0	5	30	605	10	10	490	75
Future Vol, veh/h	10	0	5	5	0	5	30	605	10	10	490	75
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	5	5	0	5	33	658	11	11	533	82

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	994	1336	311	1021	1372	337	618	0	0	671	0	0
Stage 1	599	599	-	732	732	-	-	-	-	-	-	-
Stage 2	395	737	-	289	640	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	199	152	685	191	145	659	958	-	-	915	-	-
Stage 1	455	489	-	379	425	-	-	-	-	-	-	-
Stage 2	602	423	-	694	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	190	144	683	182	138	658	955	-	-	913	-	-
Mov Cap-2 Maneuver	190	144	-	182	138	-	-	-	-	-	-	-
Stage 1	438	482	-	365	409	-	-	-	-	-	-	-
Stage 2	576	407	-	680	461	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	20.4		18.1		0.4		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	955	-	-	250	285	913	-	-
HCM Lane V/C Ratio	0.034	-	-	0.065	0.038	0.012	-	-
HCM Control Delay (s)	8.9	-	-	20.4	18.1	9	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-

# HCM Signalized Intersection Capacity Analysis

## 7: Hartnell Ave & Parkview Ave

Year 2040 No Project Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	60	5	15	10	0	15	30	560	30	20	550	30
Future Volume (vph)	60	5	15	10	0	15	30	560	30	20	550	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.92		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746			1665		1770	3507		1770	3507	
Flt Permitted		0.76			0.85		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1379			1449		1770	3507		1770	3507	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	5	16	11	0	16	33	609	33	22	598	33
RTOR Reduction (vph)	0	12	0	0	23	0	0	3	0	0	4	0
Lane Group Flow (vph)	0	74	0	0	4	0	33	639	0	22	627	0
Confl. Peds. (#/hr)			3			7			3			2
Confl. Bikes (#/hr)									3			3
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		7.2			7.2		2.8	29.5		0.8	27.5	
Effective Green, g (s)		7.2			7.2		2.8	29.5		0.8	27.5	
Actuated g/C Ratio		0.14			0.14		0.06	0.58		0.02	0.54	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		196			206		98	2048		28	1909	
v/s Ratio Prot							0.02	c0.18		c0.01	c0.18	
v/s Ratio Perm		c0.05			0.00							
v/c Ratio		0.38			0.02		0.34	0.31		0.79	0.33	
Uniform Delay, d1		19.6			18.6		23.0	5.3		24.8	6.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.0		0.7	0.2		78.1	0.2	
Delay (s)		20.1			18.6		23.7	5.5		102.9	6.6	
Level of Service		C			B		C	A		F	A	
Approach Delay (s)		20.1			18.6			6.4			9.8	
Approach LOS		C			B			A			A	

### Intersection Summary

HCM 2000 Control Delay	9.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	50.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	0	5	5	0	15	10	610	15	45	590	50
Future Vol, veh/h	15	0	5	5	0	15	10	610	15	45	590	50
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	0	5	5	0	16	11	663	16	49	641	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1122	1471	350	1114	1490	342	697	0	0	681	0	0
Stage 1	768	768	-	695	695	-	-	-	-	-	-	-
Stage 2	354	703	-	419	795	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	159	125	643	162	122	651	888	-	-	901	-	-
Stage 1	358	407	-	396	439	-	-	-	-	-	-	-
Stage 2	633	436	-	580	395	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	147	116	642	152	113	650	886	-	-	899	-	-
Mov Cap-2 Maneuver	147	116	-	152	113	-	-	-	-	-	-	-
Stage 1	353	384	-	390	433	-	-	-	-	-	-	-
Stage 2	609	430	-	544	372	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	27.4		15.7		0.1		0.6	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	886	-	-	182	357	899	-
HCM Lane V/C Ratio	0.012	-	-	0.119	0.061	0.054	-
HCM Control Delay (s)	9.1	-	-	27.4	15.7	9.2	-
HCM Lane LOS	A	-	-	D	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.2	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑	
Traffic Vol, veh/h	0	5	5	635	680	25
Future Vol, veh/h	0	5	5	635	680	25
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	5	5	690	739	27

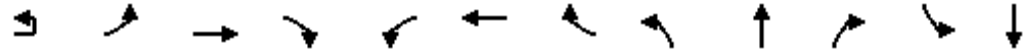
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	755	768	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	408	844	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	407	842	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	842	-	407	-	-
HCM Lane V/C Ratio	0.006	-	0.013	-	-
HCM Control Delay (s)	9.3	-	14	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔↔↔	↔	↔	↔↔↔	↔	↔↔	↑	↔		↔
Traffic Volume (vph)	5	165	600	435	260	855	60	495	25	115	20	10
Future Volume (vph)	5	165	600	435	260	855	60	495	25	115	20	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (prot)		1736	4988	1534	1736	4988	1508	3367	1827	1553		1768
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (perm)		1736	4988	1534	1736	4988	1508	3367	1827	1553		1768
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	179	652	473	283	929	65	538	27	125	22	11
RTOR Reduction (vph)	0	0	0	255	0	0	44	0	0	96	0	0
Lane Group Flow (vph)	0	184	652	218	283	929	21	538	27	29	0	33
Confl. Peds. (#/hr)				2			2					
Confl. Bikes (#/hr)				1			1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	5	5	2	3	1	6		3	3		4	4
Permitted Phases				2			6			3		
Actuated Green, G (s)		16.6	23.6	47.8	27.1	34.1	34.1	24.2	24.2	24.2		11.0
Effective Green, g (s)		16.6	23.6	47.8	27.1	34.1	34.1	24.2	24.2	24.2		11.0
Actuated g/C Ratio		0.16	0.23	0.46	0.26	0.33	0.33	0.23	0.23	0.23		0.11
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		277	1135	707	453	1640	495	785	426	362		187
v/s Ratio Prot		c0.11	0.13	0.07	c0.16	c0.19		c0.16	0.01			c0.02
v/s Ratio Perm				0.07			0.01			0.02		
v/c Ratio		0.66	0.57	0.31	0.62	0.57	0.04	0.69	0.06	0.08		0.18
Uniform Delay, d1		40.9	35.6	17.6	33.8	28.7	23.7	36.3	30.9	31.1		42.2
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		4.6	1.1	0.1	3.0	0.7	0.1	2.0	0.0	0.0		0.2
Delay (s)		45.5	36.7	17.7	36.9	29.4	23.8	38.3	31.0	31.1		42.4
Level of Service		D	D	B	D	C	C	D	C	C		D
Approach Delay (s)			31.1			30.8			36.7			41.9
Approach LOS			C			C			D			D
<b>Intersection Summary</b>												
HCM 2000 Control Delay			32.4			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.58									
Actuated Cycle Length (s)			103.7			Sum of lost time (s)			17.8			
Intersection Capacity Utilization			66.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c	Critical Lane Group											

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour

Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	50
Future Volume (vph)	50
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1526
Flt Permitted	1.00
Satd. Flow (perm)	1526
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	54
RTOR Reduction (vph)	48
Lane Group Flow (vph)	6
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	4%
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.0
Effective Green, g (s)	11.0
Actuated g/C Ratio	0.11
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	161
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.04
Uniform Delay, d1	41.6
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	41.6
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

Intersection							
Int Delay, s/veh	4						
Movement	WBU	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	5	15	5	0	30	5	5
Future Vol, veh/h	5	15	5	0	30	5	5
Conflicting Peds, #/hr	0	0	0	0	3	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	0	-	-	0
Grade, %	-	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	10	10	10	10
Mvmt Flow	5	16	5	0	33	5	5

Major/Minor	Minor1	Major1		Major2	
Conflicting Flow All	0	35	20	0	36
Stage 1	0	20	-	-	-
Stage 2	0	15	-	-	-
Critical Hdwy	-	6.5	6.3	-	4.2
Critical Hdwy Stg 1	-	5.5	-	-	-
Critical Hdwy Stg 2	-	5.5	-	-	-
Follow-up Hdwy	-	3.59	3.39	-	2.29
Pot Cap-1 Maneuver	0	958	1035	-	1525
Stage 1	0	982	-	-	-
Stage 2	0	987	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	0	952	1032	-	1521
Mov Cap-2 Maneuver	0	952	-	-	-
Stage 1	0	976	-	-	-
Stage 2	0	987	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	971	1521
HCM Lane V/C Ratio	-	-	0.022	0.004
HCM Control Delay (s)	-	-	8.8	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0

HCM Signalized Intersection Capacity Analysis  
 12: Bechelli Lane & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour















Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕↕		↔↔	↕↕↕		↔	↕	↔	↔	↕↕	↕↕
Traffic Volume (vph)	15	555	115	450	1030	320	110	85	255	130	45	35
Future Volume (vph)	15	555	115	450	1030	320	110	85	255	130	45	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	4.9		4.3	4.3	4.3	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (prot)	1770	4939		3433	4867		1681	1757	1553	1681	1661	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (perm)	1770	4939		3433	4867		1681	1757	1553	1681	1661	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	603	125	489	1120	348	120	92	277	141	49	38
RTOR Reduction (vph)	0	23	0	0	34	0	0	0	241	0	17	0
Lane Group Flow (vph)	16	705	0	489	1434	0	104	108	36	116	95	0
Confl. Peds. (#/hr)			5			5			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	48.1		18.8	63.7		14.2	14.2	14.2	12.2	12.2	
Effective Green, g (s)	3.2	48.1		18.8	63.7		14.2	14.2	14.2	12.2	12.2	
Actuated g/C Ratio	0.03	0.44		0.17	0.58		0.13	0.13	0.13	0.11	0.11	
Clearance Time (s)	3.5	4.9		3.5	4.9		4.3	4.3	4.3	4.0	4.0	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	51	2159		586	2818		217	226	200	186	184	
v/s Ratio Prot	0.01	0.14		c0.14	c0.29		c0.06	0.06		c0.07	0.06	
v/s Ratio Perm									0.02			
v/c Ratio	0.31	0.33		0.83	0.51		0.48	0.48	0.18	0.62	0.52	
Uniform Delay, d1	52.3	20.3		44.1	13.8		44.5	44.5	42.7	46.7	46.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.4		9.5	0.7		0.6	0.6	0.2	4.6	1.0	
Delay (s)	53.6	20.7		53.6	14.5		45.1	45.0	42.9	51.3	47.1	
Level of Service	D	C		D	B		D	D	D	D	D	
Approach Delay (s)		21.4			24.3			43.8			49.3	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	28.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.60	C
Actuated Cycle Length (s)	110.0	Sum of lost time (s)
Intersection Capacity Utilization	58.7%	16.7
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B




















HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖	↕	↗
Traffic Volume (vph)	0	780	160	290	1090	0	0	0	0	440	5	710
Future Volume (vph)	0	780	160	290	1090	0	0	0	0	440	5	710
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (prot)		5036	1568	1752	5036					1665	1451	1490
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (perm)		5036	1568	1752	5036					1665	1451	1490
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	848	174	315	1185	0	0	0	0	478	5	772
RTOR Reduction (vph)	0	0	58	0	0	0	0	0	0	0	78	78
Lane Group Flow (vph)	0	848	116	315	1185	0	0	0	0	430	338	331
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		28.7	28.7	20.2	53.1					36.9	36.9	36.9
Effective Green, g (s)		28.7	28.7	20.2	53.1					36.9	36.9	36.9
Actuated g/C Ratio		0.29	0.29	0.20	0.53					0.37	0.37	0.37
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1445	450	353	2674					614	535	549
v/s Ratio Prot		c0.17		c0.18	0.24					c0.26	0.23	
v/s Ratio Perm			0.07									0.22
v/c Ratio		0.59	0.26	0.89	0.44					0.70	0.63	0.60
Uniform Delay, d1		30.6	27.4	38.8	14.4					26.8	26.0	25.6
Progression Factor		1.00	1.00	0.59	0.71					1.00	1.00	1.00
Incremental Delay, d2		1.8	1.4	21.4	0.4					3.3	2.1	1.6
Delay (s)		32.3	28.8	44.3	10.6					30.2	28.1	27.2
Level of Service		C	C	D	B					C	C	C
Approach Delay (s)		31.7			17.7			0.0			28.5	
Approach LOS		C			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			14.2			
Intersection Capacity Utilization			68.2%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	245	975	0	0	830	375	550	5	410	0	0	0	
Future Volume (vph)	245	975	0	0	830	375	550	5	410	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.95	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00				
Satd. Flow (prot)	1752	5036			5036	1568	1665	1545	1490				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97	1.00				
Satd. Flow (perm)	1752	5036			5036	1568	1665	1545	1490				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	266	1060	0	0	902	408	598	5	446	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	96	0	15	123	0	0	0	
Lane Group Flow (vph)	266	1060	0	0	902	312	365	339	207	0	0	0	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm				
Protected Phases	5	2			6		8	8					
Permitted Phases						6			8				
Actuated Green, G (s)	19.7	63.8			39.9	39.9	26.2	26.2	26.2				
Effective Green, g (s)	19.7	63.8			39.9	39.9	26.2	26.2	26.2				
Actuated g/C Ratio	0.20	0.64			0.40	0.40	0.26	0.26	0.26				
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5				
Lane Grp Cap (vph)	345	3212			2009	625	436	404	390				
v/s Ratio Prot	c0.15	0.21			0.18		c0.22	0.22					
v/s Ratio Perm						c0.20			0.14				
v/c Ratio	0.77	0.33			0.45	0.50	0.84	0.84	0.53				
Uniform Delay, d1	38.0	8.3			22.0	22.5	34.9	34.9	31.6				
Progression Factor	0.19	0.29			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.9	0.2			0.7	2.8	12.9	13.8	1.1				
Delay (s)	16.2	2.7			22.7	25.4	47.8	48.7	32.7				
Level of Service	B	A			C	C	D	D	C				
Approach Delay (s)		5.4			23.6			43.4			0.0		
Approach LOS		A			C			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			22.7		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.66										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization			68.2%		ICU Level of Service				C				
Analysis Period (min)			15										
c Critical Lane Group													



HCM Signalized Intersection Capacity Analysis  
 15: Hilltop Dr & Cypress Ave

Year 2040 No Project Conditions  
 AM Peak Hour

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕↔		↔↔	↕↕↔		↔	↕↔		↔	↕↔	↔
Traffic Volume (vph)	255	910	220	75	670	95	150	40	50	60	45	385
Future Volume (vph)	255	910	220	75	670	95	150	40	50	60	45	385
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.88	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4921		3433	4991		1610	3141		1681	1481	1482
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4921		3433	4991		1610	3141		1681	1481	1482
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	274	978	237	81	720	102	161	43	54	65	48	414
RTOR Reduction (vph)	0	24	0	0	12	0	0	47	0	0	114	204
Lane Group Flow (vph)	274	1191	0	81	810	0	87	124	0	58	123	28
Confl. Peds. (#/hr)			4						8			1
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	12.8	58.9		6.1	51.7		14.8	14.8		13.1	13.1	13.1
Effective Green, g (s)	12.8	58.9		6.1	51.7		14.8	14.8		13.1	13.1	13.1
Actuated g/C Ratio	0.12	0.54		0.06	0.47		0.13	0.13		0.12	0.12	0.12
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	399	2634		190	2345		216	422		200	176	176
v/s Ratio Prot	c0.08	c0.24		0.02	0.16		c0.05	0.04		0.03	c0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.69	0.45		0.43	0.35		0.40	0.29		0.29	0.70	0.16
Uniform Delay, d1	46.7	15.7		50.3	18.4		43.6	42.9		44.2	46.6	43.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	0.6		0.6	0.4		0.4	0.1		0.3	9.8	0.2
Delay (s)	50.6	16.2		50.8	18.8		44.0	43.0		44.5	56.4	43.6
Level of Service	D	B		D	B		D	D		D	E	D
Approach Delay (s)		22.5			21.7			43.4			49.5	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	28.5	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.53	
Actuated Cycle Length (s)	110.0	Sum of lost time (s) 17.6
Intersection Capacity Utilization	64.8%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		

HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Year 2040 No Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 		 	 	
Traffic Volume (vph)	200	505	160	240	425	290	135	455	185	365	625	185
Future Volume (vph)	200	505	160	240	425	290	135	455	185	365	625	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1542	1770	3539	1544	1770	3355		1770	3394	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1542	1770	3539	1544	1770	3355		1770	3394	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	211	532	168	253	447	305	142	479	195	384	658	195
RTOR Reduction (vph)	0	0	75	0	0	202	0	30	0	0	18	0
Lane Group Flow (vph)	211	532	93	253	447	103	142	644	0	384	835	0
Confl. Peds. (#/hr)			11			10			14			15
Confl. Bikes (#/hr)			2			3			2			1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	12.1	27.1	27.1	21.9	36.9	36.9	13.4	29.2		26.8	42.3	
Effective Green, g (s)	12.1	27.1	27.1	21.9	36.9	36.9	13.4	29.2		26.8	42.3	
Actuated g/C Ratio	0.10	0.22	0.22	0.18	0.30	0.30	0.11	0.24		0.22	0.35	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	342	791	344	319	1077	470	195	808		391	1184	
v/s Ratio Prot	0.06	c0.15		c0.14	0.13		0.08	c0.19		c0.22	0.25	
v/s Ratio Perm			0.06			0.07						
v/c Ratio	0.62	0.67	0.27	0.79	0.42	0.22	0.73	0.80		0.98	0.71	
Uniform Delay, d1	52.3	43.0	38.9	47.5	33.6	31.4	52.1	43.2		47.0	34.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	3.0	0.9	11.9	0.5	0.5	10.9	6.3		40.4	2.4	
Delay (s)	54.7	45.9	39.8	59.4	34.1	31.9	63.0	49.5		87.4	36.5	
Level of Service	D	D	D	E	C	C	E	D		F	D	
Approach Delay (s)		46.8			39.8			51.9			52.3	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			47.8				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			121.2				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			86.8%				ICU Level of Service			E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
2: Northwoods Way & Hartnell Ave

Year 2040 No Project Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	795	25	25	670	50	30	15	35	35	10	150
Future Volume (vph)	100	795	25	25	670	50	30	15	35	35	10	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	0.99			0.94			0.90	
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (prot)	1770	3520		1770	3496			1720			1635	
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99	
Satd. Flow (perm)	1770	3520		1770	3496			1720			1635	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	108	855	27	27	720	54	32	16	38	38	11	161
RTOR Reduction (vph)	0	2	0	0	4	0	0	31	0	0	141	0
Lane Group Flow (vph)	108	881	0	27	770	0	0	55	0	0	69	0
Confl. Peds. (#/hr)			9			5						6
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	6.9	31.6		2.2	26.9			5.4			7.3	
Effective Green, g (s)	6.9	31.6		2.2	26.9			5.4			7.3	
Actuated g/C Ratio	0.11	0.50		0.03	0.43			0.09			0.12	
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0	
Lane Grp Cap (vph)	193	1760		61	1488			146			188	
v/s Ratio Prot	c0.06	c0.25		0.02	0.22			c0.03			c0.04	
v/s Ratio Perm												
v/c Ratio	0.56	0.50		0.44	0.52			0.38			0.37	
Uniform Delay, d1	26.7	10.5		29.9	13.4			27.3			25.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	2.0	0.3		1.9	0.4			0.6			0.4	
Delay (s)	28.7	10.9		31.8	13.8			27.9			26.3	
Level of Service	C	B		C	B			C			C	
Approach Delay (s)		12.8			14.4			27.9			26.3	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	63.2	Sum of lost time (s)	16.7
Intersection Capacity Utilization	52.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

Year 2040 No Project Conditions

## 3: Bechelli Ln & Hartnell Ave

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑		↘	↑↑	
Traffic Volume (vph)	45	510	300	300	420	130	160	255	195	215	280	45
Future Volume (vph)	45	510	300	300	420	130	160	255	195	215	280	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1560	1770	3539	1563	1770	3288		1770	3458	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1560	1770	3539	1563	1770	3288		1770	3458	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	554	326	326	457	141	174	277	212	234	304	49
RTOR Reduction (vph)	0	0	247	0	0	84	0	140	0	0	13	0
Lane Group Flow (vph)	49	554	79	326	457	57	174	349	0	234	340	0
Confl. Peds. (#/hr)			1						2			2
Confl. Bikes (#/hr)			2			2			1			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	4.6	22.2	22.2	19.4	37.0	37.0	13.4	17.4		15.6	19.6	
Effective Green, g (s)	4.6	22.2	22.2	19.4	37.0	37.0	13.4	17.4		15.6	19.6	
Actuated g/C Ratio	0.05	0.24	0.24	0.21	0.40	0.40	0.15	0.19		0.17	0.21	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	88	857	378	374	1429	631	258	624		301	739	
v/s Ratio Prot	0.03	c0.16		c0.18	0.13		0.10	c0.11		c0.13	0.10	
v/s Ratio Perm			0.05			0.04						
v/c Ratio	0.56	0.65	0.21	0.87	0.32	0.09	0.67	0.56		0.78	0.46	
Uniform Delay, d1	42.5	31.2	27.7	34.9	18.7	16.9	37.0	33.6		36.3	31.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	2.3	0.6	18.9	0.3	0.1	5.4	1.8		10.9	1.0	
Delay (s)	46.8	33.5	28.3	53.8	19.0	17.0	42.4	35.5		47.3	32.3	
Level of Service	D	C	C	D	B	B	D	D		D	C	
Approach Delay (s)		32.4			30.9			37.3			38.3	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	34.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	30	10	0	75	10	600	15	20	815	10
Future Vol, veh/h	10	0	30	10	0	75	10	600	15	20	815	10
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	33	11	0	82	11	652	16	22	886	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1287	1629	452	1169	1626	334	900	0	0	668	0	0
Stage 1	939	939	-	682	682	-	-	-	-	-	-	-
Stage 2	348	690	-	487	944	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	121	101	555	148	101	662	751	-	-	918	-	-
Stage 1	284	341	-	406	448	-	-	-	-	-	-	-
Stage 2	641	444	-	531	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	103	97	553	135	97	662	749	-	-	918	-	-
Mov Cap-2 Maneuver	103	97	-	135	97	-	-	-	-	-	-	-
Stage 1	279	332	-	400	441	-	-	-	-	-	-	-
Stage 2	554	437	-	488	330	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.3		14.9		0.2		0.2	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	749	-	-	264	454	918	-
HCM Lane V/C Ratio	0.015	-	-	0.165	0.204	0.024	-
HCM Control Delay (s)	9.9	-	-	21.3	14.9	9	-
HCM Lane LOS	A	-	-	C	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0.8	0.1	-

# HCM Signalized Intersection Capacity Analysis

Year 2040 No Project Conditions

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (vph)	35	0	55	45	0	40	5	5	670	5	5	740
Future Volume (vph)	35	0	55	45	0	40	5	5	670	5	5	740
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			4.5			3.5	5.0		3.5	5.0
Lane Util. Factor		1.00			1.00			1.00	0.95		1.00	0.95
Frbp, ped/bikes		1.00			0.99			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.92			0.94			1.00	1.00		1.00	1.00
Flt Protected		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1676			1688			1770	3535		1770	3531
Flt Permitted		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (perm)		1676			1688			1770	3535		1770	3531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	0	60	49	0	43	5	5	728	5	5	804
RTOR Reduction (vph)	0	90	0	0	85	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	8	0	0	7	0	0	10	733	0	5	815
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)						1				2		
Turn Type	Split	NA		Split	NA		Prot	Prot	NA		Prot	NA
Protected Phases	4	4		3	3		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)		4.0			4.0			0.8	26.1		0.7	26.0
Effective Green, g (s)		4.0			4.0			0.8	26.1		0.7	26.0
Actuated g/C Ratio		0.08			0.08			0.02	0.51		0.01	0.51
Clearance Time (s)		3.5			4.5			3.5	5.0		3.5	5.0
Vehicle Extension (s)		2.0			2.0			2.0	5.0		2.0	5.0
Lane Grp Cap (vph)		130			131			27	1798		24	1789
v/s Ratio Prot		c0.00			c0.00			c0.01	0.21		0.00	c0.23
v/s Ratio Perm												
v/c Ratio		0.06			0.05			0.37	0.41		0.21	0.46
Uniform Delay, d1		21.9			21.9			25.0	7.8		25.0	8.1
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1			3.1	0.3		1.6	0.4
Delay (s)		22.0			22.0			28.1	8.1		26.6	8.5
Level of Service		C			C			C	A		C	A
Approach Delay (s)		22.0			22.0				8.4			8.6
Approach LOS		C			C				A			A

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	51.3	Sum of lost time (s)	16.5
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Year 2040 No Project Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Confl. Bikes (#/hr)	1
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

**Intersection**

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕	
Traffic Vol, veh/h	45	0	35	5	0	5	10	730	5	5	10	715	15
Future Vol, veh/h	45	0	35	5	0	5	10	730	5	5	10	715	15
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	0	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	0	38	5	0	5	11	793	5	5	11	777	16

Major/Minor	Minor2		Minor1		Major1		Major2						
Conflicting Flow All	1239	1641	400	1240	1647	400	796	0	0	799	799	0	0
Stage 1	820	820	-	819	819	-	-	-	-	-	-	-	-
Stage 2	419	821	-	421	828	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	132	99	600	131	98	600	822	-	-	447	819	-	-
Stage 1	335	387	-	336	388	-	-	-	-	-	-	-	-
Stage 2	582	387	-	581	384	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	127	95	598	119	94	599	820	-	-	638	638	-	-
Mov Cap-2 Maneuver	127	95	-	119	94	-	-	-	-	-	-	-	-
Stage 1	330	376	-	331	383	-	-	-	-	-	-	-	-
Stage 2	569	382	-	530	373	-	-	-	-	-	-	-	-



















Approach	EB		WB		NB		SB	
HCM Control Delay, s	37.8		24.1		0.1		0.2	
HCM LOS	E		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	820	-	-	194	199	638	-	-
HCM Lane V/C Ratio	0.013	-	-	0.448	0.055	0.026	-	-
HCM Control Delay (s)	9.4	-	-	37.8	24.1	10.8	-	-
HCM Lane LOS	A	-	-	E	C	B	-	-
HCM 95th %tile Q(veh)	0	-	-	2.1	0.2	0.1	-	-



HCM Signalized Intersection Capacity Analysis  
7: Hartnell Ave & Parkview Ave

Year 2040 No Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	0	60	35	5	25	45	710	30	25	650	65
Future Volume (vph)	130	0	60	35	5	25	45	710	30	25	650	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.97			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1724			1710		1770	3514		1770	3484	
Flt Permitted		0.75			0.81		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1341			1421		1770	3514		1770	3484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	141	0	65	38	5	27	49	772	33	27	707	71
RTOR Reduction (vph)	0	114	0	0	21	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	92	0	0	49	0	49	802	0	27	770	0
Confl. Peds. (#/hr)						3			1			
Confl. Bikes (#/hr)									2			2
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		10.5			10.5		2.5	25.9		2.0	25.4	
Effective Green, g (s)		10.5			10.5		2.5	25.9		2.0	25.4	
Actuated g/C Ratio		0.20			0.20		0.05	0.50		0.04	0.49	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		273			290		86	1770		68	1721	
v/s Ratio Prot							0.03	c0.23		0.02	c0.22	
v/s Ratio Perm		c0.07			0.03							
v/c Ratio		0.34			0.17		0.57	0.45		0.40	0.45	
Uniform Delay, d1		17.5			16.8		23.9	8.2		24.1	8.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			0.1		5.1	0.4		1.4	0.4	
Delay (s)		17.7			16.9		29.0	8.6		25.5	8.8	
Level of Service		B			B		C	A		C	A	
Approach Delay (s)		17.7			16.9			9.7			9.4	
Approach LOS		B			B			A			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.7				HCM 2000 Level of Service				B	
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			51.4				Sum of lost time (s)			13.0		
Intersection Capacity Utilization			49.9%				ICU Level of Service			A		
Analysis Period (min)			15									

c Critical Lane Group

**Intersection**

Int Delay, s/veh 27.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	110	0	45	10	0	30	50	800	15	20	685	150
Future Vol, veh/h	110	0	45	10	0	30	50	800	15	20	685	150
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	0	49	11	0	33	54	870	16	22	745	163

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1414	1865	454	1403	1938	443	908	0	0	886	0	0
Stage 1	871	871	-	986	986	-	-	-	-	-	-	-
Stage 2	543	994	-	417	952	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 98	72	553	100	65	562	745	-	-	760	-	-
Stage 1	312	367	-	266	324	-	-	-	-	-	-	-
Stage 2	492	321	-	584	336	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 85	65	553	84	59	562	745	-	-	760	-	-
Mov Cap-2 Maneuver	~ 85	65	-	84	59	-	-	-	-	-	-	-
Stage 1	290	356	-	247	301	-	-	-	-	-	-	-
Stage 2	430	298	-	517	326	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$	330.6	24.1	0.6	0.2
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	745	-	-	113	232	760	-	-
HCM Lane V/C Ratio	0.073	-	-	1.491	0.187	0.029	-	-
HCM Control Delay (s)	10.2	-	-	\$ 330.6	24.1	9.9	-	-
HCM Lane LOS	B	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	12.1	0.7	0.1	-	-

**Notes**  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	5	25	5	935	830	55
Future Vol, veh/h	5	25	5	935	830	55
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	27	5	1016	902	60

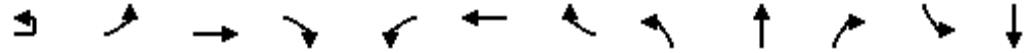
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1349	933	963	0	-	0
Stage 1	933	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Critical Hdwy	6.08	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	185	322	713	-	-	-
Stage 1	372	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	182	322	712	-	-	-
Mov Cap-2 Maneuver	182	-	-	-	-	-
Stage 1	366	-	-	-	-	-
Stage 2	599	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.3	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	712	-	285	-	-
HCM Lane V/C Ratio	0.008	-	0.114	-	-
HCM Control Delay (s)	10.1	-	19.3	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
 PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↔	↑↑↑	↗	↖	↑↑↑	↗	↖↖	↑	↗		↖	
Traffic Volume (vph)	5	45	750	630	215	720	45	575	30	335	75	40	
Future Volume (vph)	5	45	750	630	215	720	45	575	30	335	75	40	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.96	1.00	1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (prot)		1770	5085	1561	1770	5085	1525	3433	1863	1562		1804	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (perm)		1770	5085	1561	1770	5085	1525	3433	1863	1562		1804	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	6	53	882	741	253	847	53	676	35	394	88	47	
RTOR Reduction (vph)	0	0	0	166	0	0	33	0	0	282	0	0	
Lane Group Flow (vph)	0	59	882	575	253	847	20	676	35	112	0	135	
Confl. Peds. (#/hr)				4			4						
Confl. Bikes (#/hr)				2			1			2			
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	5	2	3	1	6		3	3		4	4	
Permitted Phases				2			6			3			
Actuated Green, G (s)		6.3	26.6	56.8	20.8	41.1	41.1	30.2	30.2	30.2		11.3	
Effective Green, g (s)		6.3	26.6	56.8	20.8	41.1	41.1	30.2	30.2	30.2		11.3	
Actuated g/C Ratio		0.06	0.25	0.53	0.19	0.39	0.39	0.28	0.28	0.28		0.11	
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)		104	1267	830	345	1958	587	971	527	442		191	
v/s Ratio Prot		0.03	c0.17	0.20	c0.14	0.17		c0.20	0.02			c0.07	
v/s Ratio Perm				0.17			0.01			0.07			
v/c Ratio		0.57	0.70	0.69	0.73	0.43	0.03	0.70	0.07	0.25		0.71	
Uniform Delay, d1		48.9	36.4	18.5	40.3	24.2	20.4	34.2	27.9	29.5		46.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		4.2	2.1	2.0	8.3	0.3	0.0	1.8	0.0	0.1		9.3	
Delay (s)		53.0	38.5	20.5	48.7	24.5	20.5	35.9	28.0	29.6		55.4	
Level of Service		D	D	C	D	C	C	D	C	C		E	
Approach Delay (s)			31.1			29.6			33.4			49.1	
Approach LOS			C			C			C			D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			32.6		HCM 2000 Level of Service					C			
HCM 2000 Volume to Capacity ratio			0.71										
Actuated Cycle Length (s)			106.7		Sum of lost time (s)					17.8			
Intersection Capacity Utilization			70.8%		ICU Level of Service					C			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
 PM Peak Hour

Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	150
Future Volume (vph)	150
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	176
RTOR Reduction (vph)	131
Lane Group Flow (vph)	45
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.3
Effective Green, g (s)	11.3
Actuated g/C Ratio	0.11
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	167
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.27
Uniform Delay, d1	43.9
Progression Factor	1.00
Incremental Delay, d2	0.3
Delay (s)	44.2
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

Intersection						
Int Delay, s/veh	4.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	5	5	30	5	5
Future Vol, veh/h	35	5	5	30	5	5
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	5	5	33	5	5























Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	38	23	0	0	39
Stage 1	23	-	-	-	-
Stage 2	15	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	974	1054	-	-	1571
Stage 1	1000	-	-	-	-
Stage 2	1008	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	970	1053	-	-	1570
Mov Cap-2 Maneuver	970	-	-	-	-
Stage 1	996	-	-	-	-
Stage 2	1008	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.8	0	3.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	980	1570
HCM Lane V/C Ratio	-	-	0.044	0.003
HCM Control Delay (s)	-	-	8.8	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0













HCM Signalized Intersection Capacity Analysis  
 12: Bechelli Lane & Cypress Ave

Year 2040 No Project Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1260	115	360	715	110	150	30	390	265	65	20
Future Volume (vph)	15	1260	115	360	715	110	150	30	390	265	65	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5011		3433	4965		1681	1713	1552	1681	1696	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5011		3433	4965		1681	1713	1552	1681	1696	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	1370	125	391	777	120	163	33	424	288	71	22
RTOR Reduction (vph)	0	7	0	0	12	0	0	0	224	0	4	0
Lane Group Flow (vph)	16	1488	0	391	885	0	98	98	200	190	187	0
Confl. Peds. (#/hr)			9			3			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	49.6		16.8	63.2		19.4	19.4	19.4	17.3	17.3	
Effective Green, g (s)	3.2	49.6		16.8	63.2		19.4	19.4	19.4	17.3	17.3	
Actuated g/C Ratio	0.03	0.41		0.14	0.53		0.16	0.16	0.16	0.14	0.14	
Clearance Time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	47	2071		480	2614		271	276	250	242	244	
v/s Ratio Prot	0.01	c0.30		c0.11	0.18		0.06	0.06		c0.11	0.11	
v/s Ratio Perm									c0.13			
v/c Ratio	0.34	0.72		0.81	0.34		0.36	0.36	0.80	0.79	0.77	
Uniform Delay, d1	57.4	29.4		50.1	16.4		44.8	44.7	48.4	49.6	49.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	2.2		9.7	0.4		0.3	0.3	15.7	14.2	12.1	
Delay (s)	58.9	31.6		59.8	16.7		45.1	45.0	64.2	63.8	61.5	
Level of Service	E	C		E	B		D	D	E	E	E	
Approach Delay (s)		31.8			29.8			58.1			62.6	
Approach LOS		C			C			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.5				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.9		
Intersection Capacity Utilization			72.6%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave

Year 2040 No Project Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖	↔	↗
Traffic Volume (vph)	0	1530	385	510	805	0	0	0	0	460	0	380
Future Volume (vph)	0	1530	385	510	805	0	0	0	0	460	0	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		5085	1517	1770	5085					1681	1547	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		5085	1517	1770	5085					1681	1547	1504
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1561	393	520	821	0	0	0	0	469	0	388
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	0	0	51	198
Lane Group Flow (vph)	0	1561	343	520	821	0	0	0	0	295	239	74
Confl. Peds. (#/hr)			7			8						
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		43.5	43.5	32.0	79.7					20.3	20.3	20.3
Effective Green, g (s)		43.5	43.5	32.0	79.7					20.3	20.3	20.3
Actuated g/C Ratio		0.40	0.40	0.29	0.72					0.18	0.18	0.18
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		2010	599	514	3684					310	285	277
v/s Ratio Prot		c0.31		c0.29	0.16					c0.18	0.15	
v/s Ratio Perm			0.23									0.05
v/c Ratio		0.78	0.57	1.01	0.22					0.95	0.84	0.27
Uniform Delay, d1		29.0	26.0	39.0	5.0					44.4	43.3	38.5
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		3.0	4.0	42.6	0.1					38.2	19.2	0.4
Delay (s)		32.0	30.0	81.6	5.1					82.5	62.5	38.8
Level of Service		C	C	F	A					F	E	D
Approach Delay (s)		31.6			34.8			0.0			61.9	
Approach LOS		C			C			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.9			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			14.2			
Intersection Capacity Utilization			87.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave






















Year 2040 No Project Conditions  
 PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	595	1395	0	0	1130	540	185	5	375	0	0	0
Future Volume (vph)	595	1395	0	0	1130	540	185	5	375	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1770	5085			5085	1583	1681	1464	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1770	5085			5085	1583	1681	1464	1504			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	626	1468	0	0	1189	568	195	5	395	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	101	0	94	94	0	0	0
Lane Group Flow (vph)	626	1468	0	0	1189	467	175	117	115	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	38.8	86.8			43.8	43.8	12.2	12.2	12.2			
Effective Green, g (s)	38.8	86.8			43.8	43.8	12.2	12.2	12.2			
Actuated g/C Ratio	0.36	0.80			0.40	0.40	0.11	0.11	0.11			
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5			
Lane Grp Cap (vph)	630	4049			2043	636	188	163	168			
v/s Ratio Prot	c0.35	0.29			0.23		c0.10	0.08				
v/s Ratio Perm						c0.29			0.08			
v/c Ratio	0.99	0.36			0.58	0.73	0.93	0.72	0.68			
Uniform Delay, d1	35.0	3.2			25.5	27.7	48.0	46.7	46.5			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	34.0	0.3			1.2	7.4	46.1	13.1	10.0			
Delay (s)	69.0	3.4			26.7	35.0	94.1	59.8	56.6			
Level of Service	E	A			C	D	F	E	E			
Approach Delay (s)		23.0			29.4			68.8			0.0	
Approach LOS		C			C			E			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.7				HCM 2000 Level of Service		C			
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			109.0				Sum of lost time (s)		14.2			
Intersection Capacity Utilization			87.3%				ICU Level of Service		E			
Analysis Period (min)			15									

c Critical Lane Group




























HCM Signalized Intersection Capacity Analysis  
15: Hilltop Dr & Cypress Ave

Year 2040 No Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	395	1095	280	80	875	70	230	100	70	80	95	565
Future Volume (vph)	395	1095	280	80	875	70	230	100	70	80	95	565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.96		1.00	0.90	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4930		3433	5020		1610	3168		1681	1485	1460
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4930		3433	5020		1610	3168		1681	1485	1460
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	429	1190	304	87	951	76	250	109	76	87	103	614
RTOR Reduction (vph)	0	35	0	0	7	0	0	31	0	0	62	271
Lane Group Flow (vph)	429	1459	0	87	1020	0	147	257	0	78	308	85
Confl. Peds. (#/hr)						8			22			14
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	18.3	42.9		7.7	31.8		23.7	23.7		28.6	28.6	28.6
Effective Green, g (s)	18.3	42.9		7.7	31.8		23.7	23.7		28.6	28.6	28.6
Actuated g/C Ratio	0.15	0.36		0.06	0.27		0.20	0.20		0.24	0.24	0.24
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	523	1762		220	1330		317	625		400	353	347
v/s Ratio Prot	c0.12	c0.30		0.03	0.20		c0.09	0.08		0.05	c0.21	
v/s Ratio Perm												0.06
v/c Ratio	0.82	0.83		0.40	0.77		0.46	0.41		0.20	0.87	0.24
Uniform Delay, d1	49.3	35.2		53.9	40.7		42.5	42.1		36.5	44.0	37.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.5	4.6		0.4	4.3		0.4	0.2		0.1	20.0	0.1
Delay (s)	58.8	39.8		54.3	45.0		42.9	42.2		36.6	63.9	37.1
Level of Service	E	D		D	D		D	D		D	E	D
Approach Delay (s)		44.0			45.7			42.5			49.4	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			45.3				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			17.6		
Intersection Capacity Utilization			77.0%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Year 2040 Plus Project Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 			 	
Traffic Volume (vph)	151	307	203	260	505	220	250	590	215	145	400	122
Future Volume (vph)	151	307	203	260	505	220	250	590	215	145	400	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1526	1770	3539	1530	1770	3366		1770	3396	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1526	1770	3539	1530	1770	3366		1770	3396	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	164	334	221	283	549	239	272	641	234	158	435	133
RTOR Reduction (vph)	0	0	134	0	0	123	0	24	0	0	21	0
Lane Group Flow (vph)	164	334	87	283	549	116	272	851	0	158	547	0
Confl. Peds. (#/hr)			24			21			19			8
Confl. Bikes (#/hr)			1			2			2			3
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	10.0	24.5	24.5	21.8	36.3	36.3	17.2	31.6		14.6	28.7	
Effective Green, g (s)	10.0	24.5	24.5	21.8	36.3	36.3	17.2	31.6		14.6	28.7	
Actuated g/C Ratio	0.09	0.23	0.23	0.20	0.33	0.33	0.16	0.29		0.13	0.26	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	315	797	343	354	1181	510	280	978		237	896	
v/s Ratio Prot	0.05	0.09		c0.16	c0.16		c0.15	c0.25		0.09	0.16	
v/s Ratio Perm			0.06			0.08						
v/c Ratio	0.52	0.42	0.25	0.80	0.46	0.23	0.97	0.87		0.67	0.61	
Uniform Delay, d1	47.1	36.0	34.6	41.4	28.5	26.1	45.5	36.6		44.7	35.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.7	0.8	11.2	0.6	0.5	45.5	9.2		5.4	1.8	
Delay (s)	47.8	36.8	35.4	52.5	29.1	26.6	91.0	45.8		50.1	36.9	
Level of Service	D	D	D	D	C	C	F	D		D	D	
Approach Delay (s)		38.9			34.8			56.5			39.8	
Approach LOS		D			C			E			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			43.4				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			108.7				Sum of lost time (s)			16.5		
Intersection Capacity Utilization			79.6%				ICU Level of Service			D		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: Northwoods Way & Hartnell Ave

Year 2040 Plus Project Conditions

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	406	85	140	642	95	70	45	125	130	60	100
Future Volume (vph)	110	406	85	140	642	95	70	45	125	130	60	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frbp, ped/bikes	1.00	0.99		1.00	0.99			1.00			0.98	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.97		1.00	0.98			0.93			0.95	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (prot)	1770	3410		1770	3445			1707			1696	
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.98	
Satd. Flow (perm)	1770	3410		1770	3445			1707			1696	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	120	441	92	152	698	103	76	49	136	141	65	109
RTOR Reduction (vph)	0	17	0	0	11	0	0	39	0	0	19	0
Lane Group Flow (vph)	120	516	0	152	790	0	0	222	0	0	296	0
Confl. Peds. (#/hr)			24			19						57
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												
Actuated Green, G (s)	8.8	22.6		12.0	25.8			14.6			23.2	
Effective Green, g (s)	8.8	22.6		12.0	25.8			14.6			23.2	
Actuated g/C Ratio	0.10	0.25		0.13	0.29			0.16			0.26	
Clearance Time (s)	3.5	5.0		3.5	5.0			3.7			4.5	
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0	
Lane Grp Cap (vph)	174	864		238	997			279			441	
v/s Ratio Prot	0.07	0.15		c0.09	c0.23			c0.13			c0.17	
v/s Ratio Perm												
v/c Ratio	0.69	0.60		0.64	0.79			0.79			0.67	
Uniform Delay, d1	38.8	29.2		36.5	29.2			35.8			29.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Incremental Delay, d2	8.7	1.3		4.1	4.7			13.5			3.1	
Delay (s)	47.6	30.6		40.6	33.9			49.3			32.7	
Level of Service	D	C		D	C			D			C	
Approach Delay (s)		33.7			34.9			49.3			32.7	
Approach LOS		C			C			D			C	

### Intersection Summary

HCM 2000 Control Delay	36.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	89.1	Sum of lost time (s)	16.7
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

# HCM Signalized Intersection Capacity Analysis

Year 2040 Plus Project Conditions

## 3: Bechelli Ln & Hartnell Ave

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	246	125	220	417	175	290	285	200	155	220	77
Future Volume (vph)	16	246	125	220	417	175	290	285	200	155	220	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frbp, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.98	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.94		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1558	1770	3539	1549	1770	3297		1770	3384	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1558	1770	3539	1549	1770	3297		1770	3384	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	267	136	239	453	190	315	310	217	168	239	84
RTOR Reduction (vph)	0	0	107	0	0	121	0	118	0	0	36	0
Lane Group Flow (vph)	17	267	29	239	453	69	315	409	0	168	287	0
Confl. Peds. (#/hr)			1			9			4			6
Confl. Bikes (#/hr)			3			3			2			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	2.2	17.7	17.7	15.1	30.6	30.6	18.3	21.4		12.6	15.7	
Effective Green, g (s)	2.2	17.7	17.7	15.1	30.6	30.6	18.3	21.4		12.6	15.7	
Actuated g/C Ratio	0.03	0.21	0.21	0.18	0.37	0.37	0.22	0.26		0.15	0.19	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	46	747	329	318	1292	565	386	841		266	633	
v/s Ratio Prot	0.01	0.08		c0.14	c0.13		c0.18	c0.12		0.09	0.08	
v/s Ratio Perm			0.02			0.04						
v/c Ratio	0.37	0.36	0.09	0.75	0.35	0.12	0.82	0.49		0.63	0.45	
Uniform Delay, d1	40.1	28.2	26.6	32.6	19.4	17.7	31.1	26.5		33.4	30.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.6	0.2	8.6	0.3	0.2	11.9	0.9		3.6	1.1	
Delay (s)	41.9	28.8	26.8	41.2	19.7	17.9	43.1	27.5		37.0	31.3	
Level of Service	D	C	C	D	B	B	D	C		D	C	
Approach Delay (s)		28.7			25.1			33.3			33.3	
Approach LOS		C			C			C			C	

### Intersection Summary

HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	83.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕				↗	↖	↕		↖	↕	
Traffic Vol, veh/h	10	0	10	0	0	15	15	689	80	70	377	15
Future Vol, veh/h	10	0	10	0	0	15	15	689	80	70	377	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	2	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	0	75	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	0	11	0	0	16	16	749	87	76	410	16

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	978	1441	214	-	-	420	427	0	0	838	0	0
Stage 1	571	571	-	-	-	-	-	-	-	-	-	-
Stage 2	407	870	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	-	-	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	-	-	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	203	130	788	0	0	579	1122	-	-	786	-	-
Stage 1	471	501	-	0	0	-	-	-	-	-	-	-
Stage 2	589	365	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	180	115	787	-	-	578	1121	-	-	785	-	-
Mov Cap-2 Maneuver	180	115	-	-	-	-	-	-	-	-	-	-
Stage 1	464	452	-	-	-	-	-	-	-	-	-	-
Stage 2	564	359	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	18.3		11.4		0.2		1.5	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1121	-	-	293	578	785	-	-
HCM Lane V/C Ratio	0.015	-	-	0.074	0.028	0.097	-	-
HCM Control Delay (s)	8.3	-	-	18.3	11.4	10.1	-	-
HCM Lane LOS	A	-	-	C	B	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0.3	-	-

# HCM Signalized Intersection Capacity Analysis

Year 2040 Plus Project Conditions

## 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (vph)	5	0	10	15	0	30	30	669	15	50	437	30
Future Volume (vph)	5	0	10	15	0	30	30	669	15	50	437	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5			4.5		3.5	5.0		4.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.91		1.00	1.00		1.00	0.99	
Flt Protected		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1664			1652		1770	3526		1770	3499	
Flt Permitted		0.98			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1664			1652		1770	3526		1770	3499	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	0	11	16	0	33	33	727	16	54	475	33
RTOR Reduction (vph)	0	16	0	0	44	0	0	1	0	0	2	0
Lane Group Flow (vph)	0	0	0	0	5	0	33	742	0	54	506	0
Confl. Peds. (#/hr)							2			2		4
Confl. Bikes (#/hr)										2		2
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4		3	3		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)		0.5			5.5		0.9	31.6		2.4	33.6	
Effective Green, g (s)		0.5			5.5		0.9	31.6		2.4	33.6	
Actuated g/C Ratio		0.01			0.10		0.02	0.55		0.04	0.59	
Clearance Time (s)		3.5			4.5		3.5	5.0		4.0	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)		14			159		27	1954		74	2062	
v/s Ratio Prot		c0.00			c0.00		0.02	c0.21		c0.03	0.14	
v/s Ratio Perm												
v/c Ratio		0.01			0.03		1.22	0.38		0.73	0.25	
Uniform Delay, d1		28.0			23.3		28.1	7.2		27.0	5.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			0.0		247.9	0.3		26.0	0.1	
Delay (s)		28.1			23.4		276.0	7.4		53.0	5.7	
Level of Service		C			C		F	A		D	A	
Approach Delay (s)		28.1			23.4			18.8			10.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	5	5	0	5	30	664	10	10	507	75
Future Vol, veh/h	10	0	5	5	0	5	30	664	10	10	507	75
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	2	2	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	5	5	0	5	33	722	11	11	551	82

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	1044	1418	320	1094	1454	369	636	0	0	735	0	0
Stage 1	617	617	-	796	796	-	-	-	-	-	-	-
Stage 2	427	801	-	298	658	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	183	136	676	168	129	628	943	-	-	866	-	-
Stage 1	444	479	-	347	397	-	-	-	-	-	-	-
Stage 2	576	395	-	686	459	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	174	129	674	160	122	627	940	-	-	864	-	-
Mov Cap-2 Maneuver	174	129	-	160	122	-	-	-	-	-	-	-
Stage 1	427	471	-	334	382	-	-	-	-	-	-	-
Stage 2	551	380	-	672	452	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	21.8		19.7		0.4		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	940	-	-	231	255	864	-	-
HCM Lane V/C Ratio	0.035	-	-	0.071	0.043	0.013	-	-
HCM Control Delay (s)	9	-	-	21.8	19.7	9.2	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.1	0	-	-



HCM Signalized Intersection Capacity Analysis  
7: Hartnell Ave & Parkview Ave

Year 2040 Plus Project Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Volume (vph)	109	5	29	10	0	15	89	560	30	20	553	51
Future Volume (vph)	109	5	29	10	0	15	89	560	30	20	553	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.97			0.92		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.98		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1740			1664		1770	3507		1770	3487	
Flt Permitted		0.76			0.86		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1372			1468		1770	3507		1770	3487	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	118	5	32	11	0	16	97	609	33	22	601	55
RTOR Reduction (vph)	0	13	0	0	22	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	142	0	0	5	0	97	639	0	22	648	0
Confl. Peds. (#/hr)			3			7			3			2
Confl. Bikes (#/hr)									3			3
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1		6
Permitted Phases	4			8								
Actuated Green, G (s)		10.7			10.7		8.9	32.8		0.9	24.8	
Effective Green, g (s)		10.7			10.7		8.9	32.8		0.9	24.8	
Actuated g/C Ratio		0.19			0.19		0.16	0.57		0.02	0.43	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		255			273		274	2004		27	1506	
v/s Ratio Prot							0.05	c0.18		0.01	c0.19	
v/s Ratio Perm		c0.10			0.00							
v/c Ratio		0.56			0.02		0.35	0.32		0.81	0.43	
Uniform Delay, d1		21.2			19.1		21.7	6.4		28.2	11.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.5			0.0		0.3	0.2		91.8	0.4	
Delay (s)		22.7			19.1		22.0	6.6		120.0	11.8	
Level of Service		C			B		C	A		F	B	
Approach Delay (s)		22.7			19.1			8.6			15.3	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM 2000 Control Delay	13.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	15	0	5	5	0	15	10	659	15	45	614	50
Future Vol, veh/h	15	0	5	5	0	15	10	659	15	45	614	50
Conflicting Peds, #/hr	0	0	0	0	0	0	2	0	2	2	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	16	0	5	5	0	16	11	716	16	49	667	54

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1174	1550	363	1180	1569	368	723	0	0	734	0	0
Stage 1	794	794	-	748	748	-	-	-	-	-	-	-
Stage 2	380	756	-	432	821	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	146	112	631	144	109	626	869	-	-	860	-	-
Stage 1	345	396	-	368	415	-	-	-	-	-	-	-
Stage 2	611	412	-	569	384	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	134	104	630	135	101	625	867	-	-	858	-	-
Mov Cap-2 Maneuver	134	104	-	135	101	-	-	-	-	-	-	-
Stage 1	340	373	-	362	409	-	-	-	-	-	-	-
Stage 2	588	406	-	532	361	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	29.8		16.8		0.1		0.6	
HCM LOS	D		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	867	-	-	167	328	858	-
HCM Lane V/C Ratio	0.013	-	-	0.13	0.066	0.057	-
HCM Control Delay (s)	9.2	-	-	29.8	16.8	9.4	-
HCM Lane LOS	A	-	-	D	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.2	0.2	-

Intersection						
Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑	
Traffic Vol, veh/h	0	8	5	684	701	190
Future Vol, veh/h	0	8	5	684	701	190
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	5	743	762	207

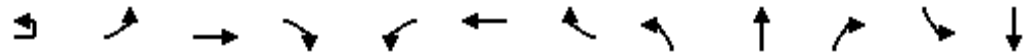
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	868	971	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.23	4.13	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	0	351	708	-	-	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	350	707	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	707	-	350	-	-
HCM Lane V/C Ratio	0.008	-	0.025	-	-
HCM Control Delay (s)	10.1	-	15.5	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
 AM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↔	↔↔↔	↔	↔	↔↔↔	↔	↔↔	↑	↔		↔
Traffic Volume (vph)	5	165	600	504	372	855	60	513	26	145	20	15
Future Volume (vph)	5	165	600	504	372	855	60	513	26	145	20	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.97	1.00	1.00	1.00		1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (prot)		1736	4988	1534	1736	4988	1508	3367	1827	1553		1776
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97
Satd. Flow (perm)		1736	4988	1534	1736	4988	1508	3367	1827	1553		1776
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	179	652	548	404	929	65	558	28	158	22	16
RTOR Reduction (vph)	0	0	0	294	0	0	44	0	0	120	0	0
Lane Group Flow (vph)	0	184	652	254	404	929	21	558	28	38	0	38
Confl. Peds. (#/hr)				2			2					
Confl. Bikes (#/hr)				1			1					
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA
Protected Phases	5	5	2	3	1	6		3	3		4	4
Permitted Phases				2			6			3		
Actuated Green, G (s)		16.6	23.6	49.2	28.1	35.1	35.1	25.6	25.6	25.6		11.1
Effective Green, g (s)		16.6	23.6	49.2	28.1	35.1	35.1	25.6	25.6	25.6		11.1
Actuated g/C Ratio		0.16	0.22	0.46	0.26	0.33	0.33	0.24	0.24	0.24		0.10
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0
Lane Grp Cap (vph)		271	1108	710	459	1648	498	811	440	374		185
v/s Ratio Prot		0.11	0.13	0.09	c0.23	c0.19		c0.17	0.02			c0.02
v/s Ratio Perm				0.08			0.01			0.02		
v/c Ratio		0.68	0.59	0.36	0.88	0.56	0.04	0.69	0.06	0.10		0.21
Uniform Delay, d1		42.3	37.0	18.3	37.4	29.3	24.1	36.7	31.1	31.4		43.5
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2		5.2	1.2	0.1	18.0	0.7	0.1	2.0	0.0	0.0		0.2
Delay (s)		47.5	38.2	18.4	55.4	30.0	24.2	38.6	31.1	31.4		43.7
Level of Service		D	D	B	E	C	C	D	C	C		D
Approach Delay (s)			31.6			37.0			36.8			43.2
Approach LOS			C			D			D			D

Intersection Summary		
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.67	D
Actuated Cycle Length (s)	106.2	Sum of lost time (s)
Intersection Capacity Utilization	74.1%	17.8
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		D

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
 AM Peak Hour



Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	50
Future Volume (vph)	50
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	0.98
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1525
Flt Permitted	1.00
Satd. Flow (perm)	1525
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	54
RTOR Reduction (vph)	48
Lane Group Flow (vph)	6
Confl. Peds. (#/hr)	4
Confl. Bikes (#/hr)	1
Heavy Vehicles (%)	4%
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.1
Effective Green, g (s)	11.1
Actuated g/C Ratio	0.10
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	159
v/s Ratio Prot	
v/s Ratio Perm	0.00
v/c Ratio	0.04
Uniform Delay, d1	42.7
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	42.8
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

**Intersection**

Int Delay, s/veh 7.1

Movement	WBU	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Vol, veh/h	5	15	85	0	30	68	5
Future Vol, veh/h	5	15	85	0	30	68	5
Conflicting Peds, #/hr	0	0	0	0	3	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	0	-	-	0
Grade, %	-	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92	92
Heavy Vehicles, %	10	10	10	10	10	10	10
Mvmt Flow	5	16	92	0	33	74	5

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	0	173	20
Stage 1	0	20	-
Stage 2	0	153	-
Critical Hdwy	-	6.5	6.3
Critical Hdwy Stg 1	-	5.5	-
Critical Hdwy Stg 2	-	5.5	-
Follow-up Hdwy	-	3.59	3.39
Pot Cap-1 Maneuver	0	799	1035
Stage 1	0	982	-
Stage 2	0	856	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	0	757	1032
Mov Cap-2 Maneuver	0	757	-
Stage 1	0	931	-
Stage 2	0	856	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	979	1521
HCM Lane V/C Ratio	-	-	0.111	0.049
HCM Control Delay (s)	-	-	9.1	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.2

HCM Signalized Intersection Capacity Analysis  
 12: Bechelli Lane & Cypress Ave

Year 2040 Plus Project Conditions  
 AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗	↑↑↑		↖↗	↑↑↑		↖	↑	↗	↖	↑	↗
Traffic Volume (vph)	15	585	115	450	1142	320	110	85	255	130	45	35
Future Volume (vph)	15	585	115	450	1142	320	110	85	255	130	45	35
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.0		4.5	4.5	4.5	4.5	4.5	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.98		1.00	0.97		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (prot)	1770	4945		3433	4884		1681	1757	1553	1681	1661	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.99	1.00	0.95	0.99	
Satd. Flow (perm)	1770	4945		3433	4884		1681	1757	1553	1681	1661	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	636	125	489	1241	348	120	92	277	141	49	38
RTOR Reduction (vph)	0	21	0	0	31	0	0	0	241	0	17	0
Lane Group Flow (vph)	16	740	0	489	1558	0	104	108	36	116	95	0
Confl. Peds. (#/hr)			5			5			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	47.4		18.8	63.0		14.2	14.2	14.2	12.1	12.1	
Effective Green, g (s)	3.2	47.4		18.8	63.0		14.2	14.2	14.2	12.1	12.1	
Actuated g/C Ratio	0.03	0.43		0.17	0.57		0.13	0.13	0.13	0.11	0.11	
Clearance Time (s)	3.5	5.0		3.5	5.0		4.5	4.5	4.5	4.5	4.5	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	51	2130		586	2797		217	226	200	184	182	
v/s Ratio Prot	0.01	0.15		c0.14	c0.32		c0.06	0.06		c0.07	0.06	
v/s Ratio Perm									0.02			
v/c Ratio	0.31	0.35		0.83	0.56		0.48	0.48	0.18	0.63	0.52	
Uniform Delay, d1	52.3	20.9		44.1	14.7		44.5	44.5	42.7	46.8	46.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.3	0.4		9.5	0.8		0.6	0.6	0.2	5.1	1.2	
Delay (s)	53.6	21.4		53.6	15.6		45.1	45.0	42.9	51.9	47.5	
Level of Service	D	C		D	B		D	D	D	D	D	
Approach Delay (s)		22.1			24.5			43.8			49.7	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service
HCM 2000 Volume to Capacity ratio	0.63	C
Actuated Cycle Length (s)	110.0	Sum of lost time (s)
Intersection Capacity Utilization	61.1%	17.5
Analysis Period (min)	15	ICU Level of Service
c Critical Lane Group		B

HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave

Year 2040 Plus Project Conditions  
 AM Peak Hour




























Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↘	↑↑↑					↘	↕	↗
Traffic Volume (vph)	0	797	173	290	1153	0	0	0	0	440	5	759
Future Volume (vph)	0	797	173	290	1153	0	0	0	0	440	5	759
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.87	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (prot)		5036	1568	1752	5036					1665	1449	1490
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (perm)		5036	1568	1752	5036					1665	1449	1490
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	866	188	315	1253	0	0	0	0	478	5	825
RTOR Reduction (vph)	0	0	62	0	0	0	0	0	0	0	68	68
Lane Group Flow (vph)	0	866	126	315	1253	0	0	0	0	430	373	369
Confl. Peds. (#/hr)						2						
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		29.0	29.0	20.2	53.4					36.6	36.6	36.6
Effective Green, g (s)		29.0	29.0	20.2	53.4					36.6	36.6	36.6
Actuated g/C Ratio		0.29	0.29	0.20	0.53					0.37	0.37	0.37
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		1460	454	353	2689					609	530	545
v/s Ratio Prot		c0.17		c0.18	0.25					c0.26	0.26	
v/s Ratio Perm			0.08									0.25
v/c Ratio		0.59	0.28	0.89	0.47					0.71	0.70	0.68
Uniform Delay, d1		30.4	27.4	38.8	14.5					27.1	27.1	26.7
Progression Factor		1.00	1.00	0.57	0.66					1.00	1.00	1.00
Incremental Delay, d2		1.8	1.5	21.3	0.4					3.5	3.9	3.0
Delay (s)		32.2	28.9	43.4	10.0					30.6	31.0	29.7
Level of Service		C	C	D	B					C	C	C
Approach Delay (s)		31.6			16.7			0.0			30.4	
Approach LOS		C			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			25.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			14.2			
Intersection Capacity Utilization			70.2%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave

Year 2040 Plus Project Conditions  
 AM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		  			  			 					
Traffic Volume (vph)	258	979	0	0	844	375	599	5	410	0	0	0	
Future Volume (vph)	258	979	0	0	844	375	599	5	410	0	0	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95				
Frt	1.00	1.00			1.00	0.85	1.00	0.96	0.85				
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.97	1.00				
Satd. Flow (prot)	1752	5036			5036	1568	1665	1554	1490				
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.97	1.00				
Satd. Flow (perm)	1752	5036			5036	1568	1665	1554	1490				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	280	1064	0	0	917	408	651	5	446	0	0	0	
RTOR Reduction (vph)	0	0	0	0	0	95	0	12	122	0	0	0	
Lane Group Flow (vph)	280	1064	0	0	917	313	384	363	221	0	0	0	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm				
Protected Phases	5	2			6		8	8					
Permitted Phases						6			8				
Actuated Green, G (s)	20.5	64.1			39.4	39.4	25.9	25.9	25.9				
Effective Green, g (s)	20.5	64.1			39.4	39.4	25.9	25.9	25.9				
Actuated g/C Ratio	0.20	0.64			0.39	0.39	0.26	0.26	0.26				
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9				
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5				
Lane Grp Cap (vph)	359	3228			1984	617	431	402	385				
v/s Ratio Prot	c0.16	0.21			0.18		0.23	c0.23					
v/s Ratio Perm						c0.20			0.15				
v/c Ratio	0.78	0.33			0.46	0.51	0.89	0.90	0.57				
Uniform Delay, d1	37.6	8.2			22.5	22.9	35.7	35.8	32.2				
Progression Factor	0.19	0.28			1.00	1.00	1.00	1.00	1.00				
Incremental Delay, d2	8.9	0.2			0.8	3.0	19.9	23.0	1.7				
Delay (s)	16.0	2.5			23.2	25.9	55.6	58.8	33.9				
Level of Service	B	A			C	C	E	E	C				
Approach Delay (s)		5.3			24.1			50.0			0.0		
Approach LOS		A			C			D			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			25.0		HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.69										
Actuated Cycle Length (s)			100.0		Sum of lost time (s)				14.2				
Intersection Capacity Utilization			70.2%		ICU Level of Service				C				
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
15: Hilltop Dr & Cypress Ave

Year 2040 Plus Project Conditions  
AM Peak Hour

































Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑↔		↔↔	↑↑↔		↔	↔↔		↔	↔↔	↔
Traffic Volume (vph)	256	913	220	75	682	95	150	40	50	60	45	387
Future Volume (vph)	256	913	220	75	682	95	150	40	50	60	45	387
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0		3.5	5.5		4.2	4.2		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frbp, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.99	0.99
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.98		1.00	0.95		1.00	0.88	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4921		3433	4992		1610	3141		1681	1481	1482
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4921		3433	4992		1610	3141		1681	1481	1482
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	275	982	237	81	733	102	161	43	54	65	48	416
RTOR Reduction (vph)	0	24	0	0	12	0	0	47	0	0	114	205
Lane Group Flow (vph)	275	1195	0	81	823	0	87	124	0	58	124	28
Confl. Peds. (#/hr)			4						8			1
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	12.8	58.7		6.1	51.5		14.8	14.8		13.1	13.1	13.1
Effective Green, g (s)	12.8	58.7		6.1	51.5		14.8	14.8		13.1	13.1	13.1
Actuated g/C Ratio	0.12	0.53		0.06	0.47		0.13	0.13		0.12	0.12	0.12
Clearance Time (s)	3.5	5.0		3.5	5.5		4.2	4.2		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	399	2626		190	2337		216	422		200	176	176
v/s Ratio Prot	c0.08	c0.24		0.02	0.16		c0.05	0.04		0.03	c0.08	
v/s Ratio Perm												0.02
v/c Ratio	0.69	0.46		0.43	0.35		0.40	0.29		0.29	0.71	0.16
Uniform Delay, d1	46.7	15.8		50.3	18.6		43.6	42.9		44.2	46.6	43.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.9	0.6		0.6	0.4		0.4	0.1		0.3	10.1	0.2
Delay (s)	50.6	16.4		50.8	19.0		44.0	43.0		44.5	56.7	43.6
Level of Service	D	B		D	B		D	D		D	E	D
Approach Delay (s)		22.7			21.9			43.4			49.6	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.53	
Actuated Cycle Length (s)	110.0	Sum of lost time (s) 17.8
Intersection Capacity Utilization	65.0%	ICU Level of Service C
Analysis Period (min)	15	
c Critical Lane Group		



















HCM Signalized Intersection Capacity Analysis  
1: Churn Creek Rd & Hartnell Ave

Year 2040 Plus Project Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 		 	 	
Traffic Volume (vph)	203	530	170	240	433	290	138	455	185	365	625	186
Future Volume (vph)	203	530	170	240	433	290	138	455	185	365	625	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00	0.97	1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3433	3539	1542	1770	3539	1544	1770	3355		1770	3393	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	3433	3539	1542	1770	3539	1544	1770	3355		1770	3393	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	214	558	179	253	456	305	145	479	195	384	658	196
RTOR Reduction (vph)	0	0	75	0	0	197	0	30	0	0	18	0
Lane Group Flow (vph)	214	558	104	253	456	108	145	644	0	384	836	0
Confl. Peds. (#/hr)			11			10			14			15
Confl. Bikes (#/hr)			2			3			2			1
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	12.3	27.9	27.9	22.0	37.6	37.6	13.6	29.2		26.8	42.1	
Effective Green, g (s)	12.3	27.9	27.9	22.0	37.6	37.6	13.6	29.2		26.8	42.1	
Actuated g/C Ratio	0.10	0.23	0.23	0.18	0.31	0.31	0.11	0.24		0.22	0.34	
Clearance Time (s)	3.5	4.6	4.6	3.5	4.6	4.6	3.5	4.6		3.5	4.9	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	345	808	352	318	1089	475	197	802		388	1169	
v/s Ratio Prot	0.06	c0.16		c0.14	0.13		0.08	c0.19		c0.22	0.25	
v/s Ratio Perm			0.07			0.07						
v/c Ratio	0.62	0.69	0.30	0.80	0.42	0.23	0.74	0.80		0.99	0.71	
Uniform Delay, d1	52.7	43.1	39.0	47.9	33.6	31.5	52.5	43.7		47.5	34.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.5	3.2	1.0	12.1	0.5	0.5	11.6	6.6		42.4	2.6	
Delay (s)	55.1	46.4	40.0	60.0	34.1	32.0	64.1	50.4		89.9	37.4	
Level of Service	E	D	D	E	C	C	E	D		F	D	
Approach Delay (s)		47.2			39.9			52.8			53.7	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			48.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			122.1			Sum of lost time (s)				16.5		
Intersection Capacity Utilization			87.3%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
2: Northwoods Way & Hartnell Ave

Year 2040 Plus Project Conditions  
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	100	833	25	25	682	50	30	15	35	35	10	150	
Future Volume (vph)	100	833	25	25	682	50	30	15	35	35	10	150	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.5	5.0		3.5	5.0			4.0			4.5		
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00		
Frbp, ped/bikes	1.00	1.00		1.00	1.00			1.00			0.99		
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00		
Frt	1.00	1.00		1.00	0.99			0.94			0.90		
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (prot)	1770	3520		1770	3496			1720			1634		
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.99		
Satd. Flow (perm)	1770	3520		1770	3496			1720			1634		
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	
Adj. Flow (vph)	108	896	27	27	733	54	32	16	38	38	11	161	
RTOR Reduction (vph)	0	1	0	0	4	0	0	31	0	0	141	0	
Lane Group Flow (vph)	108	922	0	27	783	0	0	55	0	0	69	0	
Confl. Peds. (#/hr)			9			5						6	
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA		
Protected Phases	5	2		1	6		3	3		4	4		
Permitted Phases													
Actuated Green, G (s)	7.0	32.9		2.3	28.2			5.5			7.3		
Effective Green, g (s)	7.0	32.9		2.3	28.2			5.5			7.3		
Actuated g/C Ratio	0.11	0.51		0.04	0.43			0.08			0.11		
Clearance Time (s)	3.5	5.0		3.5	5.0			4.0			4.5		
Vehicle Extension (s)	2.0	4.1		2.0	4.1			2.0			2.0		
Lane Grp Cap (vph)	190	1781		62	1516			145			183		
v/s Ratio Prot	c0.06	c0.26		0.02	0.22			c0.03			c0.04		
v/s Ratio Perm													
v/c Ratio	0.57	0.52		0.44	0.52			0.38			0.38		
Uniform Delay, d1	27.6	10.7		30.7	13.4			28.1			26.7		
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00		
Incremental Delay, d2	2.3	0.4		1.8	0.4			0.6			0.5		
Delay (s)	29.9	11.1		32.5	13.8			28.7			27.2		
Level of Service	C	B		C	B			C			C		
Approach Delay (s)		13.1			14.5			28.7			27.2		
Approach LOS		B			B			C			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			15.6									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.51										
Actuated Cycle Length (s)			65.0									Sum of lost time (s)	17.0
Intersection Capacity Utilization			53.4%									ICU Level of Service	A
Analysis Period (min)			15										
c	Critical Lane Group												

# HCM Signalized Intersection Capacity Analysis

## 3: Bechelli Ln & Hartnell Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	48	548	320	300	432	130	166	255	195	215	280	46
Future Volume (vph)	48	548	320	300	432	130	166	255	195	215	280	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.99	1.00	1.00	0.99	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1560	1770	3539	1563	1770	3287		1770	3456	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1560	1770	3539	1563	1770	3287		1770	3456	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	52	596	348	326	470	141	180	277	212	234	304	50
RTOR Reduction (vph)	0	0	248	0	0	84	0	140	0	0	13	0
Lane Group Flow (vph)	52	596	100	326	470	57	180	349	0	234	341	0
Confl. Peds. (#/hr)			1						2			2
Confl. Bikes (#/hr)			2			2			1			2
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	4.8	22.7	22.7	19.4	37.3	37.3	13.6	17.4		15.7	19.5	
Effective Green, g (s)	4.8	22.7	22.7	19.4	37.3	37.3	13.6	17.4		15.7	19.5	
Actuated g/C Ratio	0.05	0.25	0.25	0.21	0.40	0.40	0.15	0.19		0.17	0.21	
Clearance Time (s)	3.5	5.0	5.0	3.5	5.0	5.0	3.5	5.0		3.5	5.0	
Vehicle Extension (s)	2.0	5.0	5.0	2.0	5.0	5.0	2.0	5.0		2.0	5.0	
Lane Grp Cap (vph)	92	871	384	372	1431	632	261	620		301	730	
v/s Ratio Prot	0.03	c0.17		c0.18	0.13		0.10	c0.11		c0.13	0.10	
v/s Ratio Perm			0.06			0.04						
v/c Ratio	0.57	0.68	0.26	0.88	0.33	0.09	0.69	0.56		0.78	0.47	
Uniform Delay, d1	42.7	31.5	28.0	35.2	18.8	17.0	37.3	33.9		36.6	31.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7	2.9	0.8	19.5	0.3	0.1	5.9	1.9		10.9	1.0	
Delay (s)	47.4	34.4	28.7	54.7	19.1	17.1	43.2	35.9		47.5	32.8	
Level of Service	D	C	C	D	B	B	D	D		D	C	
Approach Delay (s)		33.1			31.2			37.8			38.6	
Approach LOS		C			C			D			D	

### Intersection Summary

HCM 2000 Control Delay	34.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	0	30	10	0	75	10	619	15	20	876	10
Future Vol, veh/h	10	0	30	10	0	75	10	619	15	20	876	10
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	0	0	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	0	33	11	0	82	11	673	16	22	952	11

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1364	1716	485	1223	1713	345	966	0	0	689	0	0
Stage 1	1005	1005	-	703	703	-	-	-	-	-	-	-
Stage 2	359	711	-	520	1010	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	106	89	528	135	89	651	709	-	-	901	-	-
Stage 1	259	317	-	394	438	-	-	-	-	-	-	-
Stage 2	632	434	-	507	316	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	90	85	526	123	85	651	707	-	-	901	-	-
Mov Cap-2 Maneuver	90	85	-	123	85	-	-	-	-	-	-	-
Stage 1	254	308	-	388	431	-	-	-	-	-	-	-
Stage 2	544	427	-	464	307	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	23.5		15.6		0.2		0.2	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	707	-	-	238	433	901	-
HCM Lane V/C Ratio	0.015	-	-	0.183	0.213	0.024	-
HCM Control Delay (s)	10.2	-	-	23.5	15.6	9.1	-
HCM Lane LOS	B	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.8	0.1	-

HCM Signalized Intersection Capacity Analysis Year 2040 Plus Project Conditions  
 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↕			↕			↕	↕		↕	↕
Traffic Volume (vph)	35	0	55	45	0	40	5	5	689	5	5	801
Future Volume (vph)	35	0	55	45	0	40	5	5	689	5	5	801
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.7			4.7			3.5	5.0		3.5	5.0
Lane Util. Factor		1.00			1.00			1.00	0.95		1.00	0.95
Frbp, ped/bikes		1.00			0.99			1.00	1.00		1.00	1.00
Flpb, ped/bikes		1.00			1.00			1.00	1.00		1.00	1.00
Frt		0.92			0.94			1.00	1.00		1.00	1.00
Flt Protected		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (prot)		1676			1688			1770	3535		1770	3532
Flt Permitted		0.98			0.97			0.95	1.00		0.95	1.00
Satd. Flow (perm)		1676			1688			1770	3535		1770	3532
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	38	0	60	49	0	43	5	5	749	5	5	871
RTOR Reduction (vph)	0	91	0	0	85	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	7	0	0	7	0	0	10	754	0	5	882
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)						1				2		
Turn Type	Split	NA		Split	NA		Prot	Prot	NA		Prot	NA
Protected Phases	4	4		3	3		5	5	2		1	6
Permitted Phases												
Actuated Green, G (s)		3.9			4.0			0.8	27.9		0.8	27.9
Effective Green, g (s)		3.9			4.0			0.8	27.9		0.8	27.9
Actuated g/C Ratio		0.07			0.07			0.01	0.52		0.01	0.52
Clearance Time (s)		3.7			4.7			3.5	5.0		3.5	5.0
Vehicle Extension (s)		2.0			2.0			2.0	5.0		2.0	5.0
Lane Grp Cap (vph)		122			126			26	1843		26	1841
v/s Ratio Prot		c0.00			c0.00			c0.01	0.21		0.00	c0.25
v/s Ratio Perm												
v/c Ratio		0.06			0.05			0.38	0.41		0.19	0.48
Uniform Delay, d1		23.1			23.0			26.1	7.8		26.0	8.2
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1			0.1			3.4	0.3		1.3	0.4
Delay (s)		23.2			23.1			29.5	8.1		27.3	8.6
Level of Service		C			C			C	A		C	A
Approach Delay (s)		23.2			23.1				8.4			8.7
Approach LOS		C			C				A			A

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	16.9
Intersection Capacity Utilization	37.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Year 2040 Plus Project Conditions

PM Peak Hour

Movement	SBR
<b>Lane Configurations</b>	
Traffic Volume (vph)	10
Future Volume (vph)	10
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.92
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	1
Confl. Bikes (#/hr)	1
<b>Turn Type</b>	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	



**Intersection**

Int Delay, s/veh 2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕	
Traffic Vol, veh/h	45	0	35	5	0	5	10	749	5	5	10	776	15
Future Vol, veh/h	45	0	35	5	0	5	10	749	5	5	10	776	15
Conflicting Peds, #/hr	0	0	0	0	0	0	3	0	1	0	1	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	-	None
Storage Length	-	-	-	-	-	-	105	-	-	-	130	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	0	38	5	0	5	11	814	5	5	11	843	16

Major/Minor	Minor2		Minor1		Major1		Major2						
Conflicting Flow All	1315	1728	433	1294	1734	411	862	0	0	820	820	0	0
Stage 1	886	886	-	840	840	-	-	-	-	-	-	-	-
Stage 2	429	842	-	454	894	-	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	6.44	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.52	2.22	-	-
Pot Cap-1 Maneuver	116	88	571	120	87	590	776	-	-	433	805	-	-
Stage 1	306	361	-	326	379	-	-	-	-	-	-	-	-
Stage 2	574	378	-	555	358	-	-	-	-	-	-	-	-
Platoon blocked, %								-	-			-	-
Mov Cap-1 Maneuver	111	84	569	108	83	589	774	-	-	623	623	-	-
Mov Cap-2 Maneuver	111	84	-	108	83	-	-	-	-	-	-	-	-
Stage 1	301	351	-	321	373	-	-	-	-	-	-	-	-
Stage 2	561	372	-	505	348	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	46	25.9	0.1	0.2
HCM LOS	E	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	774	-	-	171	183	623	-
HCM Lane V/C Ratio	0.014	-	-	0.509	0.059	0.026	-
HCM Control Delay (s)	9.7	-	-	46	25.9	10.9	-
HCM Lane LOS	A	-	-	E	D	B	-
HCM 95th %tile Q(veh)	0	-	-	2.5	0.2	0.1	-

HCM Signalized Intersection Capacity Analysis  
7: Hartnell Ave & Parkview Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↕		↗	↕	
Traffic Volume (vph)	321	0	114	35	5	25	64	710	30	25	657	73
Future Volume (vph)	321	0	114	35	5	25	64	710	30	25	657	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.96			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.96			0.97		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1733			1710		1770	3514		1770	3479	
Flt Permitted		0.74			0.77		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1325			1355		1770	3514		1770	3479	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	349	0	124	38	5	27	70	772	33	27	714	79
RTOR Reduction (vph)	0	92	0	0	17	0	0	4	0	0	11	0
Lane Group Flow (vph)	0	381	0	0	53	0	70	801	0	27	782	0
Confl. Peds. (#/hr)						3			1			
Confl. Bikes (#/hr)									2			2
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		23.9			23.9		5.4	27.3		2.3	24.2	
Effective Green, g (s)		23.9			23.9		5.4	27.3		2.3	24.2	
Actuated g/C Ratio		0.36			0.36		0.08	0.41		0.03	0.36	
Clearance Time (s)		4.5			4.5		3.5	5.0		3.5	5.0	
Vehicle Extension (s)		2.0			2.0		2.0	4.9		2.0	4.9	
Lane Grp Cap (vph)		476			486		143	1442		61	1266	
v/s Ratio Prot							0.04	c0.23		0.02	c0.22	
v/s Ratio Perm		c0.29			0.04							
v/c Ratio		0.80			0.11		0.49	0.56		0.44	0.62	
Uniform Delay, d1		19.2			14.2		29.2	15.0		31.5	17.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.9			0.0		1.0	0.8		1.9	1.3	
Delay (s)		28.0			14.2		30.2	15.7		33.3	18.6	
Level of Service		C			B		C	B		C	B	
Approach Delay (s)		28.0			14.2			16.9			19.1	
Approach LOS		C			B			B			B	

Intersection Summary

HCM 2000 Control Delay	20.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	66.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

**Intersection**

Int Delay, s/veh	37.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	110	0	45	10	0	30	50	991	15	20	700	150
Future Vol, veh/h	110	0	45	10	0	30	50	991	15	20	700	150
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	175	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	120	0	49	11	0	33	54	1077	16	22	761	163

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1534	2088	462	1618	2161	547	924	0	0	1093	0	0
Stage 1	887	887	-	1193	1193	-	-	-	-	-	-	-
Stage 2	647	1201	-	425	968	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	~ 79	52	547	69	47	481	735	-	-	634	-	-
Stage 1	305	360	-	198	258	-	-	-	-	-	-	-
Stage 2	426	256	-	578	330	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 68	47	547	58	42	481	735	-	-	634	-	-
Mov Cap-2 Maneuver	~ 68	47	-	58	42	-	-	-	-	-	-	-
Stage 1	283	347	-	184	239	-	-	-	-	-	-	-
Stage 2	368	237	-	508	318	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s\$ 500.1		33.3	0.5	0.3
HCM LOS	F	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	735	-	-	91	170	634	-	-
HCM Lane V/C Ratio	0.074	-	-	1.851	0.256	0.034	-	-
HCM Control Delay (s)	10.3	-	-	\$ 500.1	33.3	10.9	-	-
HCM Lane LOS	B	-	-	F	D	B	-	-
HCM 95th %tile Q(veh)	0.2	-	-	14.2	1	0.1	-	-

**Notes**  
 ~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑↑	↑	
Traffic Vol, veh/h	5	32	5	1126	838	108
Future Vol, veh/h	5	32	5	1126	838	108
Conflicting Peds, #/hr	0	0	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	120	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	35	5	1224	911	117

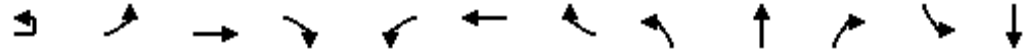
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1471	971	1029	0	-	0
Stage 1	971	-	-	-	-	-
Stage 2	500	-	-	-	-	-
Critical Hdwy	6.08	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	6.03	-	-	-	-	-
Follow-up Hdwy	3.669	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	158	306	673	-	-	-
Stage 1	357	-	-	-	-	-
Stage 2	542	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	154	306	672	-	-	-
Mov Cap-2 Maneuver	154	-	-	-	-	-
Stage 1	348	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	672	-	306	-	-
HCM Lane V/C Ratio	0.008	-	0.114	-	-
HCM Control Delay (s)	10.4	-	18.3	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

HCM Signalized Intersection Capacity Analysis  
10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Configurations		↔	↔↔↔	↔	↔	↔↔↔	↔	↔↔	↑	↔		↔	
Traffic Volume (vph)	5	45	750	652	252	720	45	645	35	451	75	42	
Future Volume (vph)	5	45	750	652	252	720	45	645	35	451	75	42	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Lane Util. Factor		1.00	0.91	1.00	1.00	0.91	1.00	0.97	1.00	1.00		1.00	
Frbp, ped/bikes		1.00	1.00	0.99	1.00	1.00	0.96	1.00	1.00	0.99		1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Frt		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	
Flt Protected		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (prot)		1770	5085	1561	1770	5085	1523	3433	1863	1562		1805	
Flt Permitted		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		0.97	
Satd. Flow (perm)		1770	5085	1561	1770	5085	1523	3433	1863	1562		1805	
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	
Adj. Flow (vph)	6	53	882	767	296	847	53	759	41	531	88	49	
RTOR Reduction (vph)	0	0	0	146	0	0	32	0	0	329	0	0	
Lane Group Flow (vph)	0	59	882	621	296	847	21	759	41	202	0	137	
Confl. Peds. (#/hr)				4			4						
Confl. Bikes (#/hr)				2			1			2			
Turn Type	Prot	Prot	NA	pm+ov	Prot	NA	Perm	Split	NA	Perm	Split	NA	
Protected Phases	5	5	2	3	1	6		3	3		4	4	
Permitted Phases				2			6			3			
Actuated Green, G (s)		6.4	26.9	59.8	23.2	43.7	43.7	32.9	32.9	32.9		11.3	
Effective Green, g (s)		6.4	26.9	59.8	23.2	43.7	43.7	32.9	32.9	32.9		11.3	
Actuated g/C Ratio		0.06	0.24	0.53	0.21	0.39	0.39	0.29	0.29	0.29		0.10	
Clearance Time (s)		3.5	5.0	4.8	3.5	5.0	5.0	4.8	4.8	4.8		4.5	
Vehicle Extension (s)		2.0	4.9	2.0	4.0	4.9	4.9	2.0	2.0	2.0		2.0	
Lane Grp Cap (vph)		101	1220	832	366	1982	593	1007	546	458		181	
v/s Ratio Prot		0.03	0.17	c0.22	c0.17	0.17		c0.22	0.02			c0.08	
v/s Ratio Perm				0.18			0.01			0.13			
v/c Ratio		0.58	0.72	0.75	0.81	0.43	0.03	0.75	0.08	0.44		0.76	
Uniform Delay, d1		51.6	39.2	20.3	42.3	25.0	21.2	35.9	28.6	32.1		49.1	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	
Incremental Delay, d2		5.4	2.6	3.2	13.0	0.3	0.0	2.9	0.0	0.2		14.7	
Delay (s)		57.0	41.8	23.5	55.3	25.3	21.2	38.8	28.6	32.4		63.8	
Level of Service		E	D	C	E	C	C	D	C	C		E	
Approach Delay (s)			34.1			32.6			35.9			54.4	
Approach LOS			C			C			D			D	
<b>Intersection Summary</b>													
HCM 2000 Control Delay			35.6		HCM 2000 Level of Service					D			
HCM 2000 Volume to Capacity ratio			0.76										
Actuated Cycle Length (s)			112.1		Sum of lost time (s)					17.8			
Intersection Capacity Utilization			74.2%		ICU Level of Service					D			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
 10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
 PM Peak Hour



Movement	SBR
Lane Configurations	7
Traffic Volume (vph)	150
Future Volume (vph)	150
Ideal Flow (vphpl)	1900
Total Lost time (s)	4.5
Lane Util. Factor	1.00
Frbp, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1583
Flt Permitted	1.00
Satd. Flow (perm)	1583
Peak-hour factor, PHF	0.85
Adj. Flow (vph)	176
RTOR Reduction (vph)	129
Lane Group Flow (vph)	47
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Actuated Green, G (s)	11.3
Effective Green, g (s)	11.3
Actuated g/C Ratio	0.10
Clearance Time (s)	4.5
Vehicle Extension (s)	2.0
Lane Grp Cap (vph)	159
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.30
Uniform Delay, d1	46.7
Progression Factor	1.00
Incremental Delay, d2	0.4
Delay (s)	47.1
Level of Service	D
Approach Delay (s)	
Approach LOS	
<b>Intersection Summary</b>	

Intersection						
Int Delay, s/veh	7.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	32	5	30	250	5
Future Vol, veh/h	35	32	5	30	250	5
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	35	5	33	272	5

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	572	23	0	0	39
Stage 1	23	-	-	-	-
Stage 2	549	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	482	1054	-	-	1571
Stage 1	1000	-	-	-	-
Stage 2	579	-	-	-	-
Platoon blocked, %					
Mov Cap-1 Maneuver	398	1053	-	-	1570
Mov Cap-2 Maneuver	398	-	-	-	-
Stage 1	825	-	-	-	-
Stage 2	579	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.3	0	7.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	566	1570
HCM Lane V/C Ratio	-	-	0.129	0.173
HCM Control Delay (s)	-	-	12.3	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.4	0.6

HCM Signalized Intersection Capacity Analysis  
12: Bechelli Lane & Cypress Ave

Year 2040 Plus Project Conditions  
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	1376	115	360	752	110	150	30	390	265	65	20
Future Volume (vph)	15	1376	115	360	752	110	150	30	390	265	65	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Lane Util. Factor	1.00	0.91		0.97	0.91		0.95	0.95	1.00	0.95	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	0.98	1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (prot)	1770	5017		3433	4970		1681	1713	1552	1681	1696	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.97	1.00	0.95	0.97	
Satd. Flow (perm)	1770	5017		3433	4970		1681	1713	1552	1681	1696	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	1496	125	391	817	120	163	33	424	288	71	22
RTOR Reduction (vph)	0	6	0	0	11	0	0	0	224	0	4	0
Lane Group Flow (vph)	16	1615	0	391	926	0	98	98	200	190	187	0
Confl. Peds. (#/hr)			9			3			6			
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Split	NA	
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases									3			
Actuated Green, G (s)	3.2	49.6		16.8	63.2		19.4	19.4	19.4	17.3	17.3	
Effective Green, g (s)	3.2	49.6		16.8	63.2		19.4	19.4	19.4	17.3	17.3	
Actuated g/C Ratio	0.03	0.41		0.14	0.53		0.16	0.16	0.16	0.14	0.14	
Clearance Time (s)	3.5	4.9		3.5	4.9		4.4	4.4	4.4	4.1	4.1	
Vehicle Extension (s)	1.7	4.0		1.7	4.0		1.7	1.7	1.7	1.7	1.7	
Lane Grp Cap (vph)	47	2073		480	2617		271	276	250	242	244	
v/s Ratio Prot	0.01	c0.32		c0.11	0.19		0.06	0.06		c0.11	0.11	
v/s Ratio Perm									c0.13			
v/c Ratio	0.34	0.78		0.81	0.35		0.36	0.36	0.80	0.79	0.77	
Uniform Delay, d1	57.4	30.5		50.1	16.5		44.8	44.7	48.4	49.6	49.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	3.0		9.7	0.4		0.3	0.3	15.7	14.2	12.1	
Delay (s)	58.9	33.4		59.8	16.9		45.1	45.0	64.2	63.8	61.5	
Level of Service	E	C		E	B		D	D	E	E	E	
Approach Delay (s)		33.7			29.5			58.1			62.6	
Approach LOS		C			C			E			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.9				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			16.9		
Intersection Capacity Utilization			74.8%				ICU Level of Service			D		
Analysis Period (min)			15									
c	Critical Lane Group											



HCM Signalized Intersection Capacity Analysis  
 13: I-5 SB Ramps & Cypress Ave


























Year 2040 Plus Project Conditions  
 PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑↑					↖	↔	↗
Traffic Volume (vph)	0	1596	435	510	826	0	0	0	0	460	0	396
Future Volume (vph)	0	1596	435	510	826	0	0	0	0	460	0	396
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Lane Util. Factor		0.91	1.00	1.00	0.91					0.95	0.91	0.95
Frbp, ped/bikes		1.00	0.96	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	0.94	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (prot)		5085	1517	1770	5085					1681	1543	1504
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.97	1.00
Satd. Flow (perm)		5085	1517	1770	5085					1681	1543	1504
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1629	444	520	843	0	0	0	0	469	0	404
RTOR Reduction (vph)	0	0	53	0	0	0	0	0	0	0	51	190
Lane Group Flow (vph)	0	1629	391	520	843	0	0	0	0	300	243	89
Confl. Peds. (#/hr)			7			8						
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		43.9	43.9	31.8	79.9					20.1	20.1	20.1
Effective Green, g (s)		43.9	43.9	31.8	79.9					20.1	20.1	20.1
Actuated g/C Ratio		0.40	0.40	0.29	0.73					0.18	0.18	0.18
Clearance Time (s)		5.1	5.1	4.2	5.1					4.9	4.9	4.9
Vehicle Extension (s)		3.5	3.5	2.0	3.5					2.5	2.5	2.5
Lane Grp Cap (vph)		2029	605	511	3693					307	281	274
v/s Ratio Prot		c0.32		c0.29	0.17					c0.18	0.16	
v/s Ratio Perm			0.26									0.06
v/c Ratio		0.80	0.65	1.02	0.23					0.98	0.87	0.32
Uniform Delay, d1		29.2	26.8	39.1	4.9					44.7	43.6	39.0
Progression Factor		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Incremental Delay, d2		3.5	5.2	44.3	0.1					44.7	23.0	0.5
Delay (s)		32.7	32.0	83.4	5.1					89.4	66.6	39.5
Level of Service		C	C	F	A					F	E	D
Approach Delay (s)		32.5			35.0			0.0			65.8	
Approach LOS		C			C			A			E	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			40.1		HCM 2000 Level of Service					D		
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			110.0		Sum of lost time (s)				14.2			
Intersection Capacity Utilization			90.5%		ICU Level of Service				E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 14: I-5 NB Ramps & Cypress Ave































Year 2040 Plus Project Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  				 			
Traffic Volume (vph)	645	1411	0	0	1135	540	201	5	375	0	0	0
Future Volume (vph)	645	1411	0	0	1135	540	201	5	375	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Lane Util. Factor	1.00	0.91			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (prot)	1770	5085			5085	1583	1681	1465	1504			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00	1.00			
Satd. Flow (perm)	1770	5085			5085	1583	1681	1465	1504			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	679	1485	0	0	1195	568	212	5	395	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	100	0	91	91	0	0	0
Lane Group Flow (vph)	679	1485	0	0	1195	468	191	121	118	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	38.8	86.8			43.8	43.8	12.2	12.2	12.2			
Effective Green, g (s)	38.8	86.8			43.8	43.8	12.2	12.2	12.2			
Actuated g/C Ratio	0.36	0.80			0.40	0.40	0.11	0.11	0.11			
Clearance Time (s)	4.2	5.1			5.1	5.1	4.9	4.9	4.9			
Vehicle Extension (s)	2.0	3.5			3.5	3.5	2.5	2.5	2.5			
Lane Grp Cap (vph)	630	4049			2043	636	188	163	168			
v/s Ratio Prot	c0.38	0.29			0.23		c0.11	0.08				
v/s Ratio Perm						c0.30			0.08			
v/c Ratio	1.08	0.37			0.58	0.74	1.02	0.74	0.70			
Uniform Delay, d1	35.1	3.2			25.5	27.7	48.4	46.9	46.6			
Progression Factor	1.00	1.00			1.00	1.00	1.00	1.00	1.00			
Incremental Delay, d2	58.6	0.3			1.2	7.4	69.8	15.2	11.1			
Delay (s)	93.7	3.5			26.7	35.1	118.2	62.1	57.7			
Level of Service	F	A			C	D	F	E	E			
Approach Delay (s)		31.8			29.4			78.1			0.0	
Approach LOS		C			C			E			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			37.1				HCM 2000 Level of Service		D			
HCM 2000 Volume to Capacity ratio			0.91									
Actuated Cycle Length (s)			109.0			Sum of lost time (s)		14.2				
Intersection Capacity Utilization			90.5%			ICU Level of Service		E				
Analysis Period (min)			15									

c Critical Lane Group

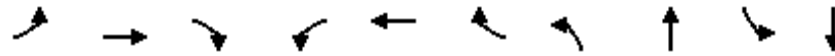
HCM Signalized Intersection Capacity Analysis  
 15: Hilltop Dr & Cypress Ave

Year 2040 Plus Project Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	  		 	  			 			 	 
Traffic Volume (vph)	398	1108	280	80	879	70	230	100	70	80	95	566
Future Volume (vph)	398	1108	280	80	879	70	230	100	70	80	95	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Lane Util. Factor	0.97	0.91		0.97	0.91		0.91	0.91		0.95	0.91	0.95
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	0.98	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.96		1.00	0.90	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (prot)	3433	4932		3433	5020		1610	3168		1681	1485	1460
Flt Permitted	0.95	1.00		0.95	1.00		0.95	0.98		0.95	1.00	1.00
Satd. Flow (perm)	3433	4932		3433	5020		1610	3168		1681	1485	1460
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	433	1204	304	87	955	76	250	109	76	87	103	615
RTOR Reduction (vph)	0	35	0	0	7	0	0	31	0	0	62	272
Lane Group Flow (vph)	433	1473	0	87	1024	0	147	257	0	78	308	85
Confl. Peds. (#/hr)						8			22			14
Turn Type	Prot	NA		Prot	NA		Split	NA		Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases												4
Actuated Green, G (s)	18.4	42.9		7.7	31.7		23.7	23.7		28.6	28.6	28.6
Effective Green, g (s)	18.4	42.9		7.7	31.7		23.7	23.7		28.6	28.6	28.6
Actuated g/C Ratio	0.15	0.36		0.06	0.26		0.20	0.20		0.24	0.24	0.24
Clearance Time (s)	3.5	4.9		3.5	5.4		4.1	4.1		4.6	4.6	4.6
Vehicle Extension (s)	2.0	4.0		1.7	4.0		1.7	1.7		1.7	1.7	1.7
Lane Grp Cap (vph)	526	1763		220	1326		317	625		400	353	347
v/s Ratio Prot	c0.13	c0.30		0.03	0.20		c0.09	0.08		0.05	c0.21	
v/s Ratio Perm												0.06
v/c Ratio	0.82	0.84		0.40	0.77		0.46	0.41		0.20	0.87	0.25
Uniform Delay, d1	49.2	35.3		53.9	40.8		42.5	42.1		36.5	44.0	37.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.6	4.9		0.4	4.4		0.4	0.2		0.1	20.0	0.1
Delay (s)	58.8	40.2		54.3	45.2		42.9	42.2		36.6	63.9	37.1
Level of Service	E	D		D	D		D	D		D	E	D
Approach Delay (s)		44.4			45.9			42.5			49.4	
Approach LOS		D			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			45.5			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)		17.6				
Intersection Capacity Utilization			77.2%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Queues  
1: Churn Creek Rd & Hartnell Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	91	244	221	284	511	237	237	736	160	486
v/c Ratio	0.37	0.32	0.44	0.79	0.39	0.34	0.82	0.75	0.67	0.55
Control Delay	58.3	37.2	8.0	59.7	26.0	7.1	71.6	42.2	61.7	37.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	37.2	8.0	59.7	26.0	7.1	71.6	42.2	61.7	37.8
Queue Length 50th (ft)	35	75	0	209	138	18	181	264	118	165
Queue Length 95th (ft)	68	129	65	328	207	78	#401	#435	204	238
Internal Link Dist (ft)		811			408			444		323
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1235	1235	672	549	1416	726	288	1030	462	1366
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.33	0.52	0.36	0.33	0.82	0.71	0.35	0.36

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	109	408	138	675	222	265
v/c Ratio	0.49	0.44	0.55	0.69	0.71	0.62
Control Delay	46.4	27.9	46.5	32.6	43.3	33.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	27.9	46.5	32.6	43.3	33.2
Queue Length 50th (ft)	62	100	79	186	103	117
Queue Length 95th (ft)	118	157	142	272	#211	212
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	406	1196	406	1204	420	632
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.34	0.34	0.56	0.53	0.42

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Conditions  
AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	36	29	623	36	378
v/c Ratio	0.05	0.10	0.12	0.23	0.15	0.14
Control Delay	0.3	0.5	27.3	9.6	26.8	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	0.5	27.3	9.6	26.8	7.7
Queue Length 50th (ft)	0	0	5	0	6	0
Queue Length 95th (ft)	0	0	43	206	50	121
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	768	1128	751	2832	751	2810
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.04	0.22	0.05	0.13
<b>Intersection Summary</b>						

Queues  
7: Hartnell Ave & Parkview Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	37	12	12	643	4	532
v/c Ratio	0.12	0.03	0.05	0.23	0.02	0.19
Control Delay	13.2	0.1	25.5	7.4	27.2	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	0.1	25.5	7.4	27.2	7.8
Queue Length 50th (ft)	4	0	2	0	1	0
Queue Length 95th (ft)	26	0	22	185	11	159
Internal Link Dist (ft)	256	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	820	930	778	2800	778	2791
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.01	0.02	0.23	0.01	0.19
<b>Intersection Summary</b>						

Queues  
10: Hartnell Ave & Cypress Ave

Existing Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	113	563	428	188	865	60	542	24	135	19	39
v/c Ratio	0.50	0.48	0.44	0.56	0.58	0.12	0.64	0.05	0.27	0.07	0.12
Control Delay	52.8	35.4	3.2	46.2	32.2	8.0	37.5	33.4	8.3	40.8	0.8
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	52.8	35.4	3.2	46.2	32.2	8.0	37.5	33.4	8.3	40.8	0.8
Queue Length 50th (ft)	59	99	0	94	148	0	135	10	0	10	0
Queue Length 95th (ft)	154	198	33	232	289	25	280	40	43	34	0
Internal Link Dist (ft)		704			423			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	456	2440	1152	562	2745	856	1449	786	745	872	803
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.23	0.37	0.33	0.32	0.07	0.37	0.03	0.18	0.02	0.05

Intersection Summary



Queuing and Blocking Report  
Existing Conditions

AM Peak Hour

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	41	236	147	128	190	226	156	198	242	222	116	126
Average Queue (ft)	9	124	31	59	103	123	60	87	121	106	53	49
95th Queue (ft)	30	200	99	109	167	190	132	164	214	187	90	98
Link Distance (ft)		553	553	553			389	389	389	363	363	293
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		16								44		
Queuing Penalty (veh)		2								19		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	112
Average Queue (ft)	52
95th Queue (ft)	95
Link Distance (ft)	293
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	346	254	165	115	299	344	286	199	328	414	351
Average Queue (ft)	159	81	57	6	160	97	82	92	157	241	163
95th Queue (ft)	293	187	121	48	276	220	180	174	267	367	305
Link Distance (ft)	389	389	389			432	432	432	737	737	
Upstream Blk Time (%)	0					0	0				
Queuing Penalty (veh)	0					1	0				
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			21	0	5	0				1	0
Queuing Penalty (veh)			23	0	13	0				2	0

Queuing and Blocking Report  
Existing Conditions

AM Peak Hour

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	303	390	242	167	250	228	165	128	278	365	296
Average Queue (ft)	156	76	53	59	155	79	54	34	148	231	157
95th Queue (ft)	281	229	147	132	257	179	128	108	264	340	291
Link Distance (ft)		432	432	432	234	234	234			806	
Upstream Blk Time (%)		0	0		2	0	0				
Queuing Penalty (veh)		1	0		7	0	0				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	3	0					15	5			
Queuing Penalty (veh)	9	0					50	11			

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	161	163	221	244	232	12	170	244	186	292	114	146
Average Queue (ft)	79	99	88	115	129	1	51	126	49	133	53	68
95th Queue (ft)	141	151	176	201	223	10	117	218	147	242	104	120
Link Distance (ft)			234	234	234			464	464	464	262	262
Upstream Blk Time (%)			0	0	1							
Queuing Penalty (veh)			1	1	3							
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	0	0	1				2	19				
Queuing Penalty (veh)	0	1	2				4	11				

Intersection: 15: Hilltop Dr & Cypress Ave

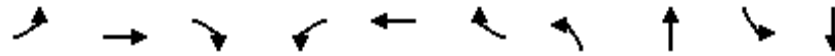
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	72	128	263	178
Average Queue (ft)	23	14	137	63
95th Queue (ft)	54	78	240	139
Link Distance (ft)	262		287	287
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		0	15	
Queuing Penalty (veh)		0	4	

Zone Summary

Zone wide Queuing Penalty: 480

Queues  
1: Churn Creek Rd & Hartnell Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	175	469	104	199	400	276	104	573	366	681
v/c Ratio	0.54	0.61	0.25	0.72	0.40	0.44	0.58	0.71	0.85	0.53
Control Delay	56.7	43.5	10.5	60.9	33.7	5.9	63.9	42.1	61.3	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	43.5	10.5	60.9	33.7	5.9	63.9	42.1	61.3	30.3
Queue Length 50th (ft)	62	159	4	136	121	0	72	179	250	187
Queue Length 95th (ft)	112	240	52	239	180	61	146	287	#532	325
Internal Link Dist (ft)		811			408			444		323
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1156	1155	568	514	1105	670	269	970	433	1299
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.41	0.18	0.39	0.36	0.41	0.39	0.59	0.85	0.52

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	99	734	14	652	59	168
v/c Ratio	0.38	0.37	0.08	0.45	0.27	0.53
Control Delay	28.5	9.4	29.2	15.5	21.3	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	9.4	29.2	15.5	21.3	15.8
Queue Length 50th (ft)	29	63	4	87	10	11
Queue Length 95th (ft)	83	171	22	171	46	66
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	576	1976	576	1747	570	884
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.37	0.02	0.37	0.10	0.19
<b>Intersection Summary</b>						

Queues

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Conditions

PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	77	3	620	6	759
v/c Ratio	0.32	0.29	0.02	0.30	0.03	0.36
Control Delay	8.8	8.5	23.5	8.1	23.4	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.8	8.5	23.5	8.1	23.4	8.5
Queue Length 50th (ft)	0	0	1	44	1	56
Queue Length 95th (ft)	25	23	8	104	11	129
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	709	1020	675	2457	675	2451
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.08	0.00	0.25	0.01	0.31
<b>Intersection Summary</b>						

**Queues**  
**7: Hartnell Ave & Parkview Ave**

**Existing Conditions**  
 PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	62	16	735	25	770
v/c Ratio	0.18	0.20	0.07	0.30	0.11	0.31
Control Delay	1.1	10.8	25.7	9.0	25.7	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.1	10.8	25.7	9.0	25.7	9.1
Queue Length 50th (ft)	0	6	3	30	4	31
Queue Length 95th (ft)	0	30	25	205	34	215
Internal Link Dist (ft)	256	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	812	796	745	2696	745	2674
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.08	0.02	0.27	0.03	0.29
<b>Intersection Summary</b>						

Queues  
10: Hartnell Ave & Cypress Ave

Existing Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	51	862	672	91	811	53	572	16	216	128	172
v/c Ratio	0.33	0.62	0.58	0.40	0.47	0.09	0.62	0.03	0.38	0.52	0.51
Control Delay	52.4	33.8	3.1	47.9	27.6	5.2	34.7	28.9	6.3	50.0	18.1
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	52.4	33.8	3.1	47.9	27.6	5.2	34.7	28.9	6.3	50.0	18.1
Queue Length 50th (ft)	29	163	0	50	141	0	151	7	0	72	18
Queue Length 95th (ft)	75	246	30	113	215	18	240	25	47	148	80
Internal Link Dist (ft)		709			410			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	413	2209	1255	509	2485	772	1312	712	730	794	773
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.39	0.54	0.18	0.33	0.07	0.44	0.02	0.30	0.16	0.22

Intersection Summary

Queuing and Blocking Report  
Existing Conditions

PM Peak Hour

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	160	798	761	648	189	220	178	195	216	337	361	267
Average Queue (ft)	29	548	455	285	95	114	56	92	121	131	178	146
95th Queue (ft)	116	856	804	533	163	181	130	169	203	273	339	237
Link Distance (ft)		835	835	835			389	389	389	357	357	291
Upstream Blk Time (%)		5	1	0						2	11	1
Queuing Penalty (veh)		0	0	0						0	0	0
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		69								43		
Queuing Penalty (veh)		8								23		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	265
Average Queue (ft)	126
95th Queue (ft)	212
Link Distance (ft)	291
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	414	393	388	130	315	465	436	80	607	621	459
Average Queue (ft)	380	226	191	91	285	211	89	25	363	373	286
95th Queue (ft)	457	393	346	177	350	539	326	67	657	672	526
Link Distance (ft)	389	389	389			442	442	442	914	914	
Upstream Blk Time (%)	12	0	0			9	0		0	0	
Queuing Penalty (veh)	71	1	1			37	0		0	0	
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			37	2	48	0				22	0
Queuing Penalty (veh)			109	10	116	0				35	1



## Queuing and Blocking Report Existing Conditions

PM Peak Hour

### Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	305	462	442	377	272	240	259	130	291	368	299
Average Queue (ft)	285	287	171	135	239	89	139	99	130	225	167
95th Queue (ft)	345	545	402	265	275	205	288	171	255	336	287
Link Distance (ft)		442	442	442	241	241	241			836	
Upstream Blk Time (%)		2	0	0	19	0	4				
Queuing Penalty (veh)		13	2	0	107	1	21				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	23	0					25	20			
Queuing Penalty (veh)	105	2					131	72			

### Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	219	240	268	271	264	78	195	847	835	823	257	240
Average Queue (ft)	138	172	209	229	241	21	129	807	749	573	129	139
95th Queue (ft)	222	253	279	278	268	58	269	916	997	946	241	226
Link Distance (ft)			241	241	241			808	808	808	249	249
Upstream Blk Time (%)		1	3	9	21			81	22	2	5	0
Queuing Penalty (veh)		0	18	53	124			0	0	0	0	0
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	3	11	15			1	2	84				
Queuing Penalty (veh)	12	38	57			2	6	64				

### Intersection: 15: Hilltop Dr & Cypress Ave

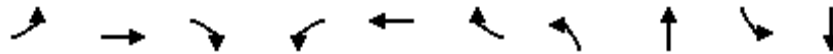
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	195	130	332	309
Average Queue (ft)	65	70	304	182
95th Queue (ft)	154	166	318	329
Link Distance (ft)	249		286	286
Upstream Blk Time (%)	0		90	6
Queuing Penalty (veh)	0		0	0
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		1	88	
Queuing Penalty (veh)		2	34	

### Zone Summary

Zone wide Queuing Penalty: 1736

Queues  
1: Churn Creek Rd & Hartnell Ave

Existing Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	92	252	224	284	539	237	248	736	160	489
v/c Ratio	0.38	0.32	0.44	0.80	0.41	0.35	0.86	0.75	0.67	0.55
Control Delay	58.3	37.3	8.0	60.0	26.3	7.8	76.6	42.3	61.6	37.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.3	37.3	8.0	60.0	26.3	7.8	76.6	42.3	61.6	37.7
Queue Length 50th (ft)	35	78	0	209	147	23	~192	264	118	166
Queue Length 95th (ft)	69	133	65	328	218	86	#424	#435	204	240
Internal Link Dist (ft)		811			408			444		323
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1232	1231	673	548	1412	718	287	1028	461	1364
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.20	0.33	0.52	0.38	0.33	0.86	0.72	0.35	0.36

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Existing Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	109	420	138	715	222	265
v/c Ratio	0.51	0.46	0.58	0.74	0.73	0.56
Control Delay	48.4	29.4	49.0	35.6	46.3	30.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	29.4	49.0	35.6	46.3	30.9
Queue Length 50th (ft)	62	104	79	200	103	117
Queue Length 95th (ft)	118	163	142	292	#213	214
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	388	1145	388	1157	403	611
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.37	0.36	0.62	0.55	0.43

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Plus Project Conditions

AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	14	36	29	687	36	397
v/c Ratio	0.05	0.10	0.13	0.26	0.15	0.14
Control Delay	0.3	0.5	28.2	9.9	27.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.3	0.5	28.2	9.9	27.8	7.9
Queue Length 50th (ft)	0	0	5	0	7	0
Queue Length 95th (ft)	0	0	43	234	50	129
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	724	1070	720	2757	720	2738
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.03	0.04	0.25	0.05	0.14

Intersection Summary

Queues  
7: Hartnell Ave & Parkview Ave

Existing Plus Project Conditions  
AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	108	12	79	643	4	558
v/c Ratio	0.34	0.03	0.30	0.29	0.02	0.30
Control Delay	17.6	0.1	27.3	8.9	30.5	13.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.6	0.1	27.3	8.9	30.5	13.0
Queue Length 50th (ft)	19	0	17	31	1	48
Queue Length 95th (ft)	66	0	83	184	12	176
Internal Link Dist (ft)	256	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	721	858	683	2493	683	2433
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.01	0.12	0.26	0.01	0.23

Intersection Summary

Queues  
10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	113	563	511	323	865	60	564	25	171	25	39
v/c Ratio	0.56	0.55	0.53	0.68	0.48	0.10	0.69	0.06	0.34	0.10	0.13
Control Delay	59.2	40.5	3.7	46.6	30.2	7.6	42.4	35.3	7.8	43.7	1.0
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	59.2	40.5	3.7	46.6	30.2	7.6	42.4	35.3	7.8	43.7	1.0
Queue Length 50th (ft)	68	117	0	182	153	0	165	12	0	15	0
Queue Length 95th (ft)	154	198	33	#463	289	25	292	42	45	42	0
Internal Link Dist (ft)		704			423			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	385	2058	1097	474	2315	732	1222	663	672	743	692
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.27	0.47	0.68	0.37	0.08	0.46	0.04	0.25	0.03	0.06

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queuing and Blocking Report  
Existing Plus Project Conditions

AM Peak Hour

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	62	227	144	165	199	218	185	219	272	238	115	107
Average Queue (ft)	10	124	32	66	105	125	75	103	138	105	56	45
95th Queue (ft)	41	203	98	128	169	186	158	188	235	190	94	90
Link Distance (ft)		553	553	553			389	389	389	363	363	293
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		17								44		
Queuing Penalty (veh)		2								19		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	146
Average Queue (ft)	61
95th Queue (ft)	119
Link Distance (ft)	293
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	328	238	144	105	305	306	233	178	295	437	369
Average Queue (ft)	166	87	56	10	164	114	89	93	159	249	184
95th Queue (ft)	286	195	118	58	288	251	199	167	258	381	329
Link Distance (ft)	389	389	389			432	432	432	737	737	
Upstream Blk Time (%)						0	0				
Queuing Penalty (veh)						1	0				
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			23	1	7	0				1	0
Queuing Penalty (veh)			27	1	22	0				3	0

Queuing and Blocking Report  
Existing Plus Project Conditions

AM Peak Hour

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	303	390	188	149	251	225	191	128	313	394	312
Average Queue (ft)	157	72	45	48	169	97	58	43	166	241	159
95th Queue (ft)	284	234	141	115	271	199	141	124	278	357	291
Link Distance (ft)		432	432	432	234	234	234			806	
Upstream Blk Time (%)		0	0		2	0	0				
Queuing Penalty (veh)		1	0		9	0	0				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	6	0					17	6			
Queuing Penalty (veh)	16	0					55	14			

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	173	179	216	238	247	30	175	265	215	270	130	126
Average Queue (ft)	74	97	92	116	132	2	49	139	55	133	61	62
95th Queue (ft)	139	152	179	200	224	12	115	227	159	229	114	111
Link Distance (ft)			234	234	234			464	464	464	262	262
Upstream Blk Time (%)	0	0	0	0	0							
Queuing Penalty (veh)	0	0	1	1	2							
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	0	0	1				1	22				
Queuing Penalty (veh)	0	1	1				3	13				

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	69	129	283	223
Average Queue (ft)	23	22	164	75
95th Queue (ft)	54	100	270	172
Link Distance (ft)	262		287	287
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		0	23	
Queuing Penalty (veh)		0	5	

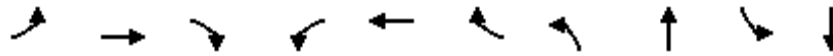
Zone Summary

Zone wide Queuing Penalty: 573



Queues  
1: Churn Creek Rd & Hartnell Ave

Existing Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	178	497	115	199	408	276	107	573	366	682
v/c Ratio	0.55	0.62	0.27	0.72	0.40	0.43	0.60	0.71	0.86	0.54
Control Delay	57.5	43.7	12.3	62.0	33.6	5.8	65.2	42.8	63.4	31.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.5	43.7	12.3	62.0	33.6	5.8	65.2	42.8	63.4	31.0
Queue Length 50th (ft)	64	172	10	139	125	0	76	184	259	195
Queue Length 95th (ft)	113	255	61	239	183	61	148	287	#532	324
Internal Link Dist (ft)		811			408			444		323
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1141	1141	562	507	1116	674	265	959	427	1282
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.44	0.20	0.39	0.37	0.41	0.40	0.60	0.86	0.53

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Existing Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	99	776	14	665	59	168
v/c Ratio	0.38	0.39	0.08	0.45	0.28	0.54
Control Delay	29.0	9.8	29.8	15.8	21.6	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	9.8	29.8	15.8	21.6	16.0
Queue Length 50th (ft)	30	70	4	91	10	11
Queue Length 95th (ft)	84	186	22	178	46	66
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	563	1985	563	1739	539	868
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.39	0.02	0.38	0.11	0.19
<b>Intersection Summary</b>						

Queues

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

Existing Plus Project Conditions

PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	90	77	3	643	6	835
v/c Ratio	0.32	0.29	0.02	0.30	0.03	0.39
Control Delay	8.5	8.0	24.0	7.9	24.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	8.0	24.0	7.9	24.0	8.5
Queue Length 50th (ft)	0	0	1	45	1	63
Queue Length 95th (ft)	23	21	8	108	11	144
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	687	984	628	2354	628	2352
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.08	0.00	0.27	0.01	0.36

Intersection Summary

Queues  
7: Hartnell Ave & Parkview Ave

Existing Plus Project Conditions  
PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	367	62	39	735	25	791
v/c Ratio	0.71	0.13	0.19	0.48	0.13	0.53
Control Delay	19.4	10.6	32.4	14.9	33.2	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	10.6	32.4	14.9	33.2	15.7
Queue Length 50th (ft)	52	6	11	70	7	75
Queue Length 95th (ft)	154	31	46	205	35	226
Internal Link Dist (ft)	256	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	684	665	601	2187	601	2158
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.09	0.06	0.34	0.04	0.37
<b>Intersection Summary</b>						

Queues  
10: Hartnell Ave & Cypress Ave

Existing Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	51	862	698	134	811	53	654	22	353	130	172
v/c Ratio	0.35	0.65	0.60	0.53	0.46	0.09	0.66	0.04	0.50	0.56	0.53
Control Delay	57.5	37.9	3.4	51.9	28.8	4.8	37.3	30.6	6.3	55.6	19.8
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	57.5	37.9	3.4	51.9	28.8	4.8	37.3	30.6	6.3	55.6	19.8
Queue Length 50th (ft)	33	189	4	83	158	0	189	10	0	83	22
Queue Length 95th (ft)	78	260	38	158	216	18	297	34	55	157	84
Internal Link Dist (ft)		709			410			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	376	2012	1218	463	2263	709	1195	648	773	724	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.43	0.57	0.29	0.36	0.07	0.55	0.03	0.46	0.18	0.24
Intersection Summary											

Queuing and Blocking Report  
Existing Plus Project Conditions

PM Peak Hour

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	157	993	987	972	185	207	152	192	227	325	379	281
Average Queue (ft)	17	912	890	715	95	115	54	94	123	102	180	151
95th Queue (ft)	85	1117	1124	1159	163	179	124	172	204	217	335	256
Link Distance (ft)		956	956	956			391	391	391	357	357	291
Upstream Blk Time (%)		64	22	3						1	6	1
Queuing Penalty (veh)		0	0	0						0	0	0
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		77								38		
Queuing Penalty (veh)		9								20		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	264
Average Queue (ft)	135
95th Queue (ft)	236
Link Distance (ft)	291
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	420	396	393	130	315	462	433	98	697	704	524
Average Queue (ft)	392	204	196	88	288	217	74	29	504	513	398
95th Queue (ft)	442	379	374	176	351	533	279	72	832	828	632
Link Distance (ft)	391	391	391			440	440	440	742	742	
Upstream Blk Time (%)	16	0	0			6	0		11	15	
Queuing Penalty (veh)	97	2	3			26	0		0	0	
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			37	2	51	0				50	1
Queuing Penalty (veh)			128	10	127	0				86	2

Queuing and Blocking Report  
Existing Plus Project Conditions

PM Peak Hour

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	305	463	449	371	264	250	253	130	272	371	315
Average Queue (ft)	289	315	153	123	238	99	150	104	140	232	180
95th Queue (ft)	353	558	393	253	274	223	292	168	257	340	291
Link Distance (ft)		440	440	440	241	241	241			836	
Upstream Blk Time (%)		3	0	0	20	0	3				
Queuing Penalty (veh)		19	2	0	112	2	15				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	25	0					25	22			
Queuing Penalty (veh)	114	1					136	81			

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	219	240	285	283	259	67	195	1009	980	981	274	253
Average Queue (ft)	141	169	209	231	242	18	112	875	813	586	146	138
95th Queue (ft)	227	249	281	281	262	53	254	1178	1174	1025	270	230
Link Distance (ft)			241	241	241			961	961	961	250	250
Upstream Blk Time (%)		1	3	8	21			56	15	2	10	2
Queuing Penalty (veh)		0	17	44	123			0	0	0	0	0
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	3	9	11				2	84				
Queuing Penalty (veh)	10	34	42				5	64				

Intersection: 15: Hilltop Dr & Cypress Ave

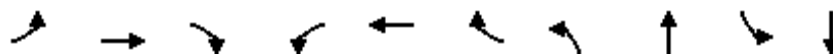
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	173	130	334	303
Average Queue (ft)	54	78	305	190
95th Queue (ft)	124	174	319	352
Link Distance (ft)	250		286	286
Upstream Blk Time (%)	0		91	7
Queuing Penalty (veh)	0		0	0
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		1	88	
Queuing Penalty (veh)		2	34	

Zone Summary

Zone wide Queuing Penalty: 1927

Queues  
1: Churn Creek Rd & Hartnell Ave

Year 2040 No Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	163	326	217	283	522	239	261	875	158	565
v/c Ratio	0.52	0.41	0.46	0.80	0.44	0.38	0.94	0.88	0.67	0.62
Control Delay	57.2	38.5	13.1	61.2	29.4	8.2	90.2	49.7	62.6	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.2	38.5	13.1	61.2	29.4	8.2	90.2	49.7	62.6	38.9
Queue Length 50th (ft)	62	103	24	208	147	21	-217	337	117	195
Queue Length 95th (ft)	107	170	102	327	221	85	#449	#576	202	277
Internal Link Dist (ft)		811			1076			1179		766
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1193	1193	626	530	1328	691	277	997	446	1314
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.27	0.35	0.53	0.39	0.35	0.94	0.88	0.35	0.43

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



Queues  
2: Northwoods Way & Hartnell Ave

Year 2040 No Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	120	521	152	761	261	315
v/c Ratio	0.56	0.62	0.64	0.76	0.82	0.68
Control Delay	50.6	33.6	51.9	36.9	53.0	36.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	33.6	51.9	36.9	53.0	36.8
Queue Length 50th (ft)	71	142	89	225	127	154
Queue Length 95th (ft)	127	206	157	#345	#272	265
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	347	1030	347	1046	369	552
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.51	0.44	0.73	0.71	0.57

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues

Year 2040 No Project Conditions

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	49	33	679	54	490
v/c Ratio	0.06	0.14	0.15	0.28	0.22	0.19
Control Delay	0.4	1.6	27.7	11.1	26.9	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	1.6	27.7	11.1	26.9	8.8
Queue Length 50th (ft)	0	0	7	24	12	16
Queue Length 95th (ft)	0	6	46	234	63	158
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	902	1062	695	2474	695	2557
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.05	0.27	0.08	0.19

Intersection Summary

Queues  
7: Hartnell Ave & Parkview Ave

Year 2040 No Project Conditions  
AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	27	33	642	22	631
v/c Ratio	0.27	0.06	0.14	0.26	0.10	0.27
Control Delay	15.7	0.3	26.9	8.7	27.6	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	0.3	26.9	8.7	27.6	10.4
Queue Length 50th (ft)	12	0	6	28	4	27
Queue Length 95th (ft)	54	0	45	194	35	194
Internal Link Dist (ft)	329	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	769	864	737	2654	737	2646
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.03	0.04	0.24	0.03	0.24

Intersection Summary

Queues  
10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	184	652	473	283	929	65	538	27	125	33	54
v/c Ratio	0.66	0.57	0.49	0.62	0.57	0.12	0.68	0.06	0.27	0.14	0.19
Control Delay	57.7	39.9	3.4	46.2	34.0	9.0	43.4	36.7	8.7	45.5	2.4
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	57.7	39.9	3.4	46.2	34.0	9.0	43.4	36.7	8.7	45.5	2.4
Queue Length 50th (ft)	110	138	0	160	183	0	160	13	0	20	0
Queue Length 95th (ft)	#281	252	57	#451	353	37	314	48	54	56	6
Internal Link Dist (ft)		704			423			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	387	2069	1105	477	2328	736	1229	667	646	742	695
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.32	0.43	0.59	0.40	0.09	0.44	0.04	0.19	0.04	0.08

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queuing and Blocking Report  
 Year 2040 No Project Conditions

09/11/2018

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	137	236	193	235	229	255	259	328	384	259	164	145
Average Queue (ft)	20	139	65	104	131	148	104	142	193	128	72	71
95th Queue (ft)	74	220	158	184	202	220	214	256	319	220	124	126
Link Distance (ft)		820	820	820			389	389	389	363	363	293
Upstream Blk Time (%)										0		
Queuing Penalty (veh)										1		
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		24				0	0			48		
Queuing Penalty (veh)		4				1	0			27		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	189
Average Queue (ft)	86
95th Queue (ft)	161
Link Distance (ft)	293
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	344	284	204	129	293	354	294	203	381	482	424
Average Queue (ft)	186	119	83	28	166	106	93	100	192	294	217
95th Queue (ft)	306	223	163	103	290	240	195	179	320	446	375
Link Distance (ft)	389	389	389			432	432	432	737	737	
Upstream Blk Time (%)	0					0	0				
Queuing Penalty (veh)	1					1	0				
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			29	1	6	0				3	0
Queuing Penalty (veh)			46	3	20	1				12	1

**Intersection: 14: I-5 NB Ramps & Cypress Ave**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	299	383	280	172	254	241	243	130	488	571	496
Average Queue (ft)	159	86	51	55	182	111	81	56	272	354	264
95th Queue (ft)	300	283	165	135	287	235	190	145	439	519	436
Link Distance (ft)		432	432	432	235	235	235			806	
Upstream Blk Time (%)		1	0		5	0	0			0	
Queuing Penalty (veh)		3	0		22	2	1			0	
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	7	0					22	9	0	1	0
Queuing Penalty (veh)	23	0					83	24	0	5	0

**Intersection: 15: Hilltop Dr & Cypress Ave**

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	174	194	249	252	248	35	187	308	271	342	152	161
Average Queue (ft)	85	109	111	148	173	3	68	158	81	165	70	71
95th Queue (ft)	147	168	216	243	268	19	148	277	215	285	129	130
Link Distance (ft)			235	235	235			464	464	464	262	262
Upstream Blk Time (%)		0	0	1	3			0				
Queuing Penalty (veh)		0	1	4	16			0				
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	0	0	2				5	29				
Queuing Penalty (veh)	0	1	5				12	22				

**Intersection: 15: Hilltop Dr & Cypress Ave**

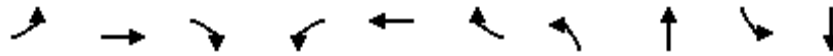
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	100	130	383	306
Average Queue (ft)	29	55	217	124
95th Queue (ft)	67	154	351	256
Link Distance (ft)	262		400	400
Upstream Blk Time (%)			1	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		0	40	
Queuing Penalty (veh)		1	12	

**Zone Summary**

Zone wide Queuing Penalty: 1003

Queues  
1: Churn Creek Rd & Hartnell Ave

Year 2040 No Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	211	532	168	253	447	305	142	674	384	853
v/c Ratio	0.62	0.67	0.40	0.79	0.42	0.46	0.72	0.81	0.98	0.71
Control Delay	62.1	48.5	21.4	66.7	34.9	6.7	75.3	50.4	90.2	39.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.1	48.5	21.4	66.7	34.9	6.7	75.3	50.4	90.2	39.4
Queue Length 50th (ft)	85	204	46	197	148	8	111	253	~318	305
Queue Length 95th (ft)	135	288	120	301	205	76	#208	#392	#601	453
Internal Link Dist (ft)		811			905			842		594
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1045	1045	523	465	1116	684	243	880	391	1199
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.51	0.32	0.54	0.40	0.45	0.58	0.77	0.98	0.71

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Year 2040 No Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	108	882	27	774	86	210
v/c Ratio	0.44	0.48	0.16	0.53	0.39	0.62
Control Delay	32.8	13.2	32.2	17.9	24.8	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.8	13.2	32.2	17.9	24.8	18.1
Queue Length 50th (ft)	37	86	9	115	18	18
Queue Length 95th (ft)	93	240	36	229	64	82
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	505	1838	505	1564	509	808
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.48	0.05	0.49	0.17	0.26

Intersection Summary



## Queues

Year 2040 No Project Conditions

## 5: Hartnell Ave &amp; Cobblestone Business Park Driveway/VA Driveway

PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	98	92	10	733	5	815
v/c Ratio	0.35	0.33	0.05	0.35	0.03	0.39
Control Delay	10.0	10.4	24.4	8.7	24.6	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	10.4	24.4	8.7	24.6	9.1
Queue Length 50th (ft)	0	0	2	54	1	61
Queue Length 95th (ft)	36	37	17	145	11	166
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	690	1013	659	2401	659	2394
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.09	0.02	0.31	0.01	0.34

## Intersection Summary

Queues  
7: Hartnell Ave & Parkview Ave

Year 2040 No Project Conditions  
PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	206	70	49	805	27	778
v/c Ratio	0.52	0.22	0.21	0.45	0.13	0.44
Control Delay	11.8	13.2	28.1	12.1	29.4	12.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.8	13.2	28.1	12.1	29.4	12.5
Queue Length 50th (ft)	11	8	9	40	5	37
Queue Length 95th (ft)	68	41	60	255	40	252
Internal Link Dist (ft)	335	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	745	727	665	2419	665	2386
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.10	0.07	0.33	0.04	0.33

Intersection Summary

Queues  
10: Hartnell Ave & Cypress Ave

Year 2040 No Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	59	882	741	253	812	53	676	35	394	129	176
v/c Ratio	0.44	0.72	0.75	0.73	0.41	0.08	0.69	0.07	0.54	0.68	0.58
Control Delay	61.9	41.9	13.9	54.4	25.7	1.6	38.5	29.7	6.2	68.3	19.8
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	61.9	41.9	13.9	54.4	25.7	1.6	38.5	29.7	6.2	68.3	19.8
Queue Length 50th (ft)	42	215	176	174	160	0	221	18	0	92	15
Queue Length 95th (ft)	85	265	287	253	193	6	278	42	53	#177	75
Internal Link Dist (ft)		709			410			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	155	1375	1072	453	2230	717	1200	651	802	200	312
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.38	0.64	0.69	0.56	0.36	0.07	0.56	0.05	0.49	0.65	0.56

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	160	636	624	608	185	198	162	236	265	378	402	356
Average Queue (ft)	36	609	584	460	112	131	76	122	153	169	264	182
95th Queue (ft)	127	625	673	693	171	187	144	199	233	370	449	317
Link Distance (ft)		590	590	590			389	389	389	370	370	550
Upstream Blk Time (%)		89	29	5						4	26	
Queuing Penalty (veh)		0	0	0						0	0	
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)		78								45		
Queuing Penalty (veh)		12								34		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	365
Average Queue (ft)	177
95th Queue (ft)	323
Link Distance (ft)	550
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	418	405	386	130	315	464	197	94	618	643	498
Average Queue (ft)	381	206	204	95	282	203	30	37	444	468	359
95th Queue (ft)	467	387	362	178	347	533	110	83	773	781	582
Link Distance (ft)	389	389	389			443	443	443	761	761	
Upstream Blk Time (%)	18	1	0			9	0		8	13	
Queuing Penalty (veh)	115	4	2			38	0		0	0	
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			39	3	55	0				39	1
Queuing Penalty (veh)			150	16	147	0				74	2

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	305	463	457	307	262	241	272	130	317	403	348
Average Queue (ft)	267	270	135	118	229	107	150	96	169	250	193
95th Queue (ft)	367	530	347	233	301	239	302	176	290	367	317
Link Distance (ft)		443	443	443	240	240	240			836	
Upstream Blk Time (%)		1	0	0	20	1	4				
Queuing Penalty (veh)		9	1	0	114	4	22				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	17	0					25	22			
Queuing Penalty (veh)	80	0					136	84			

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	218	237	265	273	265	89	195	496	473	479	264	246
Average Queue (ft)	138	166	196	223	239	26	126	456	355	311	140	139
95th Queue (ft)	215	242	283	290	282	68	256	543	588	513	267	240
Link Distance (ft)			240	240	240			458	458	458	249	249
Upstream Blk Time (%)		1	2	8	21			70	13	9	8	3
Queuing Penalty (veh)		0	15	48	121			0	0	0	0	0
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	2	7	11			0	4	82				
Queuing Penalty (veh)	8	27	43			0	13	66				

Intersection: 15: Hilltop Dr & Cypress Ave

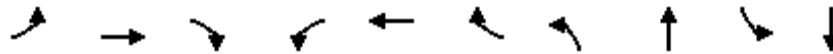
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	199	130	369	348
Average Queue (ft)	57	84	342	248
95th Queue (ft)	144	177	355	418
Link Distance (ft)	249		324	324
Upstream Blk Time (%)	0		90	10
Queuing Penalty (veh)	0		0	0
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		1	87	
Queuing Penalty (veh)		2	35	

Network Summary

Network wide Queuing Penalty: 1423

Queues  
1: Churn Creek Rd & Hartnell Ave

Year 2040 Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	164	334	221	283	549	239	272	875	158	568
v/c Ratio	0.52	0.42	0.47	0.80	0.47	0.38	0.98	0.88	0.67	0.62
Control Delay	57.1	38.6	13.6	61.1	29.8	9.0	99.2	49.9	62.6	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	57.1	38.6	13.6	61.1	29.8	9.0	99.2	49.9	62.6	38.9
Queue Length 50th (ft)	62	106	27	208	156	26	~234	337	117	196
Queue Length 95th (ft)	107	173	107	327	234	92	#472	#576	202	279
Internal Link Dist (ft)		811			408			444		323
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1191	1191	625	530	1326	685	277	995	446	1312
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.28	0.35	0.53	0.41	0.35	0.98	0.88	0.35	0.43

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Year 2040 Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	120	533	152	801	261	315
v/c Ratio	0.57	0.63	0.64	0.79	0.82	0.68
Control Delay	50.8	33.9	52.1	38.6	53.0	36.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.8	33.9	52.1	38.6	53.0	36.9
Queue Length 50th (ft)	71	146	89	242	127	154
Queue Length 95th (ft)	127	212	157	#376	#272	265
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	346	1026	346	1046	367	550
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.52	0.44	0.77	0.71	0.57

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues

Year 2040 Plus Project Conditions

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	16	49	33	743	54	508
v/c Ratio	0.06	0.14	0.15	0.31	0.23	0.20
Control Delay	0.4	1.3	28.7	11.3	27.9	8.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	0.4	1.3	28.7	11.3	27.9	8.7
Queue Length 50th (ft)	0	0	8	27	12	17
Queue Length 95th (ft)	0	4	45	262	64	165
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	873	1027	667	2457	647	2584
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.05	0.05	0.30	0.08	0.20

Intersection Summary



Queues  
7: Hartnell Ave & Parkview Ave

Year 2040 Plus Project Conditions  
AM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	155	27	97	642	22	656
v/c Ratio	0.47	0.06	0.36	0.29	0.11	0.38
Control Delay	21.9	0.3	30.1	9.4	32.0	15.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.9	0.3	30.1	9.4	32.0	15.3
Queue Length 50th (ft)	35	0	25	37	6	68
Queue Length 95th (ft)	103	0	100	193	36	220
Internal Link Dist (ft)	329	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	648	760	616	2323	616	2213
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.04	0.16	0.28	0.04	0.30
<b>Intersection Summary</b>						

Queues  
10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	184	652	548	404	929	65	558	28	158	38	54
v/c Ratio	0.68	0.59	0.54	0.88	0.56	0.12	0.69	0.06	0.32	0.16	0.19
Control Delay	59.3	40.9	3.6	62.4	34.5	9.0	43.4	36.4	8.1	46.4	2.5
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	59.3	40.9	3.6	62.4	34.5	9.0	43.4	36.4	8.1	46.4	2.5
Queue Length 50th (ft)	113	142	0	256	189	0	168	14	0	23	0
Queue Length 95th (ft)	#281	252	59	#718	353	37	326	50	59	62	6
Internal Link Dist (ft)		704			423			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	373	1995	1118	459	2244	712	1185	643	649	719	673
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.33	0.49	0.88	0.41	0.09	0.47	0.04	0.24	0.05	0.08

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

**Intersection: 12: Bechelli Lane & Cypress Ave**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	115	286	224	218	228	262	275	333	366	246	144	149
Average Queue (ft)	17	155	76	114	130	149	112	153	195	131	71	73
95th Queue (ft)	61	245	184	196	197	221	221	265	316	213	120	131
Link Distance (ft)		553	553	553			389	389	389	363	363	293
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	1			
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)	0	27					0	0		52		
Queuing Penalty (veh)	0	4					0	0		28		

**Intersection: 12: Bechelli Lane & Cypress Ave**

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	199
Average Queue (ft)	77
95th Queue (ft)	149
Link Distance (ft)	293
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

**Intersection: 13: I-5 SB Ramps & Cypress Ave**

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	312	279	179	130	312	377	252	208	482	586	465
Average Queue (ft)	181	113	76	28	184	126	92	101	209	322	247
95th Queue (ft)	290	222	149	103	316	293	184	188	358	494	402
Link Distance (ft)	389	389	389			432	432	432	737	737	
Upstream Blk Time (%)						1	0		0	0	
Queuing Penalty (veh)						4	0		0	0	
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			27	2	9	0				4	0
Queuing Penalty (veh)			46	5	33	0				15	1

Queuing and Blocking Report  
 Year 2040 Plus Project Conditions

09/11/2018

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	298	272	192	195	254	219	226	130	647	753	632
Average Queue (ft)	158	64	50	57	189	106	72	49	331	412	325
95th Queue (ft)	285	185	135	144	286	215	163	133	552	651	565
Link Distance (ft)		432	432	432	234	234	234			806	
Upstream Blk Time (%)					6	0	0			1	
Queuing Penalty (veh)					26	1	0			0	
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	4	0						21	7	1	7
Queuing Penalty (veh)	12	0						80	21	4	33

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	183	198	221	261	251	98	194	353	275	292	132	151
Average Queue (ft)	89	111	116	151	177	8	79	169	91	144	62	66
95th Queue (ft)	162	172	207	252	271	51	165	294	225	242	120	126
Link Distance (ft)			234	234	234			464	464	464	262	262
Upstream Blk Time (%)		0	0	1	4							
Queuing Penalty (veh)		0	1	4	17							
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	0	1	2					6	31			
Queuing Penalty (veh)	0	4	5					14	23			

Intersection: 15: Hilltop Dr & Cypress Ave

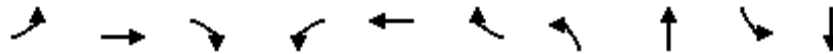
Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	65	129	321	266
Average Queue (ft)	28	41	209	112
95th Queue (ft)	56	135	327	237
Link Distance (ft)	262		287	287
Upstream Blk Time (%)			5	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		0	40	
Queuing Penalty (veh)		1	12	

Zone Summary

Zone wide Queuing Penalty: 1124

Queues  
1: Churn Creek Rd & Hartnell Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	214	558	179	253	456	305	145	674	384	854
v/c Ratio	0.62	0.69	0.42	0.80	0.42	0.46	0.74	0.81	0.99	0.72
Control Delay	62.5	49.0	22.7	67.2	34.9	7.0	76.2	51.0	92.8	40.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.5	49.0	22.7	67.2	34.9	7.0	76.2	51.0	92.8	40.0
Queue Length 50th (ft)	87	216	54	199	152	12	114	256	~331	311
Queue Length 95th (ft)	136	304	132	301	209	81	#213	#392	#601	453
Internal Link Dist (ft)		811			408			444		473
Turn Bay Length (ft)	100		75	175		145	115		110	
Base Capacity (vph)	1036	1035	519	461	1117	680	241	873	387	1186
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.54	0.34	0.55	0.41	0.45	0.60	0.77	0.99	0.72

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queues  
2: Northwoods Way & Hartnell Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	108	923	27	787	86	210
v/c Ratio	0.45	0.49	0.17	0.52	0.40	0.63
Control Delay	33.7	13.5	32.7	18.0	25.4	18.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.7	13.5	32.7	18.0	25.4	18.5
Queue Length 50th (ft)	39	94	10	118	19	18
Queue Length 95th (ft)	94	256	36	236	64	82
Internal Link Dist (ft)		1160		811	243	253
Turn Bay Length (ft)	75		90			
Base Capacity (vph)	485	1867	485	1570	482	783
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.49	0.06	0.50	0.18	0.27
<b>Intersection Summary</b>						

Queues

Year 2040 Plus Project Conditions

5: Hartnell Ave & Cobblestone Business Park Driveway/VA Driveway

PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	98	92	10	754	5	882
v/c Ratio	0.36	0.34	0.05	0.35	0.03	0.42
Control Delay	10.1	10.5	25.3	8.6	25.4	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	10.5	25.3	8.6	25.4	9.2
Queue Length 50th (ft)	0	0	2	57	1	70
Queue Length 95th (ft)	35	36	17	151	11	185
Internal Link Dist (ft)	176	253		101		92
Turn Bay Length (ft)			60		70	
Base Capacity (vph)	658	966	630	2293	630	2287
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.10	0.02	0.33	0.01	0.39

Intersection Summary

Queues  
7: Hartnell Ave & Parkview Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	473	70	70	805	27	793
v/c Ratio	0.81	0.14	0.35	0.54	0.17	0.60
Control Delay	28.6	12.6	35.8	16.6	36.0	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	12.6	35.8	16.6	36.0	19.8
Queue Length 50th (ft)	129	12	27	90	10	126
Queue Length 95th (ft)	#334	42	78	254	41	265
Internal Link Dist (ft)	335	171		440		476
Turn Bay Length (ft)			100		165	
Base Capacity (vph)	581	517	478	1822	478	1717
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.14	0.15	0.44	0.06	0.46

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.



Queues  
10: Hartnell Ave & Cypress Ave

Year 2040 Plus Project Conditions  
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	59	882	767	296	812	53	759	41	531	131	176
v/c Ratio	0.46	0.74	0.79	0.80	0.41	0.08	0.75	0.07	0.67	0.72	0.60
Control Delay	64.6	44.9	17.5	60.2	26.4	1.6	41.3	30.2	9.9	73.8	22.3
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	64.6	44.9	17.5	60.2	26.4	1.6	41.3	30.2	9.9	73.8	22.3
Queue Length 50th (ft)	45	232	247	216	167	0	270	23	34	100	21
Queue Length 95th (ft)	85	265	349	297	193	6	317	48	110	#181	82
Internal Link Dist (ft)		709			410			109		232	
Turn Bay Length (ft)	530		235	225		35			30		60
Base Capacity (vph)	146	1298	1019	427	2109	682	1133	615	830	189	297
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.68	0.75	0.69	0.39	0.08	0.67	0.07	0.64	0.69	0.59

Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Queuing and Blocking Report  
 Year 2040 Plus Project Conditions

09/24/2018

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	TR	L	L	T	T	TR	LT	R	L
Maximum Queue (ft)	159	675	672	652	202	206	176	217	236	382	399	313
Average Queue (ft)	26	649	631	492	106	124	81	118	148	235	309	177
95th Queue (ft)	114	662	745	772	172	184	161	202	236	439	463	306
Link Distance (ft)		631	631	631			388	388	388	357	357	291
Upstream Blk Time (%)		88	34	6						10	45	6
Queuing Penalty (veh)		0	0	0						0	0	0
Storage Bay Dist (ft)	95				300	300						
Storage Blk Time (%)	0	78								48		
Queuing Penalty (veh)	1	12								36		

Intersection: 12: Bechelli Lane & Cypress Ave

Movement	SB
Directions Served	LTR
Maximum Queue (ft)	295
Average Queue (ft)	151
95th Queue (ft)	265
Link Distance (ft)	291
Upstream Blk Time (%)	1
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 13: I-5 SB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	T	T	T	L	LTR	R
Maximum Queue (ft)	413	402	377	130	314	462	204	130	424	484	432
Average Queue (ft)	391	191	176	95	249	157	27	26	271	308	231
95th Queue (ft)	437	382	334	177	361	478	121	89	423	453	395
Link Distance (ft)	388	388	388			443	443	443	756	756	
Upstream Blk Time (%)	21	1	0			2					
Queuing Penalty (veh)	144	7	0			8					
Storage Bay Dist (ft)				30	215						375
Storage Blk Time (%)			36	3	29	0				6	0
Queuing Penalty (veh)			157	16	80	0				11	1

Queuing and Blocking Report  
 Year 2040 Plus Project Conditions

09/24/2018

Intersection: 14: I-5 NB Ramps & Cypress Ave

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	T	T	T	R	L	LTR	R
Maximum Queue (ft)	304	460	260	219	263	242	264	130	288	372	329
Average Queue (ft)	203	145	63	92	241	102	164	110	155	238	186
95th Queue (ft)	336	443	169	188	277	215	307	168	279	350	297
Link Distance (ft)		443	443	443	240	240	240			836	
Upstream Blk Time (%)		1			21	0	5				
Queuing Penalty (veh)		8			117	1	28				
Storage Bay Dist (ft)	230							30	535		635
Storage Blk Time (%)	10	0					26	26			
Queuing Penalty (veh)	47	0					142	100			

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	L	T	T	TR	L	L	T	T	TR	L	LT
Maximum Queue (ft)	212	239	259	272	258	70	195	737	715	705	266	264
Average Queue (ft)	114	145	174	214	233	20	120	685	636	504	148	144
95th Queue (ft)	190	221	265	286	279	57	262	804	860	790	269	249
Link Distance (ft)			240	240	240			686	686	686	251	251
Upstream Blk Time (%)		0	1	4	14			81	27	3	9	5
Queuing Penalty (veh)		0	6	26	83			0	0	0	0	0
Storage Bay Dist (ft)	175	175				95	95					
Storage Blk Time (%)	0	3	7			0	3	84				
Queuing Penalty (veh)	2	12	28			1	9	67				

Intersection: 15: Hilltop Dr & Cypress Ave

Movement	NB	SB	SB	SB
Directions Served	TR	L	LTR	R
Maximum Queue (ft)	229	130	323	301
Average Queue (ft)	67	74	299	206
95th Queue (ft)	166	172	313	351
Link Distance (ft)	251		281	281
Upstream Blk Time (%)	0		90	5
Queuing Penalty (veh)	0		0	0
Storage Bay Dist (ft)		130		
Storage Blk Time (%)		0	87	
Queuing Penalty (veh)		2	35	

Network Summary

Network wide Queuing Penalty: 1184

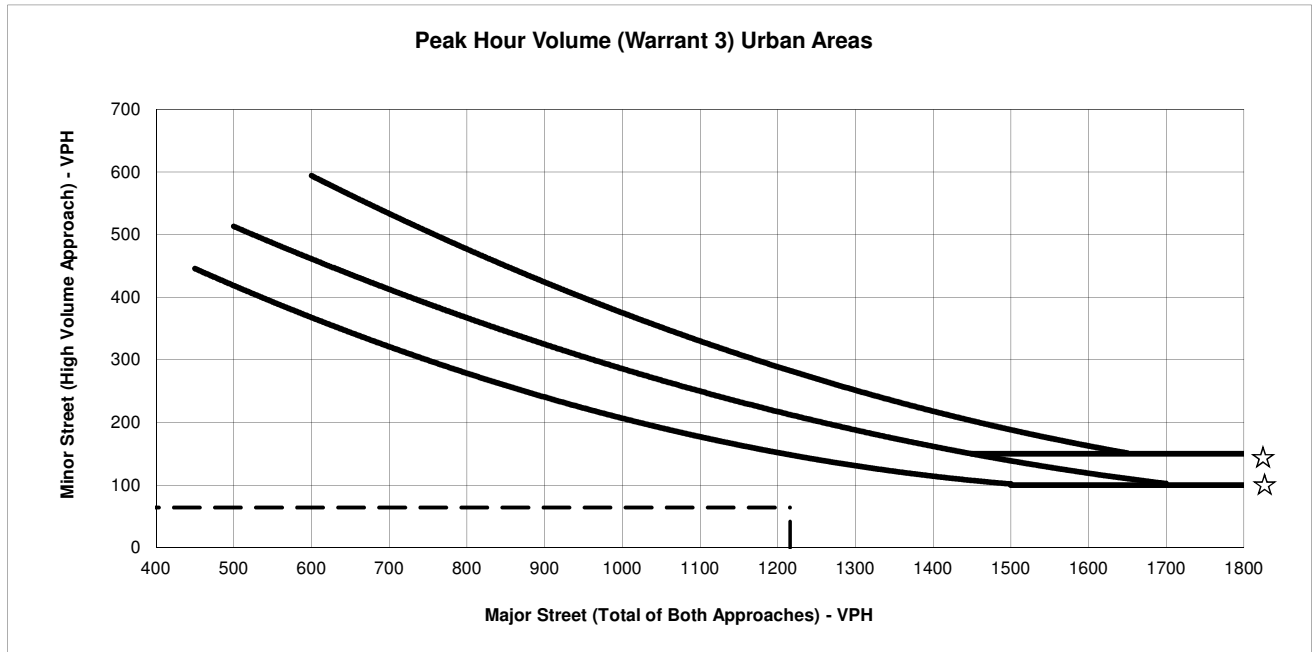


# Appendix C

## Signal Warrant Analysis Worksheets

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Existing No Project PM Peak Hour

Major Approach	Hartnell Avenue	Number of Lanes	2
Minor Approach	Retirement Community		1

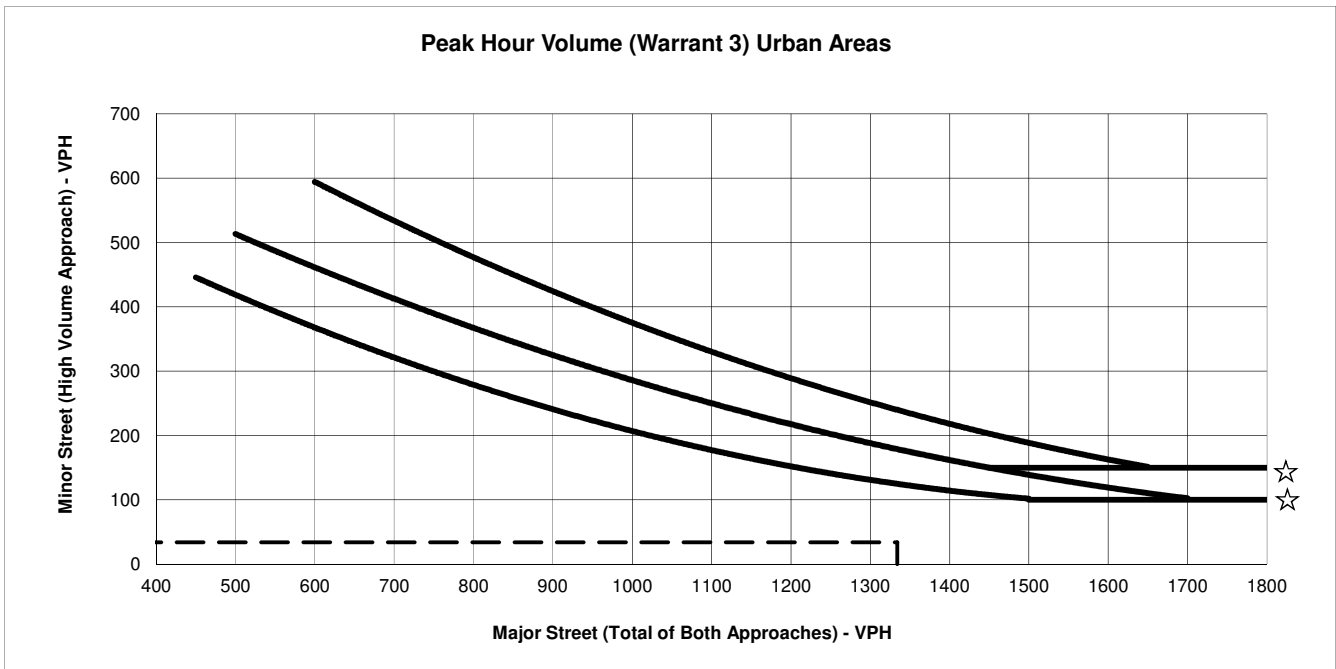
Major St. Volume: 1216

Minor St. Volume: 64

Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

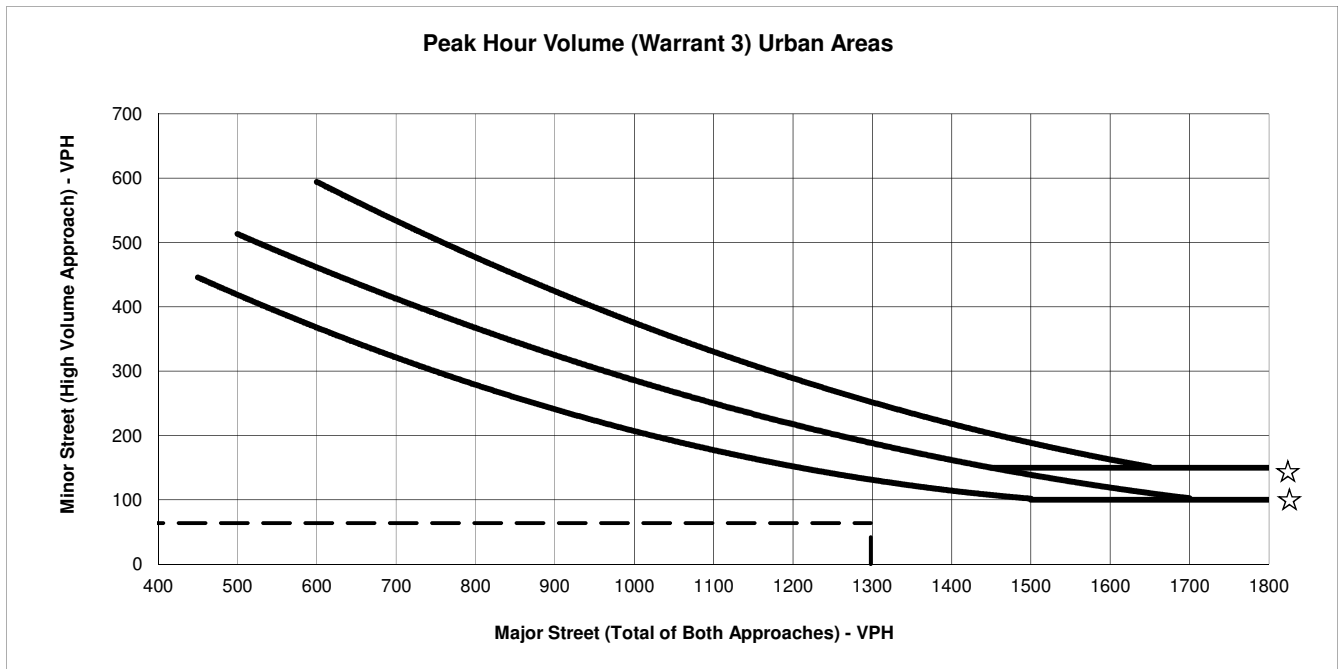
Existing No Project PM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Cobblestone SC Dwy	1

Major St. Volume: 1334  
 Minor St. Volume: 34  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

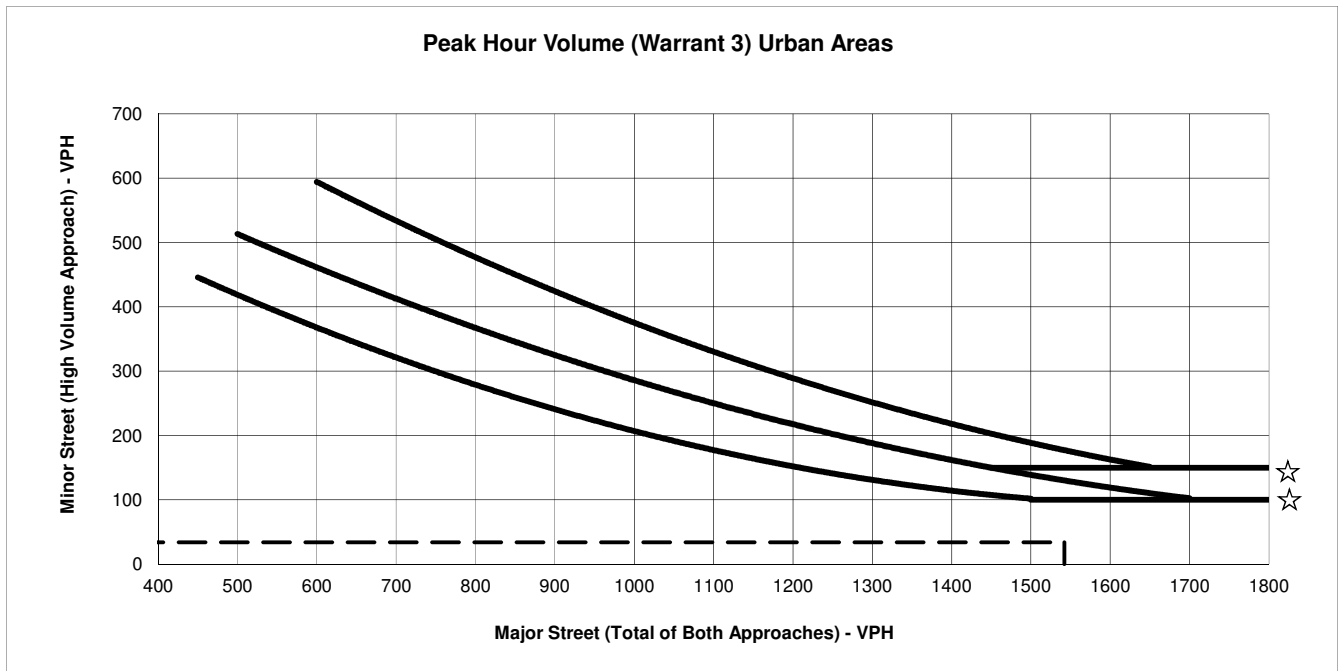
Existing Plus Project PM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Retirement Community	1

Major St. Volume: 1298  
 Minor St. Volume: 64  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Existing Plus Project PM Peak Hour

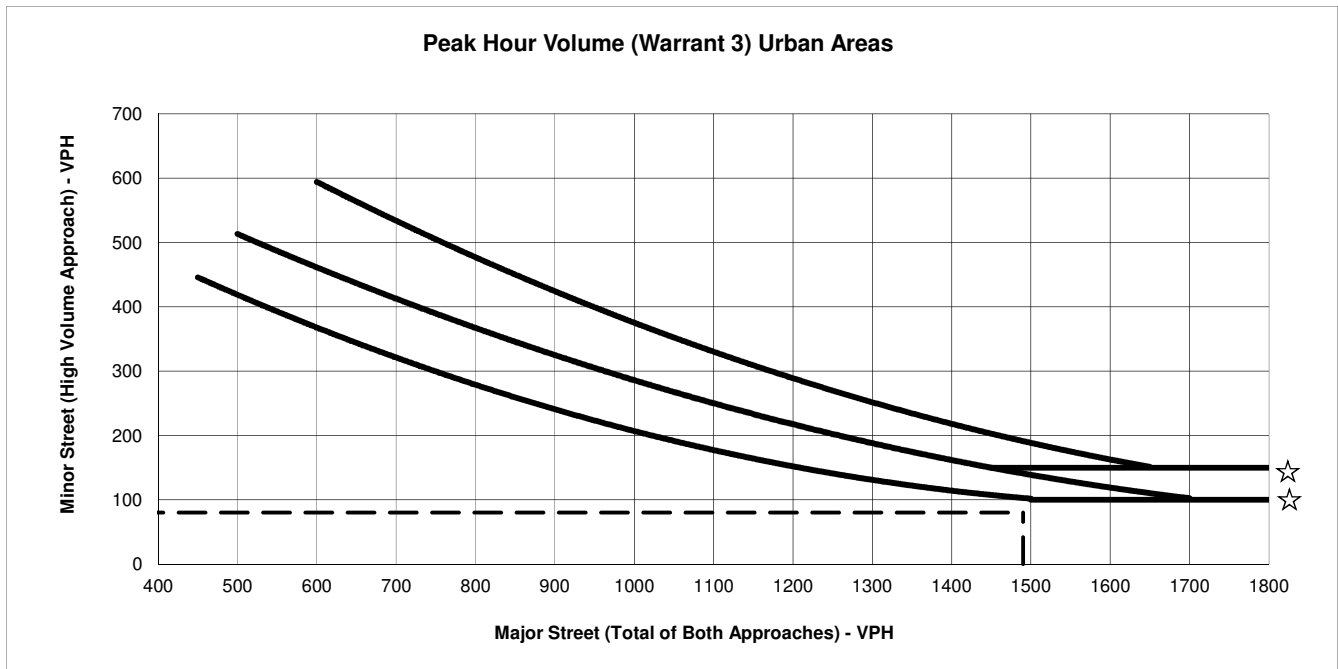
		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Cobblestone SC Dwy	1

Major St. Volume: 1542  
 Minor St. Volume: 34  
 Warrant Met?: No



Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

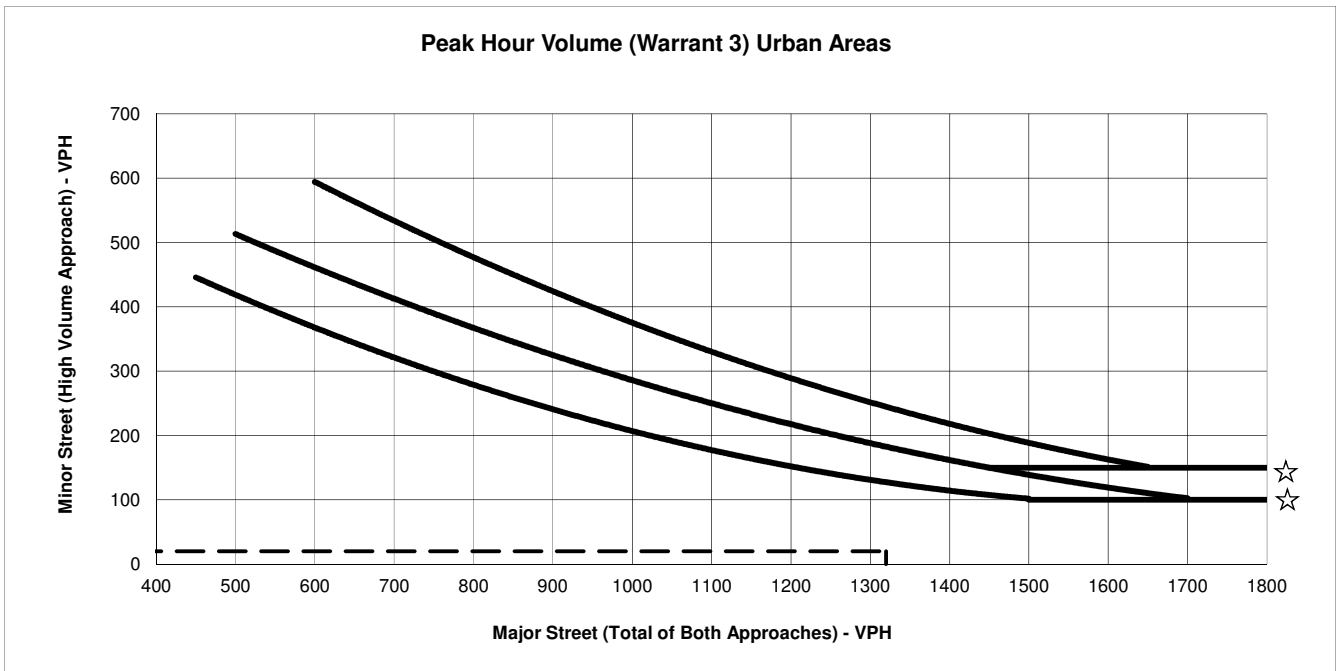
Year 2040 No Project PM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Retirement Community	1

Major St. Volume: 1490  
 Minor St. Volume: 80  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

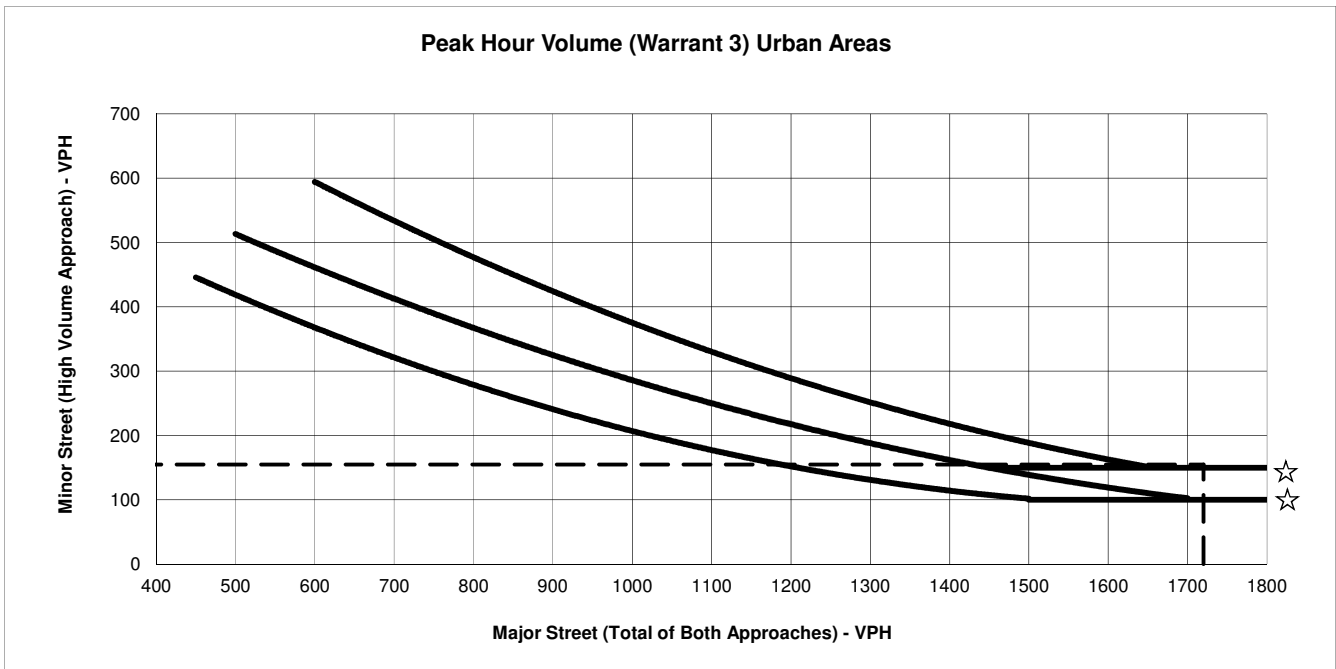
Year 2040 No Project AM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Cobblestone SC Dwy	1

Major St. Volume: 1320  
 Minor St. Volume: 20  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

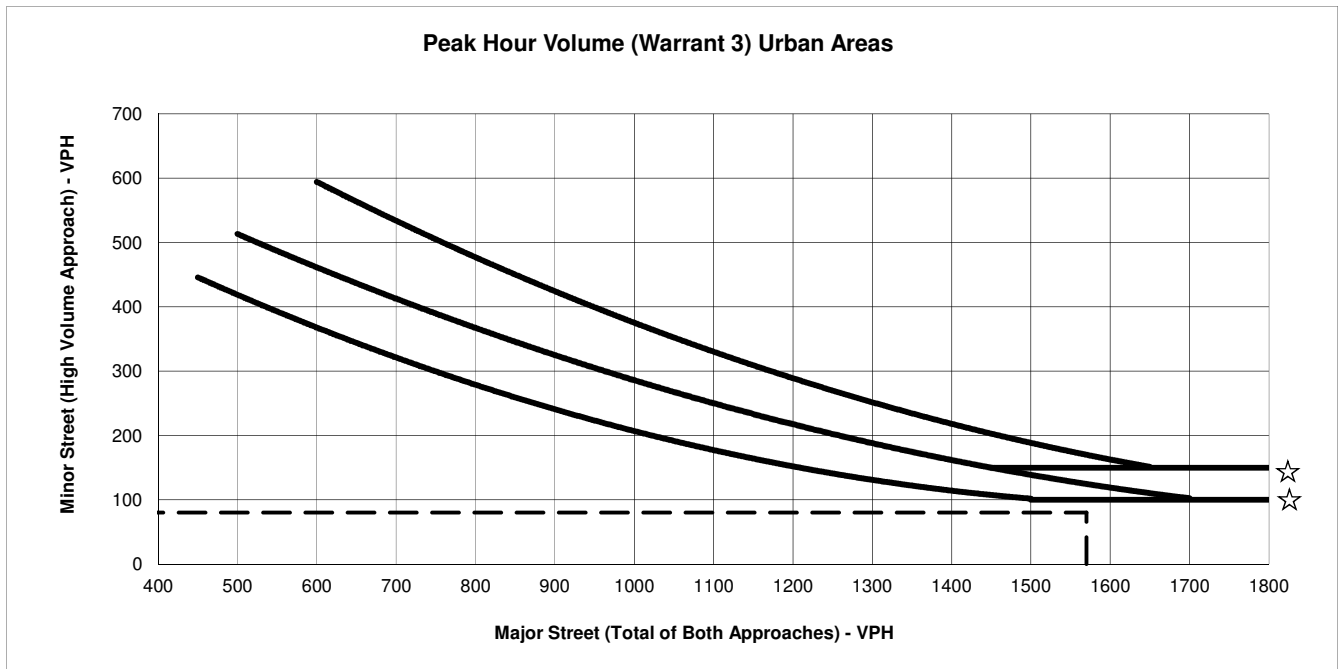
Year 2040 No Project PM Peak Hour

Major Approach	Hartnell Avenue	Number of Lanes	2
Minor Approach	Cobblestone SC Dwy		1

Major St. Volume: 1720  
 Minor St. Volume: 155  
 Warrant Met?: Yes

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

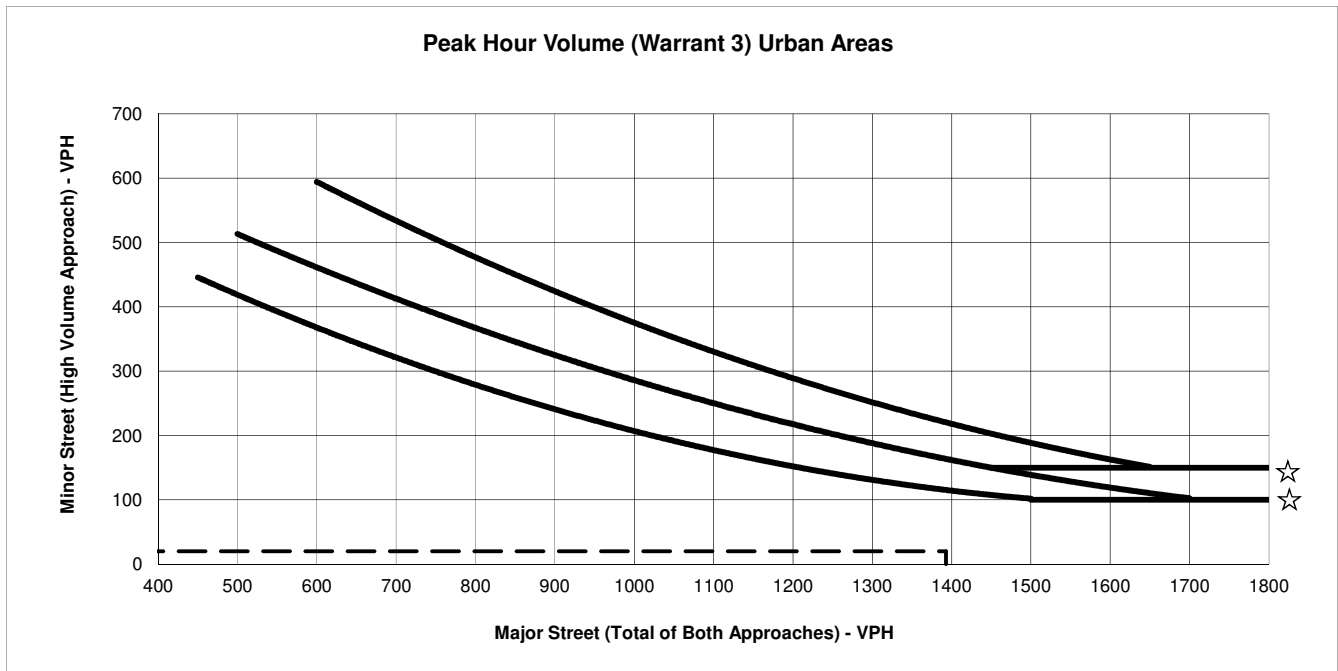
Year 2040 Plus Project PM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Retirement Community	1

Major St. Volume: 1570  
 Minor St. Volume: 80  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

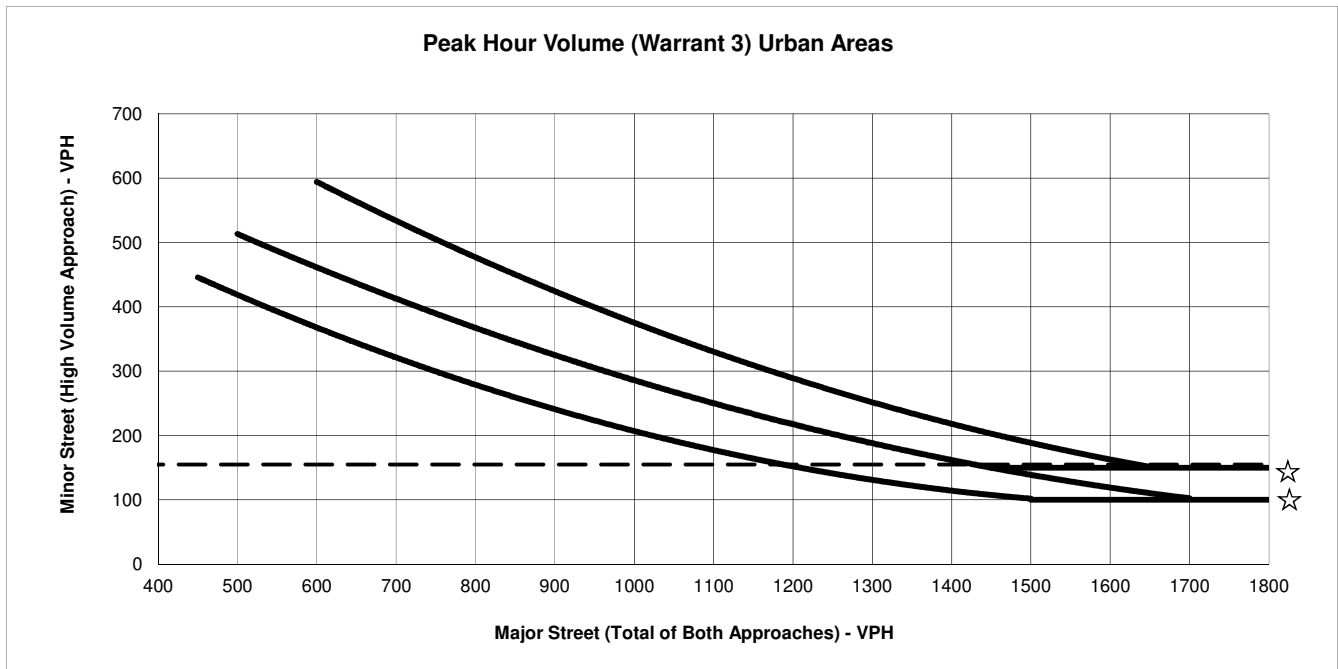
Year 2040 Plus Project AM Peak Hour

		Number of Lanes
Major Approach	Hartnell Avenue	2
Minor Approach	Cobblestone SC Dwy	1

Major St. Volume: 1393  
 Minor St. Volume: 20  
 Warrant Met?: No

Both 1 Lane Approaches		2 or more Lane and One Lane Approaches		Both 2 or more Lane Approaches	
Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach	Major Street Total of Both Approaches	Minor Street High Volume Approach
500	420	500	505	500	N/A
600	360	600	460	600	590
700	325	700	420	700	540
800	285	800	360	800	475
900	245	900	325	900	425
1000	200	1000	285	1000	370
1100	175	1100	250	1100	340
1200	150	1200	220	1200	285
1300	130	1300	190	1300	250
1400	120	1400	155	1400	220
1500	100	1500	145	1500	180
1600	100	1600	120	1600	170
1700	100	1700	100	1650	150
1800	100	1800	100	1800	150

\* Note: Values in Table are approximate, actual curves based upon 2nd order polynomial equation



☆ NOTE:  
 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Year 2040 Plus Project PM Peak Hour

Major Approach	Minor Approach	Number of Lanes
Hartnell Avenue	Cobblestone SC Dwy	2
		1

Major St. Volume: 1926  
 Minor St. Volume: 155  
 Warrant Met?: Yes



Appendix D  
Trip Rates Memorandum  
(November 22, 2016)

# Memorandum

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**To:** The City of Redding - Engineering      **Date:** November 22, 2016  
**Attn:** John Abshier, P.E., M.P.A.      **Project:** Dignity Mercy Medical Center  
Redding North State Pavilion  
**From:** Russ Wenham P.E., T.E.  
Kamesh Vedula P.E., T.E.  
**Re:** Project Trip Generation Rate      **Job No.:** 45-4858-03  
**File No.:** C1966MEM001.DOCX  
**CC:** Kenneth Isenhower III, E.I.T., Omni-Means

---

## Introduction

Dignity Health has retained Omni-Means to complete a Transportation Impact Analysis Report (TIAR) for the proposed Dignity Mercy Medical Center Redding North State Pavilion in the City of Redding, California. The proposed project is an ambulatory medical clinic campus with up to 140,000 square feet of occupied building space.

In order to estimate a PM peak hour trip generation for the proposed project, traffic counts at existing similar facilities were collected to develop an average PM peak hour rate. This technical memorandum presents a summary of the trip generation information collected at the following four (4) medical centers in Northern California. The traffic counts were obtained at the following locations, that are considered comparable to the proposed project.

- Dignity Health Medical Center in Elk Grove, CA
- Creekside Medical Office Park in Folsom, CA
- Kaiser Permanente on Fair Oaks Boulevard Medical Offices in Sacramento, CA
- Shasta Orthopaedics in Redding, CA



## Site Descriptions and Data Collection

This section presents site descriptions for the four (4) locations at which traffic counts were performed during weekday PM peak hour conditions. The PM peak hour is defined as the highest continuous hour of peak traffic flow counted between 4:00 p.m. and 6:00 p.m. under typical weekday conditions.

### Dignity Health Medical Center in Elk Grove

This site is located at 8200 Wymark Drive in Elk Grove, CA. Access to this site is provided by a single driveway facing Wymark Drive, at the northeast corner of the site. The medical center contains approximately 40,000 square feet of occupied building space (from a total building space of 60,000 square feet). PM peak hour counts were obtained at this site on Thursday, November 3, 2016. Insert 1 presents a Google Earth aerial image of the Dignity Health Medical Center in Elk Grove. A red border represents an approximate site boundary for the purpose of traffic counts. A yellow border represents an entry/ exit driveway at which PM peak hour counts were collected. Appendix A presents the raw count sheets developed for this location.

#### INSERT 1 GOOGLE EARTH AERIAL IMAGE OF DIGNITY HEALTH MEDICAL CENTER



## Creekside Medical Office Park in Folsom

This site is located at 1650 Creekside Drive in Folsom, CA. Access to this site is obtained from three driveways facing Creekside Drive. The site holds 14 medical buildings totaling approximately 109,400 square feet in occupied building space. PM peak hour counts were obtained on Wednesday, November 16, 2016. Insert 2 presents a Google Earth aerial image of the Creekside Medical Office Park in Folsom. A red border represents an approximate site boundary for the purpose of traffic counts. A yellow border represents an entry/ exit driveway at which PM peak hour counts were collected. Appendix A presents the raw count sheets developed for this location.

### INSERT 2 GOOGLE EARTH AERIAL IMAGE OF CREEKSIDE MEDICAL OFFICE PARK



## Kaiser Permanente on Fair Oaks Boulevard Medical Offices in Sacramento

This site is located at 2345 Fair Oaks Boulevard in Sacramento, CA. Access to this site is obtained from one driveway facing Fair Oaks. The medical center contains approximately 80,000 square feet of occupied building space. PM peak hour counts were obtained on Thursday, November 10, 2016. Insert 3 presents a Google Earth aerial image of the Kaiser Permanente medical center in Sacramento. A red border represents an approximate site boundary for the purpose of traffic counts. A yellow border represents an entry/ exit driveway at which PM peak hour counts were collected. Appendix A presents the raw count sheets developed for this location.

### INSERT 3 GOOGLE EARTH AERIAL IMAGE OF KAISER PERMANENTE MEDICAL CENTER



## Shasta Orthopaedics in Redding

This site is located at 1255 Liberty Street in Redding, CA. Access to this site is obtained from three driveways. Two driveways provide access to Continental Street while the third driveway provides access to Liberty Street. This medical office contains approximately 36,800 square feet of occupied building space. PM peak hour counts were obtained on Wednesday, November 2, 2016. Figure 4 presents a Google Earth aerial image of the Shasta Orthopaedics medical office in Redding. A red border represents an approximate site boundary for the purpose of traffic counts. A yellow border represents an entry/ exit driveway at which PM peak hour counts were collected. Appendix A presents the raw count sheets developed for this location.

**INSERT 4**  
**GOOGLE EARTH AERIAL IMAGE OF SHASTA ORTHOPAEDICS**



## Data Analysis and Results

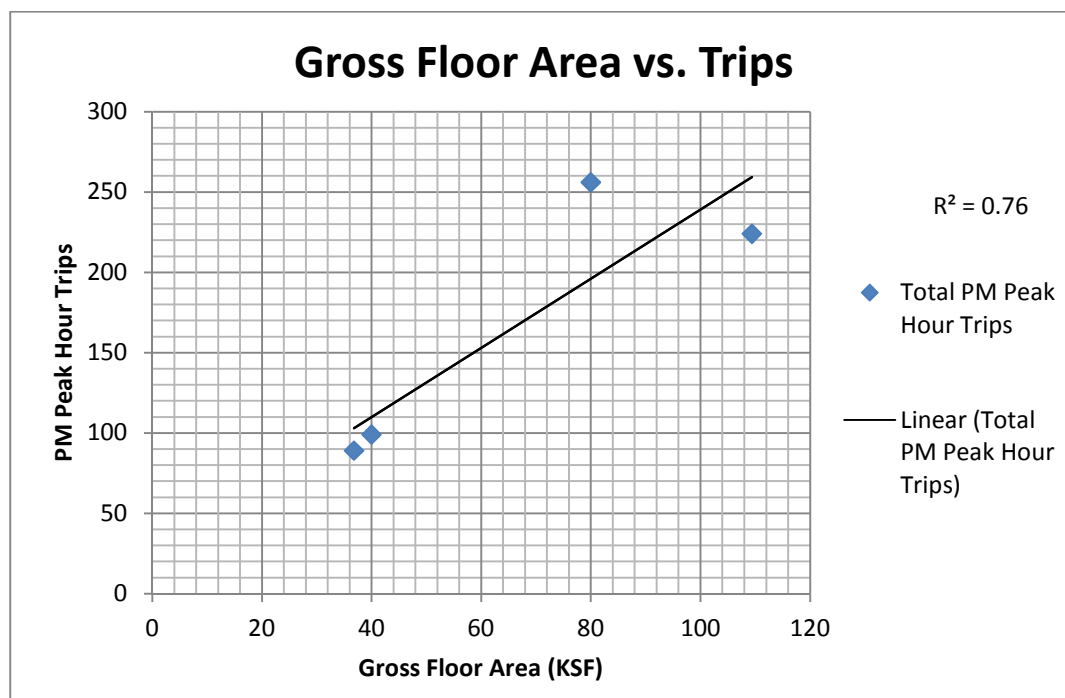
Traffic counts performed at each location were used to develop the trip rate at each site. The trip rate for each site was determined by calculating the ratio of the total PM peak hour trips to the gross floor area (in KSF). Table 1 presents a summary of the trip rates for each location.

**TABLE 1  
SUMMARY OF TRIP RATES BY LOCATION**

#	Location	Trip Rate (trips/KSF)	Gross Floor Area (KSF)	Total PM Peak Hour Trips
1	Shasta Orthopaedics (Redding)	2.42	36.8	89
2	Dignity Health Medical Center (Elk Grove)	2.48	40	99
3	Creekside Medical Office Park (Folsom)	2.05	109.4	224
4	Kaiser Permanente at Fair Oaks Blvd (Sacramento)	3.20	80	256
Average		2.54	66.55	167.00

The average trip rate for the locations presented within Table 1 was determined to be 2.54 trips/KSF.

Figure 1 presents a plot of the gross floor area vs. trips, for all locations. For the purpose of this traffic study, a  $R^2$  value within the range 0.75-1 is considered to represent an adequate linear fit. The  $R^2$  of 0.76 is obtained for the plot, indicating a strong linear fit of the data.



### Recommended Trip Rate

Based on the traffic counts analyzed and the gross floor areas of occupied building spaces at each location, an average trip rate of 2.54 trips/KSF will be used for the proposed project.

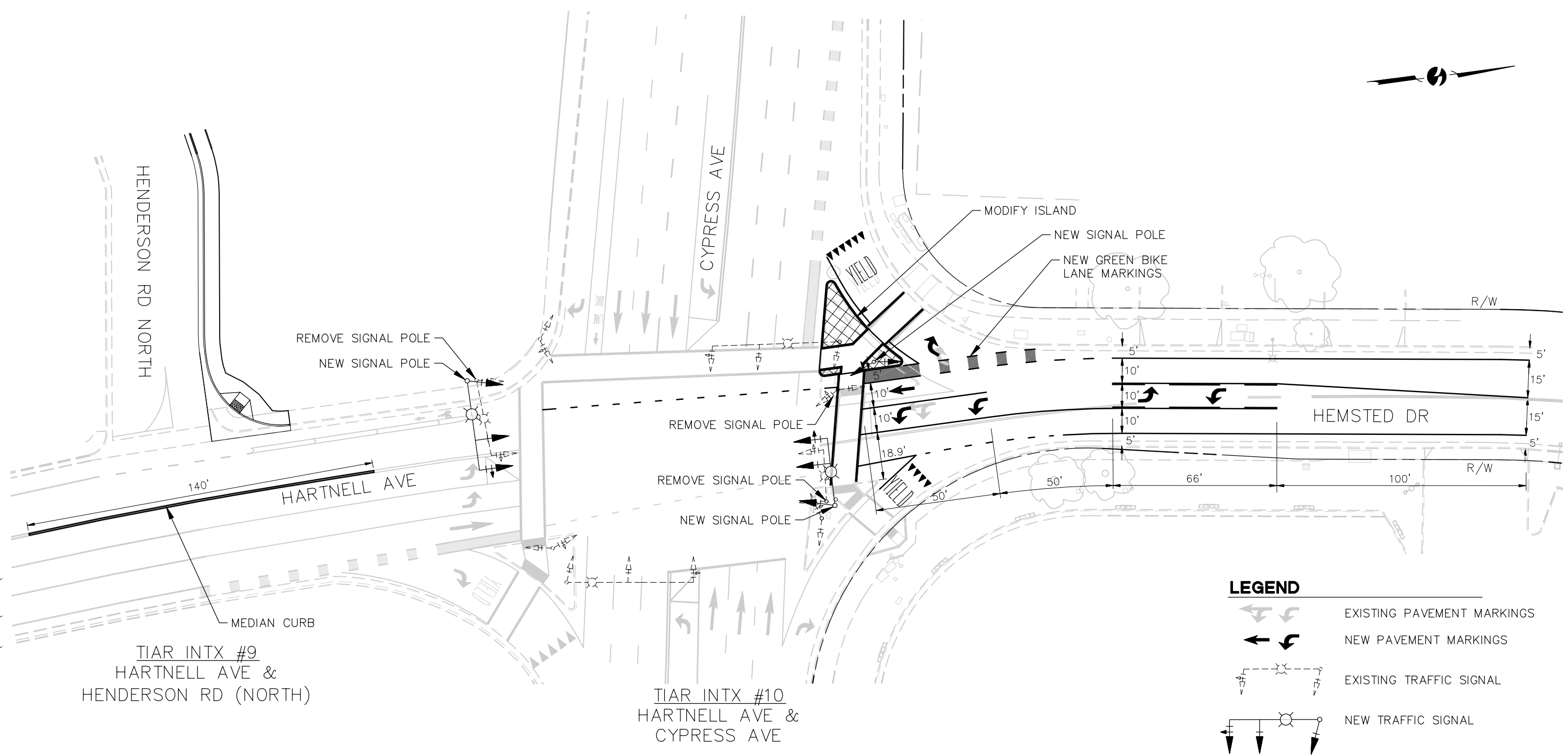




# Appendix E

## Intersection Mitigation Exhibit

J:\PRJ\1966\1966EX037.DWG  
9/21/2018 3:44 PM



**LEGEND**

- EXISTING PAVEMENT MARKINGS
- NEW PAVEMENT MARKINGS
- EXISTING TRAFFIC SIGNAL
- NEW TRAFFIC SIGNAL

APRIL 14, 2017

SCALE: 1" = 40'

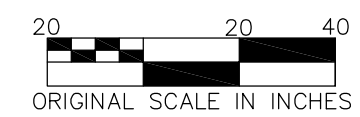
# NORTH STATE PAVILION

# INTERSECTION MITIGATION EXHIBIT

## REDDING, CA



**GHD**  
 GHD Inc.  
 330 Hartnell Avenue, Suite B  
 Redding, CA 96002 USA  
 T 1 530 242 1700 W www.ghd.com





Appendix F  
Henderson Road/Wilshire Drive Cut-Through Analysis  
Memorandum





# Transportation Technical Memorandum No. 1

Date: October 24, 2018

To: City of Redding Project: Dignity Health Mercy Medical Center  
Redding - North State Pavilion

---

Attn: Lily Toy

---

From: Russ Wenham, P.E., T.E. Ref/Job No.: 11145024

---

CC: J. Lofton Moore, Dignity Health File No.: C1966MEM005.DOCX  
Bruce Grove, SHN

---

**Subject:** Henderson Road/Wilshire Drive Traffic Cut-Through Analysis

---

## Introduction

GHD has prepared this memorandum to present the results from an analysis of the potential impacts that the development of the Dignity Health North State Pavilion project may have to Henderson Road and Wilshire Drive.

## Existing Conditions

Henderson Road and Wilshire Drive are two-lane undivided residential streets, connecting Parkview Avenue and Bechelli Lane south of the project site.

Henderson Road, from Parkview Avenue to Wilshire Drive, is within the City limits and is signed as a 25MPH zone. There are not any sidewalks along this road. The pavement on Henderson Road varies from approximately 21-feet to 30-feet wide.

Wilshire Drive, between Henderson Road and Bechelli Lane, is under a combination of City and County jurisdiction. Wilshire Drive does not have a posted speed limit. There are not any sidewalks along this road, with the exception of a very short section near Bechelli Lane. The pavement on Wilshire Drive varies from approximately 22-feet to 34-feet wide.

There are not any designated bicycle facilities along either street.

## Existing Traffic Volumes

24-Hour traffic counts were performed on Thursday, September 13, 2018 at two separate locations along this corridor. One count was performed on Wilshire Drive, between Birch Way and John Street. The second



24-Hour count was performed along Henderson Road, 300' south of Parkview Avenue. These daily traffic counts were used to produce the average daily traffic (ADT) and the AM and PM peak hour traffic flow. Of the two locations, the Wilshire Drive location had a higher daily traffic count of 731 vehicles, with an AM peak hour of 56 vehicles, and a PM peak hour of 68 vehicles. The Henderson Road location had a daily traffic count of 472 vehicles, an AM peak hour of 31 vehicles, and a PM peak hour of 47 vehicles. Therefore the traffic impact for the project is controlled by the Wilshire Drive traffic volumes. See Attachment 1 for the count summary for each location.

From the City of Redding Traffic Impact Analysis (TIA) Guidelines, the threshold for traffic on a residential local street is 2,000 vehicles per day and 180 vehicles per peak hour. Based on this criteria, Wilshire Drive existing peak hour traffic volumes do not exceed the TIA guideline volumes.

## Projected Traffic Volumes

The Traffic Impact Analysis Report (TIAR) for the project (Updated September 24, 2018) estimates that 8% of the project traffic will utilize Bechelli Lane to the south for coming/going to the project site. It is estimated that less than 1% of the project traffic will use the Henderson Road/Wilshire Drive cut-through route as a shortcut to/from Bechelli Lane. In order to ensure that this cut-through percentage is not underestimated, this memorandum analyzes a "worst-case" situation with 5% of the project traffic using this cut-through.

Taken from the project TIAR, the project is anticipated to generate 4,697 daily trips to/from the project site, with an AM Peak Hour volume of 311 trips, and 330 PM peak hour trips. Based on 5% of the project traffic using Wilshire Drive and Henderson Road as a cut-through, the ADT would increase by 235 vehicles, assuming half of the vehicles in both the eastbound and westbound directions. This would bring the ADT of the roadway to approximately 966 vehicles. The AM peak hour is projected to increase by 16 vehicles and the PM peak hour is projected to increase by 16 vehicles. This brings the AM peak hour to approximately 72 vehicles, and the PM peak hour to approximately 84 vehicles.

## Impact Assessment

Based on the above projected traffic volumes for Wilshire Drive, using 5% of the project traffic, Wilshire Drive will continue to operate well below the City of Redding's Traffic Impact Analysis (TIA) Guidelines thresholds of 2,000 vehicles per day and 180 vehicles per hour during the peak hours. Therefore the impacts from the project will be less than significant.

## Proposed Mitigation

Since the project does not cause significant impacts to the Henderson Road/Wilshire Drive corridor, traffic mitigation measures are not recommended.

# ATTACHMENT 1 - 24-HOUR COUNTS

Prepared by NDS/ATD

## VOLUME

Wilshire Dr Bet. Birch Way & John St

Day: Thursday  
Date: 9/13/2018

City: Redding  
Project #: CA18\_7291\_001

DAILY TOTALS					NB	SB	EB	WB	Total					
					0	0	362	369	731					
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			0	0	0	12:00			11	5	16			
00:15			1	0	1	12:15			4	7	11			
00:30			1	0	1	12:30			6	6	12			
00:45			0	2	0	12:45			11	32	6	24	17	56
01:00			0	0	0	13:00			5	8	13			
01:15			0	0	0	13:15			9	5	14			
01:30			0	2	2	13:30			8	7	15			
01:45			1	1	0	13:45			9	31	6	26	15	57
02:00			0	0	0	14:00			7	11	18			
02:15			0	0	0	14:15			4	8	12			
02:30			0	1	1	14:30			3	9	12			
02:45			0	0	1	14:45			6	20	4	32	10	52
03:00			1	0	1	15:00			5	3	8			
03:15			0	0	0	15:15			8	8	16			
03:30			0	0	0	15:30			5	13	18			
03:45			0	1	0	15:45			4	22	7	31	11	53
04:00			1	2	3	16:00			3	6	9			
04:15			1	0	1	16:15			9	10	19			
04:30			0	0	0	16:30			10	10	20			
04:45			0	2	1	16:45			7	29	7	33	14	62
05:00			0	1	1	17:00			5	10	15			
05:15			0	1	1	17:15			6	5	11			
05:30			1	0	1	17:30			6	13	19			
05:45			4	5	0	17:45			4	21	7	35	11	56
06:00			5	0	5	18:00			4	5	9			
06:15			4	0	4	18:15			4	4	8			
06:30			3	2	5	18:30			7	5	12			
06:45			4	16	1	18:45			3	18	8	22	11	40
07:00			6	1	7	19:00			5	9	14			
07:15			6	4	10	19:15			10	4	14			
07:30			8	4	12	19:30			1	7	8			
07:45			14	34	6	19:45			2	18	10	30	12	48
08:00			8	6	14	20:00			3	8	11			
08:15			7	3	10	20:15			1	3	4			
08:30			3	3	6	20:30			6	2	8			
08:45			6	24	0	20:45			2	12	1	14	3	26
09:00			7	5	12	21:00			1	2	3			
09:15			3	3	6	21:15			1	3	4			
09:30			9	6	15	21:30			3	3	6			
09:45			5	24	7	21:45			1	6	1	9	2	15
10:00			5	8	13	22:00			3	3	6			
10:15			4	4	8	22:15			2	4	6			
10:30			3	4	7	22:30			0	1	1			
10:45			6	18	2	22:45			2	7	5	13	7	20
11:00			7	5	12	23:00			0	2	2			
11:15			5	6	11	23:15			0	1	1			
11:30			4	2	6	23:30			1	0	1			
11:45			1	17	7	23:45			1	2	0	3	1	5
<b>TOTALS</b>			144	97	241	<b>TOTALS</b>			218	272	490			
<b>SPLIT %</b>			59.8%	40.2%	33.0%	<b>SPLIT %</b>			44.5%	55.5%	67.0%			

DAILY TOTALS					NB	SB	EB	WB	Total		
					0	0	362	369	731		
AM Peak Hour			07:30	09:30	07:15	PM Peak Hour			12:45	16:15	16:15
AM Pk Volume			37	25	56	PM Pk Volume			33	37	68
Pk Hr Factor			0.661	0.781	0.700	Pk Hr Factor			0.750	0.925	0.850
7 - 9 Volume	0	0	58	27	85	4 - 6 Volume	0	0	50	68	118
7 - 9 Peak Hour			07:30	07:15	07:15	4 - 6 Peak Hour			16:15	16:15	16:15
7 - 9 Pk Volume	0	0	37	20	56	4 - 6 Pk Volume	0	0	31	37	68
Pk Hr Factor	0.000	0.000	0.661	0.833	0.700	Pk Hr Factor	0.000	0.000	0.775	0.925	0.850

### VOLUME

Henderson Rd 300' S/O Parkview Ave

Day: Thursday  
Date: 9/13/2018

City: Redding  
Project #: CA18\_7291\_002

DAILY TOTALS					NB	SB	EB	WB	Total		
					239	233	0	0	472		
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00	0	0			0	12:00	1	5			6
00:15	0	0			0	12:15	1	3			4
00:30	0	0			0	12:30	4	3			7
00:45	0	1	1		1	12:45	7	13	6	17	30
01:00	0	0			0	13:00	3	5			8
01:15	0	0			0	13:15	3	4			7
01:30	1	0			1	13:30	5	3			8
01:45	0	1	1	1	1	13:45	4	15	4	16	31
02:00	0	0			0	14:00	5	3			8
02:15	0	0			0	14:15	5	7			12
02:30	0	1			1	14:30	5	7			12
02:45	0	0	1		0	14:45	6	21	3	20	41
03:00	0	0			0	15:00	1	4			5
03:15	0	0			0	15:15	1	2			3
03:30	0	0			0	15:30	7	9			16
03:45	1	1	0		1	15:45	3	12	6	21	33
04:00	2	0			2	16:00	5	5			10
04:15	1	0			1	16:15	4	7			11
04:30	0	0			0	16:30	7	4			11
04:45	1	4	0		1	16:45	4	20	6	22	42
05:00	0	0			0	17:00	8	7			15
05:15	2	0			2	17:15	1	9			10
05:30	2	0			2	17:30	5	4			9
05:45	0	4	0		0	17:45	5	19	6	26	45
06:00	2	1			3	18:00	2	3			5
06:15	0	0			0	18:15	4	9			13
06:30	5	1			6	18:30	1	3			4
06:45	2	9	1	3	3	18:45	1	8	4	19	27
07:00	6	1			7	19:00	3	4			7
07:15	5	0			5	19:15	3	4			7
07:30	4	0			4	19:30	3	2			5
07:45	6	21	3	4	9	19:45	1	10	3	13	23
08:00	5	1			6	20:00	2	4			6
08:15	5	1			6	20:15	2	2			4
08:30	4	4			8	20:30	2	3			5
08:45	4	18	1	7	5	20:45	0	6	1	10	16
09:00	4	4			8	21:00	2	2			4
09:15	0	1			1	21:15	1	1			2
09:30	5	5			10	21:30	1	4			5
09:45	7	16	1	11	8	21:45	2	6	2	9	15
10:00	4	0			4	22:00	1	2			3
10:15	1	1			2	22:15	0	3			3
10:30	5	6			11	22:30	1	0			1
10:45	6	16	3	10	9	22:45	2	4	1	6	10
11:00	1	6			7	23:00	2	1			3
11:15	1	3			4	23:15	0	0			0
11:30	6	3			9	23:30	0	0			0
11:45	5	13	3	15	8	23:45	0	2	0	1	3
<b>TOTALS</b>	103	53			156	<b>TOTALS</b>	136	180			316
<b>SPLIT %</b>	66.0%	34.0%			33.1%	<b>SPLIT %</b>	43.0%	57.0%			66.9%

DAILY TOTALS					NB	SB	EB	WB	Total
					239	233	0	0	472
AM Peak Hour	07:00	10:30			10:30	PM Peak Hour	16:15	15:30	16:15
AM Pk Volume	21	18			31	PM Pk Volume	23	27	47
Pk Hr Factor	0.875	0.750			0.705	Pk Hr Factor	0.719	0.750	0.783
7 - 9 Volume	39	11	0	0	50	4 - 6 Volume	39	48	87
7 - 9 Peak Hour	07:00	07:45			07:45	4 - 6 Peak Hour	16:15	16:30	16:15
7 - 9 Pk Volume	21	9	0	0	29	4 - 6 Pk Volume	23	26	47
Pk Hr Factor	0.875	0.563	0.000	0.000	0.806	Pk Hr Factor	0.719	0.722	0.783