



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH 5 at Cherry St. Waconia

COUNTY: Carver

REF. POINT: 031.711

DATE: 5/18/2010

OPERATOR: CAH

Speed	Approach Description	Lanes
50	Major App1: East Bound TH-5, W of Cherry St.	2
50	Major App3: West Bound TH-5, E of Cherry St.	2
30	Minor App2: North Bound Cherry St., S of TH-5	2
30	Minor App4: South Bound Cherry St., N of TH-5	2

0.70 FACTOR USED?

YES

POPULATION < 10,000?

Yes

EXISTING SIGNAL ?

No

THRESHOLDS 1A/1B:

420/630

140/70

140/70

HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A/1B	MINOR APP. 2	MINOR 2 1A/1B	MINOR APP. 4	MINOR 4 1A/1B	MET SAME 1A/1B
0:00 - 1:00	18	33	51	/	0	/	10	/	/
1:00 - 2:00	13	21	34	/	0	/	6	/	/
2:00 - 3:00	6	11	17	/	0	/	1	/	/
3:00 - 4:00	24	11	35	/	0	/	3	/	/
4:00 - 5:00	85	21	106	/	0	/	1	/	/
5:00 - 6:00	254	61	315	/	1	/	6	/	/
6:00 - 7:00	487	184	671	X/X	8	/	30	/	/
7:00 - 8:00	838	416	1254	X/X	13	/	50	/	/
8:00 - 9:00	553	324	877	X/X	6	/	92	/X	/X
9:00 - 10:00	440	348	788	X/X	5	/	118	/X	/X
10:00 - 11:00	429	370	799	X/X	7	/	172	X/X	X/X
11:00 - 12:00	459	445	904	X/X	5	/	177	X/X	X/X
12:00 - 13:00	476	480	956	X/X	12	/	166	X/X	X/X
13:00 - 14:00	473	463	936	X/X	10	/	159	X/X	X/X
14:00 - 15:00	487	532	1019	X/X	6	/	160	X/X	X/X
15:00 - 16:00	566	663	1229	X/X	10	/	242	X/X	X/X
16:00 - 17:00	503	723	1226	X/X	11	/	251	X/X	X/X
17:00 - 18:00	491	713	1204	X/X	8	/	210	X/X	X/X
18:00 - 19:00	434	565	999	X/X	6	/	74	/X	/X
19:00 - 20:00	270	385	655	X/X	4	/	47	/	/
20:00 - 21:00	263	369	632	X/X	2	/	61	/	/
21:00 - 22:00	156	218	374	/	1	/	20	/	/
22:00 - 23:00	102	147	249	/	0	/	20	/	/
23:00 - 24:00	42	71	113	/	0	/	53	/	/

Met (Hr) Required (Hr)

Warrant 1A	8	8	Satisfied
Warrant 1B	11	8	Satisfied
Warrant 2	10	4	Satisfied
Warrant 3	6	1	Satisfied
Warrant 7	12	8	Satisfied, check accident record

Four Hour Warrant				Peak Hour Warrant		
Major App	Minor App			Major App	Minor App	
	1 & 1	2 & 1	2 & 2		1 & 1	2 & 1
300	360	440	590	400	475	570
400	310	390	530	500	425	520
500	260	340	460	600	370	465
600	215	290	390	700	330	420
700	180	245	330	800	280	370
800	150	205	280	900	240	330
900	125	170	235	1000	204	285
1000	100	145	195	1100	175	250
1100	85	120	165	1200	150	220
1200	80	100	135	1300	130	190
1300	80	83	115	1400	115	160
1400	80	80	115	1500	100	140
1500	80	80	115	1600	100	115
1600	80	80	115	1700	100	100
1700	80	80	115	1800	100	100
1800	80	80	115			

Four Hour Warrant Factored				Peak Hour Warrant Factored		
Major App	Minor App			Major App	Minor App	
	1 & 1	2 & 1	2 & 2		1 & 1	2 & 1
200	250	320	420	300	320	380
300	210	265	350	400	270	335
400	170	215	285	500	225	285
500	130	170	230	600	180	240
600	93	130	175	700	145	200
700	70	100	135	800	115	160
800	60	80	103	900	90	135
900	60	65	80	1000	75	110
1000	60	60	80	1100	75	95
1100	60	60	80	1200	75	75
1200	60	60	80	1300	75	75
1300	60	60	80	1400	75	75
1400	60	60	80	1500	75	75
1500	60	60	80	1600	75	75
1600	60	60	80	1700	75	75
1700	60	60	80	1800	75	75
1800	60	60	80			

2 & 2
725
665
600
540
480
425
375
330
285
250
220
187
165
150
150

ctored

2 & 2
500
435
370
315
260
215
175
140
115
100
100
100
100
100
100
100

LOCATION: TH 5 at Cherry St. Waconia

COUNTY: Carver

REF. POINT: 031.711

DATE: 5/18/2010

OPERATOR: CAH

0.70 FACTOR USED? YES
 POPULATION < 10,000? Yes
 EXISTING SIGNAL ? No

Speed	Approach Description	Lanes
50	Major App1: East Bound TH-5, W of Cherry St.	2
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30	Minor App2: North Bound Cherry St., S of TH-5	2
30	Minor App4: South Bound Cherry St., N of TH-5	2

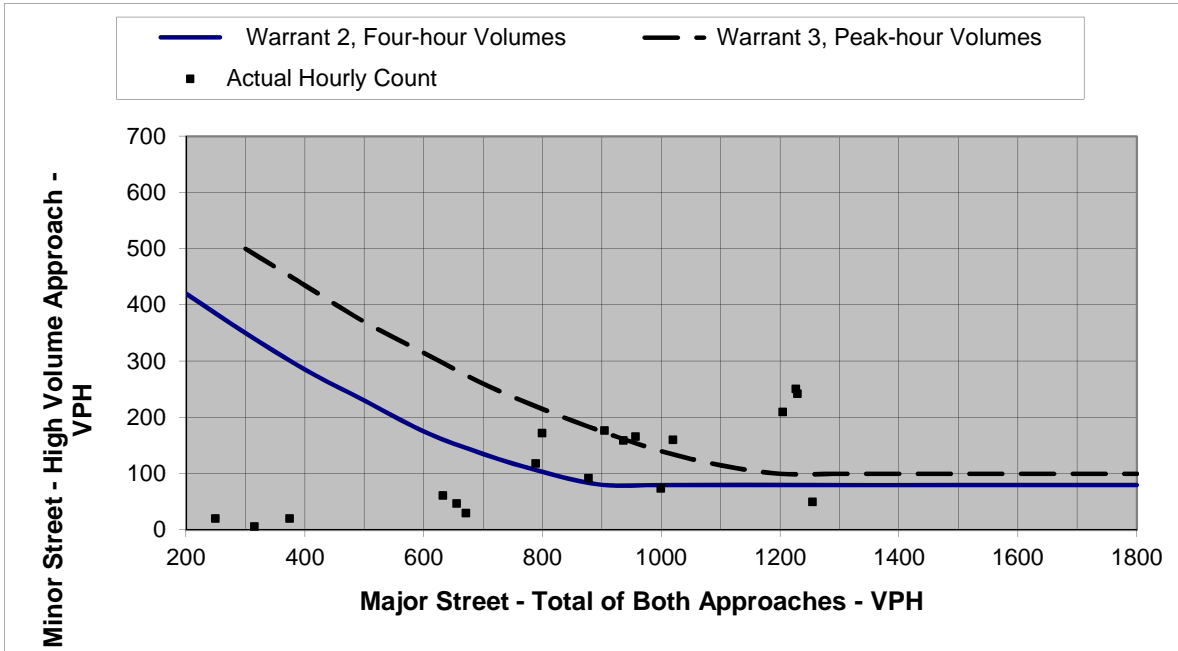


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Major	Warrant Criteria		Actual Hourly Count	
	Warrant 2, F	Warrant 3, Pe	Major	Actual Hourly Count
200	420		51	10
300	350	500	34	6
400	285	435	17	1
500	230	370	35	3
600	175	315	106	1
700	135	260	315	6
800	103	215	671	30
900	80	175	1254	50
1000	80	140	877	92
1100	80	115	788	118
1200	80	100	799	172
1300	80	100	904	177
1400	80	100	956	166
1500	80	100	936	159
1600	80	100	1019	160
1700	80	100	1229	242
1800	80	100	1226	251
			1204	210
			999	74
			655	47
			632	61
			374	20
			249	20
			113	53



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

ALL WAY STOP WARRANT

LOCATION: TH 5 at Cherry St. Waconia

COUNTY: Carver

REF. POINT: 031.711

DATE: 5/18/2010

OPERATOR: CAH

Speed	Approach Description	Lanes
50	Major App1: East Bound TH-5, W of Cherry St.	2
50	Major App3: West Bound TH-5, E of Cherry St.	2
30	Minor App2: North Bound Cherry St., S of TH-5	2
30	Minor App4: South Bound Cherry St., N of TH-5	2

0.70 FACTOR USED? Yes

HOUR					210	140	WARRANT MET
	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR TOTAL Σ (APP. 1 & APP. 3)	MINOR TOTAL APP. 2 + APP. 4	
0:00 - 1:00	18	33	0	10	51	10	/
1:00 - 2:00	13	21	0	6	34	6	/
2:00 - 3:00	6	11	0	1	17	1	/
3:00 - 4:00	24	11	0	3	35	3	/
4:00 - 5:00	85	21	0	1	106	1	/
5:00 - 6:00	254	61	1	6	315	7	X/
6:00 - 7:00	487	184	8	30	671	38	X/
7:00 - 8:00	838	416	13	50	1254	63	X/
8:00 - 9:00	553	324	6	92	877	98	X/
9:00 - 10:00	440	348	5	118	788	123	X/
10:00 - 11:00	429	370	7	172	799	179	X/X
11:00 - 12:00	459	445	5	177	904	182	X/X
12:00 - 13:00	476	480	12	166	956	178	X/X
13:00 - 14:00	473	463	10	159	936	169	X/X
14:00 - 15:00	487	532	6	160	1019	166	X/X
15:00 - 16:00	566	663	10	242	1229	252	X/X
16:00 - 17:00	503	723	11	251	1226	262	X/X
17:00 - 18:00	491	713	8	210	1204	218	X/X
18:00 - 19:00	434	565	6	74	999	80	X/
19:00 - 20:00	270	385	4	47	655	51	X/
20:00 - 21:00	263	369	2	61	632	63	X/
21:00 - 22:00	156	218	1	20	374	21	X/
22:00 - 23:00	102	147	0	20	249	20	X/
23:00 - 24:00	42	71	0	53	113	53	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **8** 8 **Satisfied**

REMARKS: _____

