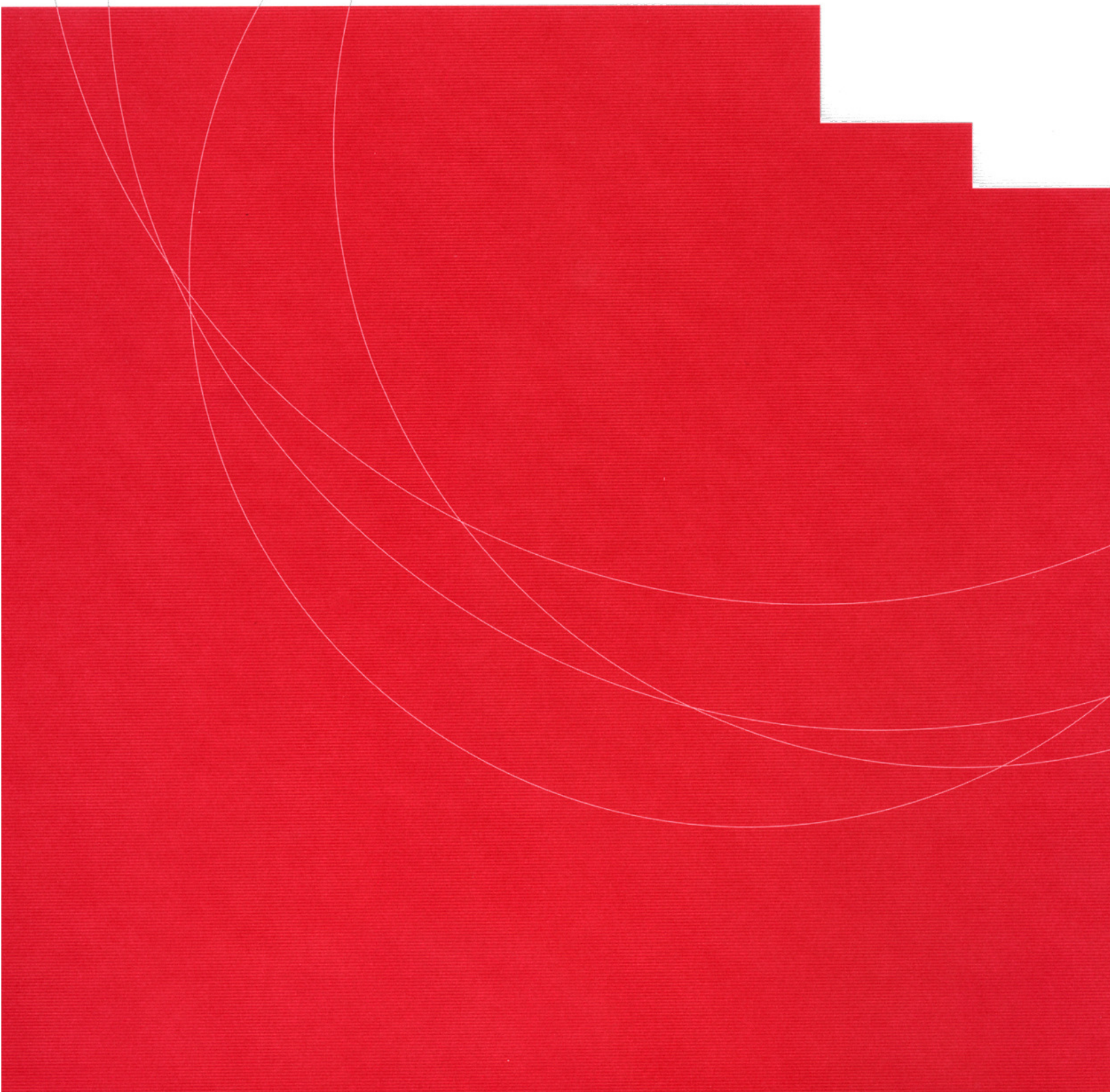


Appendix E
Traffic Signal Warrants



Traffic Signal Warrant Volumes

Derr Road @ Montego Road

Derr Road (south of Montego)

2010 ADT: 9,081

2035 ADT: 8,870

Montego Drive (east of Derr)

2010 ADT: 3,269

2035 ADT: 3,568

Hour	2010 Hourly Volumes							WB RT RED
	Derr Road			Montego Drive				
	NB	SB	TOTAL	WB LT	WB TH	WB RT	Total WB	
12-1 a	30	10	40	3	0	0	3	3
1-2 a	17	9	26	3	0	0	3	3
2-3 a	11	5	16	4	0	0	4	4
3-4 a	4	4	8	4	0	0	4	4
4-5 a	13	27	40	10	0	1	11	11
5-6 a	25	93	118	39	0	4	43	42
6-7 a	55	210	265	85	0	9	94	92
7-8 a	129	420	549	144	0	16	160	157
8-9 a	156	350	506	139	0	15	154	151
9-10 a	165	250	415	81	0	9	90	88
10-11 a	207	243	450	63	0	7	70	69
11 a-12 p	263	268	531	81	0	9	90	88
12-1 p	294	264	558	68	0	8	75	74
1-2 p	298	222	520	63	0	7	70	69
2-3 p	322	270	592	83	0	9	92	90
3-4 p	397	307	704	115	0	13	128	125
4-5 p	507	313	820	131	0	15	145	144
5-6 p	566	341	907	109	0	12	121	120
6-7 p	396	246	642	93	0	10	103	101
7-8 p	345	195	540	76	0	8	84	82
8-9 p	267	132	399	52	0	6	58	57
9-10 p	167	63	230	23	0	3	26	25
10-11 p	97	43	140	17	0	2	19	19
11p-12a	44	20	64	4	0	0	4	4
24-hour total	4,880	3,990	9,080	1,486	0	165	1,651	1621

Condition A or B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: Derr Road @ Montego Road			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM	40	3						
1:00 AM	26	3						
2:00 AM	16	4						
3:00 AM	8	4						
4:00 AM	40	11						
5:00 AM	118	42						
6:00 AM	265	92					√	no
7:00 AM	549	157	√	√	yes	√	√	yes
8:00 AM	506	151	√	√	yes		√	no
9:00 AM	415	88	√		no		√	no
10:00 AM	450	69	√		no		√	no
11:00 AM	531	88	√		no	√	√	yes
12:00 PM	558	74	√		no	√	√	yes
1:00 PM	520	69	√		no		√	no
2:00 PM	592	90	√		no	√	√	yes
3:00 PM	704	125	√	√	yes	√	√	yes
4:00 PM	820	144	√	√	yes	√	√	yes
5:00 PM	907	120	√	√	yes	√	√	yes
6:00 PM	642	101	√		no	√	√	yes
7:00 PM	540	82	√		no	√	√	yes
8:00 PM	399	57	√		no		√	no
9:00 PM	230	25						
10:00 PM	140	19						
11:00 PM	64	4						
TOTAL HOURS MET			5			9		
WARRANT MET?			No			Yes		

Condition A or B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: Middle Urbana Road @ Montego Drive			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM	27	6						
1:00 AM	15	2						
2:00 AM	12	3						
3:00 AM	20	11						
4:00 AM	41	10						
5:00 AM	109	38						
6:00 AM	233	65					√	
7:00 AM	544	119	√	√	no	√	√	yes
8:00 AM	476	108	√	√	no		√	
9:00 AM	315	59					√	
10:00 AM	376	65	√		no		√	
11:00 AM	446	59	√		no		√	
12:00 PM	399	54	√		no		√	
1:00 PM	423	54	√		no		√	
2:00 PM	501	66	√		no		√	
3:00 PM	728	104	√		no	√	√	yes
4:00 PM	684	76	√		no	√	√	
5:00 PM	630	70	√		no	√	√	
6:00 PM	520	47	√		no			
7:00 PM	332	49						
8:00 PM	244	17						
9:00 PM	155	16						
10:00 PM	78	10						
11:00 PM	41	8						
TOTAL HOURS MET			2			4		
WARRANT MET?			No			No		

Combination A and B									
TRAFFIC SIGNAL WARRANT ANALYSIS									
Project Name: Northridge			Location: Middle Urbana Road @ Montego Drive			Year: 2010			
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS						
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow			
			Major Street	Minor Street		Major Street	Minor Street		Condition Met?
			280	84		420	42		
12:00 AM	27	6							
1:00 AM	15	2							
2:00 AM	12	3							
3:00 AM	20	11							
4:00 AM	41	10							
5:00 AM	109	38							
6:00 AM	233	65					√		
7:00 AM	544	119	√	√		√	√		no
8:00 AM	476	108	√	√		√	√		no
9:00 AM	315	59	√				√		no
10:00 AM	376	65	√				√		no
11:00 AM	446	59	√			√	√		no
12:00 PM	399	54	√				√		no
1:00 PM	423	54	√			√	√		no
2:00 PM	501	66	√			√	√		no
3:00 PM	728	104	√	√		√	√		no
4:00 PM	684	76	√			√	√		no
5:00 PM	630	70	√			√	√		no
6:00 PM	520	47	√			√	√		no
7:00 PM	332	49	√						no
8:00 PM	244	17							
9:00 PM	155	16							
10:00 PM	78	10							
11:00 PM	41	8							
TOTAL HOURS MET			3						
WARRANT MET?			No						

Traffic Signal Warrant Volumes
Middle Urbana Road @ Montego Road

Middle Urbana Road
2010 ADT: 7,350
2035 ADT: 7,421

Montego Drive (EB Approach)
2010 ADT: 1,116
2035 ADT: 1,116

Hour	2010 Hourly Volumes							EB With RT Red
	Middle Urbana			Montego				
	NB	SB	TOTAL	EB LT	EB TH	EB RT	Total EB	
12-1 a	14	13	27	1	0	5	6	3
1-2 a	8	7	15	0	0	2	2	1
2-3 a	8	4	12	1	0	2	3	2
3-4 a	10	10	20	2	1	8	11	8
4-5 a	16	25	41	2	1	8	10	6
5-6 a	24	85	109	8	2	29	38	21
6-7 a	77	156	233	13	3	49	65	36
7-8 a	231	313	544	24	6	89	119	65
8-9 a	249	227	476	22	5	81	108	59
9-10 a	136	179	315	12	3	44	59	32
10-11 a	189	187	376	13	3	49	65	36
11 a-12 p	242	204	446	12	3	44	59	32
12-1 p	210	189	399	11	3	41	54	30
1-2 p	233	190	423	11	3	41	54	30
2-3 p	280	221	501	13	3	50	66	36
3-4 p	365	363	728	21	5	78	104	57
4-5 p	391	293	684	15	4	57	76	42
5-6 p	401	229	630	14	4	53	70	39
6-7 p	317	203	520	9	2	35	47	26
7-8 p	216	116	332	10	2	37	49	27
8-9 p	165	79	244	3	1	13	17	9
9-10 p	118	37	155	3	1	12	16	9
10-11 p	51	27	78	2	1	8	10	6
11p-12a	28	13	41	2	0	6	8	6
24-hour total	4,880	3,990	7,349	223	56	837	1,116	617

Condition A or B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: Middle Urbana Road @ Montego Drive			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM	27	3						
1:00 AM	15	1						
2:00 AM	12	2						
3:00 AM	20	8						
4:00 AM	41	6						
5:00 AM	109	21						
6:00 AM	233	36						
7:00 AM	544	65	√		no	√	√	yes
8:00 AM	476	59	√		no		√	
9:00 AM	315	32						
10:00 AM	376	36	√		no			
11:00 AM	446	32	√		no			
12:00 PM	399	30	√		no			
1:00 PM	423	30	√		no			
2:00 PM	501	36	√		no			
3:00 PM	728	57	√		no	√	√	yes
4:00 PM	684	42	√		no	√		
5:00 PM	630	39	√		no	√		
6:00 PM	520	26	√		no			
7:00 PM	332	27						
8:00 PM	244	9						
9:00 PM	155	9						
10:00 PM	78	6						
11:00 PM	41	6						
TOTAL HOURS MET			0			2		
WARRANT MET?			No			No		

Combination A and B									
TRAFFIC SIGNAL WARRANT ANALYSIS									
Project Name: Northridge			Location: Middle Urbana Road @ Montego Drive			Year: 2010			
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS						
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow			
			Major Street	Minor Street		Major Street	Minor Street		Condition Met?
			280	84		420	42		
12:00 AM	27	3							
1:00 AM	15	1							
2:00 AM	12	2							
3:00 AM	20	8							
4:00 AM	41	6							
5:00 AM	109	21							
6:00 AM	233	36							
7:00 AM	544	65	√			√	√		no
8:00 AM	476	59	√			√			no
9:00 AM	315	32	√						no
10:00 AM	376	36	√						no
11:00 AM	446	32	√			√			no
12:00 PM	399	30	√						no
1:00 PM	423	30	√			√			no
2:00 PM	501	36	√			√			no
3:00 PM	728	57	√			√	√		no
4:00 PM	684	42	√			√	√		no
5:00 PM	630	39	√			√			no
6:00 PM	520	26	√			√			no
7:00 PM	332	27	√						no
8:00 PM	244	9							
9:00 PM	155	9							
10:00 PM	78	6							
11:00 PM	41	6							
TOTAL HOURS MET			0						
WARRANT MET?			No						

Traffic Signal Warrant Volumes

S.R. 4 @ Middle Urbana Road

Hour	2010 Counted Hourly Volumes						
	S.R. 4			Middle Urbana Road			
	NB	SB	TOTAL	EB LT	EB TH	EB RT	Total EB
12-1 a							
1-2 a							
2-3 a							
3-4 a							
4-5 a							
5-6 a							
6-7 a							
7-8 a	270	284		2	0	265	267
8-9 a	248	179		2	0	283	285
9-10 a	164	110		2	0	171	173
10-11 a	225	98		2	0	191	193
11 a-12 p							
12-1 p							
1-2 p							
2-3 p	362	147		1	1	202	204
3-4 p	437	157		1	0	258	259
4-5 p	488	162		8	1	197	206
5-6 p	424	160		7	1	193	201
6-7 p							
7-8 p							
8-9 p							
9-10 p							
10-11 p							
11p-12a							
24-hour total							

Condition A or B (HIGH SPEED)								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: S.R. 4 @ Middle Urbana Road			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM								
1:00 AM								
2:00 AM								
3:00 AM								
4:00 AM								
5:00 AM								
6:00 AM								
7:00 AM	554	108	√	√	yes	√	√	yes
8:00 AM	427	115	√	√	yes		√	no
9:00 AM	274	70					√	no
10:00 AM	323	78					√	no
11:00 AM								
12:00 PM								
1:00 PM								
2:00 PM	509	83	√		no		√	no
3:00 PM	594	104	√		no	√	√	yes
4:00 PM	650	88	√		no	√	√	yes
5:00 PM	584	85	√		no	√	√	yes
6:00 PM								
7:00 PM								
8:00 PM								
9:00 PM								
10:00 PM								
11:00 PM								
TOTAL HOURS MET			2			4		
WARRANT MET?			No			No		

Combination A and B		(HIGH SPEED)							
TRAFFIC SIGNAL WARRANT ANALYSIS									
Project Name: Northridge		Location: S.R. 4 @ Middle Urbana Road			Year: 2010				
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS						
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow			
			Major Street	Minor Street		Major Street	Minor Street		Condition Met?
			280	84		420	42		
12:00 AM									
1:00 AM									
2:00 AM									
3:00 AM									
4:00 AM									
5:00 AM									
6:00 AM									
7:00 AM	554	108	√	√		√	√		yes
8:00 AM	427	115	√	√		√	√		yes
9:00 AM	274	70					√		no
10:00 AM	323	78	√				√		no
11:00 AM									
12:00 PM									
1:00 PM									
2:00 PM	509	83	√			√	√		no
3:00 PM	594	104	√	√		√	√		yes
4:00 PM	650	88	√	√		√	√		yes
5:00 PM	584	85	√	√		√	√		yes
6:00 PM									
7:00 PM									
8:00 PM									
9:00 PM									
10:00 PM									
11:00 PM									
TOTAL HOURS MET			5						
WARRANT MET?			No						

Traffic Signal Warrant Volumes

Villa Road @ Red Coach Drive

Villa Road (east of Red Coach)

2010 ADT: 6,627

2035 ADT: 6,885

Red Coach Drive (south of Villa)

2010 ADT: 5,411

2035 ADT: 6,608

Hour	2010 Hourly Volumes							
	Villa Road			Red Coach Drive				With
	EB	WB	TOTAL	NB LT	NB TH	NB RT	Total NB	RT Red
12-1 a			0		0			
1-2 a			0		0			
2-3 a			0		0			
3-4 a			0		0			
4-5 a			0		0			
5-6 a			0		0			
6-7 a			0		0			
7-8 a	110	213	323	24	0	50	74	54
8-9 a	178	286	464	17	0	74	91	47
9-10 a	154	252	406	25	0	99	124	65
10-11 a	180	299	479	22	0	121	143	70
11 a-12 p	207	313	520	17	0	142	159	74
12-1 p	223	309	532	19	0	140	159	75
1-2 p	290	325	615	15	0	195	210	93
2-3 p	265	383	648	18	0	162	180	83
3-4 p	294	378	672	22	0	143	165	79
4-5 p	303	388	691	24	0	141	165	80
5-6 p	330	364	694	25	0	192	217	102
6-7 p	220	273	493	22	0	151	173	82
7-8 p			0		0			
8-9 p			0		0			
9-10 p			0		0			
10-11 p			0		0			
11p-12a			0		0			
24-hour total			6,627				5,411	

Condition A or B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: Villa Road @ Red Coach			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM								
1:00 AM								
2:00 AM								
3:00 AM								
4:00 AM								
5:00 AM								
6:00 AM								
7:00 AM	323	74			no		√	no
8:00 AM	464	91	√		no		√	no
9:00 AM	406	124	√	√	yes		√	no
10:00 AM	479	143	√	√	yes		√	NO
11:00 AM	520	159	√	√	yes	√	√	yes
12:00 PM	532	159	√	√	yes	√	√	yes
1:00 PM	615	210	√	√	yes	√	√	yes
2:00 PM	648	180	√	√	yes	√	√	yes
3:00 PM	672	165	√	√	yes	√	√	yes
4:00 PM	691	165	√	√	yes	√	√	yes
5:00 PM	694	217	√	√	yes	√	√	yes
6:00 PM	493	173	√	√	yes		√	no
7:00 PM								
8:00 PM								
9:00 PM								
10:00 PM								
11:00 PM								
TOTAL HOURS MET			10			7		
WARRANT MET?			YES			No		

Combination A and B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge		Location: Derr Road @ Montego Road			Year: 2010			
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street		Major Street	Minor Street	Condition
			280	84		420	42	Met?
12:00 AM								
1:00 AM								
2:00 AM								
3:00 AM								
4:00 AM								
5:00 AM								
6:00 AM								
7:00 AM	323	74			no		√	no
8:00 AM	464	91	√		no	√	√	yes
9:00 AM	406	124	√	√	yes		√	no
10:00 AM	479	143	√	√	yes	√	√	yes
11:00 AM	520	159	√	√	yes	√	√	yes
12:00 PM	532	159	√	√	yes	√	√	yes
1:00 PM	615	210	√	√	yes	√	√	yes
2:00 PM	648	180	√	√	yes	√	√	yes
3:00 PM	672	165	√	√	yes	√	√	yes
4:00 PM	691	165	√	√	yes	√	√	yes
5:00 PM	694	217	√	√	yes	√	√	yes
6:00 PM	493	173	√	√	yes	√	√	yes
7:00 PM								
8:00 PM								
9:00 PM								
10:00 PM								
11:00 PM								
TOTAL HOURS MET			9					
WARRANT MET?			YES					

Condition A or B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge			Location: Villa Road @ Red Coach			Year: 2010		
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street	Condition	Major Street	Minor Street	Condition
			350	105	Met?	525	53	Met?
12:00 AM								
1:00 AM								
2:00 AM								
3:00 AM								
4:00 AM								
5:00 AM								
6:00 AM								
7:00 AM	323	54			no		√	no
8:00 AM	464	47	√		no			no
9:00 AM	406	65	√		no		√	no
10:00 AM	479	70	√		no		√	no
11:00 AM	520	74	√		no	√	√	Yes
12:00 PM	532	75	√		no	√	√	Yes
1:00 PM	615	93	√		no	√	√	Yes
2:00 PM	648	83	√		no	√	√	Yes
3:00 PM	672	79	√		no	√	√	Yes
4:00 PM	691	80	√		no	√	√	Yes
5:00 PM	694	102	√		no	√	√	Yes
6:00 PM	493	82	√		no		√	no
7:00 PM								
8:00 PM								
9:00 PM								
10:00 PM								
11:00 PM								
TOTAL HOURS MET			0			7		
WARRANT MET?			No			No		

Combination A and B								
TRAFFIC SIGNAL WARRANT ANALYSIS								
Project Name: Northridge		Location: Derr Road @ Montego Road			Year: 2010			
Time (Hour Starting)	Major Street Total of Both Approaches	Minor Street Higher Volume Approach	WARRANT #1 CONDITIONS					
			Condition A - Min Vehicular Volume			Condition B - Interruption of Cont. Flow		
			Major Street	Minor Street		Major Street	Minor Street	Condition
			280	84		420	42	Met?
12:00 AM								
1:00 AM								
2:00 AM								
3:00 AM								
4:00 AM								
5:00 AM								
6:00 AM								
7:00 AM	323	54	√		no		√	no
8:00 AM	464	47	√		no		√	no
9:00 AM	406	65	√		no		√	no
10:00 AM	479	70	√		no	√	√	yes
11:00 AM	520	74	√		no	√	√	yes
12:00 PM	532	75	√		no	√	√	yes
1:00 PM	615	93	√	√	yes	√	√	yes
2:00 PM	648	83	√	√	yes	√	√	yes
3:00 PM	672	79	√	√	yes	√	√	yes
4:00 PM	691	80	√	√	yes	√	√	yes
5:00 PM	694	102	√	√	yes	√	√	yes
6:00 PM	493	82	√	√	yes	√	√	yes
7:00 PM								
8:00 PM								
9:00 PM								
10:00 PM								
11:00 PM								
TOTAL HOURS MET			6					
WARRANT MET?			No					