



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH-13 & CSAH-39 S JCT.

COUNTY: SCOTT

REF. POINT: O84.912

DATE: 10/2/1996

OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-13 NB, S OF CSAH-39	2
45	Major App3: TH-13 SB, N OF CSAH-39	3
30	Minor App2: ANNA TRAIL EB, W OF TH-13	2
30	Minor App4: CSAH-39 WB, E OF TH-13	2

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630				140/70		140/70		MET SAME HOURS
	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	WARRANT MET	MINOR APP. 2	MINOR APP. 4	WARRANT MET APP.2	WARRANT MET APP. 4	
0:00 - 1:00	33	60	93	/	2	7	/	/	/
1:00 - 2:00	34	43	77	/	0	6	/	/	/
2:00 - 3:00	20	26	46	/	0	4	/	/	/
3:00 - 4:00	27	21	48	/	0	2	/	/	/
4:00 - 5:00	70	25	95	/	0	3	/	/	/
5:00 - 6:00	348	55	403	/	2	23	/	/	/
6:00 - 7:00	746	198	944	X/X	3	55	/	/	/
7:00 - 8:00	866	406	1272	X/X	4	82	/	/X	/X
8:00 - 9:00	672	420	1092	X/X	8	79	/	/X	/X
9:00 - 10:00	521	385	906	X/X	15	60	/	/	/
10:00 - 11:00	475	397	872	X/X	11	54	/	/	/
11:00 - 12:00	488	490	978	X/X	13	73	/	/X	/X
12:00 - 13:00	526	558	1084	X/X	12	74	/	/X	/X
13:00 - 14:00	515	546	1061	X/X	14	57	/	/	/
14:00 - 15:00	569	618	1187	X/X	15	77	/	/X	/X
15:00 - 16:00	592	834	1426	X/X	15	71	/	/X	/X
16:00 - 17:00	621	918	1539	X/X	15	82	/	/X	/X
17:00 - 18:00	646	1074	1720	X/X	4	95	/	/X	/X
18:00 - 19:00	629	785	1414	X/X	3	81	/	/X	/X
19:00 - 20:00	545	626	1171	X/X	2	66	/	/	/
20:00 - 21:00	368	425	793	X/X	3	47	/	/	/
21:00 - 22:00	223	333	556	X/	1	24	/	/	/
22:00 - 23:00	136	195	331	/	1	22	/	/	/
23:00 - 24:00	54	102	156	/	1	11	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	0	8	Not satisfied
Warrant 2	9	8	Satisfied
Warrant 6	12	8	Satisfied, check accident record
Warrant 8	0	8	Not satisfied
Warrant 9	4	4	Satisfied
Warrant 11	0	1	Not satisfied

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OPERATOR: DR

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

Speed	Approach Description	Lanes
45	Major App1: TH-13 NB, S OF CSAH-39	2
45	Major App3: TH-13 SB, N OF CSAH-39	3
30	Minor App2: ANNA TRAIL EB, W OF TH-13	2
30	Minor App4: CSAH-39 WB, E OF TH-13	2

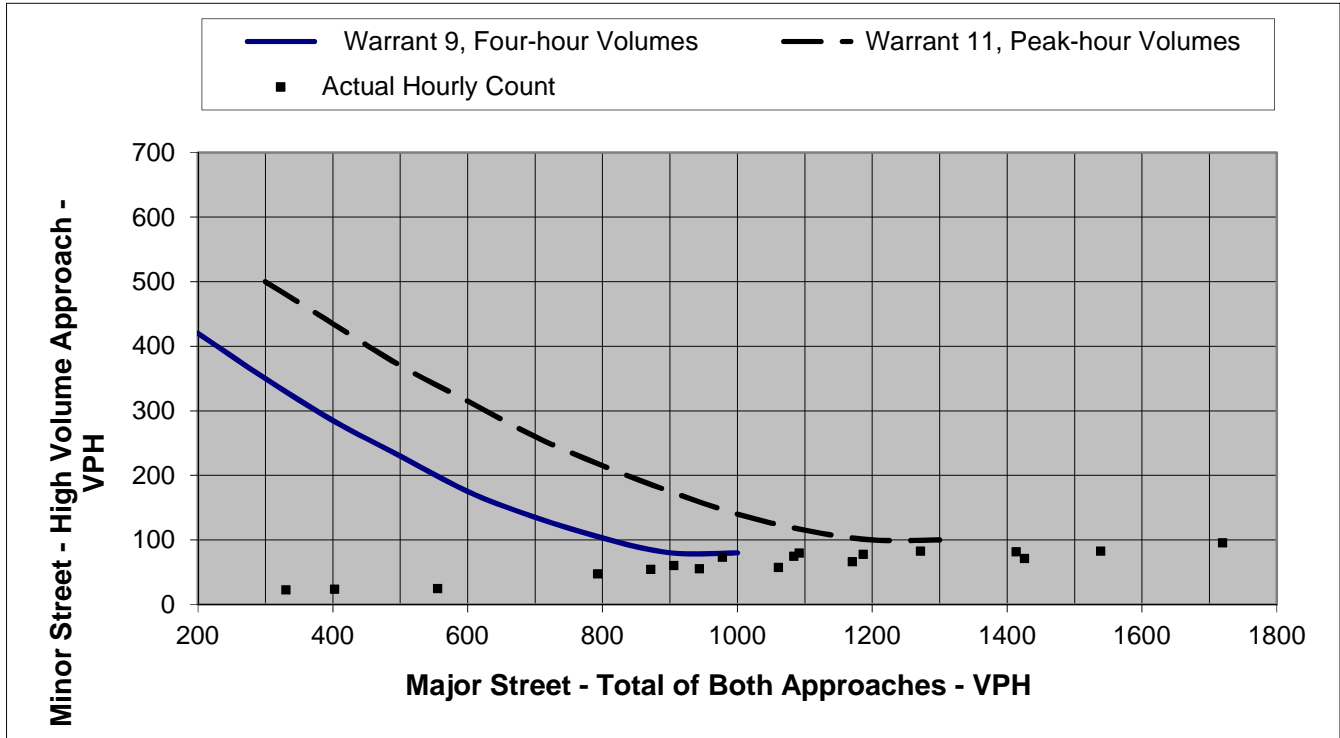


Figure 1. Four Hour and Peak Hour Warrant Analysis

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

Major	Warrant Criteria		Actual Hourly Count	
	Warrant 9, F	Warrant 11, P	Major	Actual Hourly Count
200	420		93	7
300	350	500	77	6
400	285	435	46	4
500	230	370	48	2
600	175	315	95	3
700	135	260	403	23
800	103	215	944	55
900	80	175	1272	82
1000	80	140	1092	79
1100		115	906	60
1200		100	872	54
1300		100	978	73
1400			1084	74
1500			1061	57
1600			1187	77
1700			1426	71
1800			1539	82
			1720	95
			1414	81
			1171	66
			793	47
			556	24
			331	22
			156	11

Four Hour Warrant

Major App	Minor App		
	1 & 1	2 & 1	2 & 2
300	360	440	590
400	310	390	530
500	260	340	460
600	215	290	390
700	180	245	330
800	150	205	280
900	125	170	235
1000	100	145	195
1100	85	120	165
1200	80	100	135
1300	80	83	110
1400	80	80	110

Peak Hour

Major App	1 & 1
400	475
500	425
600	370
700	330
800	280
900	240
1000	204
1100	175
1200	150
1300	130
1400	115
1500	100
1600	100
1700	100
1800	100

Four Hour Warrant Factored

Major App	Minor App		
	1 & 1	2 & 1	2 & 2
200	250	320	420
300	210	265	350
400	170	215	285
500	130	170	230
600	93	130	175
700	70	100	135
800	60	80	103
900	60	65	80
1000	60	60	80

Peak Hour

Major App	1 & 1
300	320
400	270
500	225
600	180
700	145
800	115
900	90
1000	75
1100	75
1200	75
1300	75



Warrant

Minor App

2 & 1	2 & 2
570	725
520	665
465	600
420	540
370	480
330	425
285	375
250	330
220	285
190	250
160	220
140	187
115	165
100	150
100	150

Warrant Factored

Minor App

2 & 1	2 & 2
380	500
335	435
285	370
240	315
200	260
160	215
135	175
110	140
95	115
75	100
75	100



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### ALL WAY STOP WARRANT

LOCATION: TH-13 & CSAH-39 S JCT.

COUNTY: SCOTT

REF. POINT: O84.912

DATE: 10/2/1996

OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-13 NB, S OF CSAH-39	2
45	Major App3: TH-13 SB, N OF CSAH-39	3
30	Minor App2: ANNA TRAIL EB, W OF TH-13	2
30	Minor App4: CSAH-39 WB, E OF TH-13	2

0.70 FACTOR USED? Yes

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	350	140	WARRANT MET
					TOTAL Σ (APP.1 to APP. 4)	MINOR TOTAL APP. 2 + APP. 4	
0:00 - 1:00	33	60	2	7	102	9	/
1:00 - 2:00	34	43	0	6	83	6	/
2:00 - 3:00	20	26	0	4	50	4	/
3:00 - 4:00	27	21	0	2	50	2	/
4:00 - 5:00	70	25	0	3	98	3	/
5:00 - 6:00	348	55	2	23	428	25	X/
6:00 - 7:00	746	198	3	55	1002	58	X/
7:00 - 8:00	866	406	4	82	1358	86	X/
8:00 - 9:00	672	420	8	79	1179	87	X/
9:00 - 10:00	521	385	15	60	981	75	X/
10:00 - 11:00	475	397	11	54	937	65	X/
11:00 - 12:00	488	490	13	73	1064	86	X/
12:00 - 13:00	526	558	12	74	1170	86	X/
13:00 - 14:00	515	546	14	57	1132	71	X/
14:00 - 15:00	569	618	15	77	1279	92	X/
15:00 - 16:00	592	834	15	71	1512	86	X/
16:00 - 17:00	621	918	15	82	1636	97	X/
17:00 - 18:00	646	1074	4	95	1819	99	X/
18:00 - 19:00	629	785	3	81	1498	84	X/
19:00 - 20:00	545	626	2	66	1239	68	X/
20:00 - 21:00	368	425	3	47	843	50	X/
21:00 - 22:00	223	333	1	24	581	25	X/
22:00 - 23:00	136	195	1	22	354	23	X/
23:00 - 24:00	54	102	1	11	168	12	/

Allway Stop Warrant: Met (Hr) 0 Required (Hr) 8 Not satisfied

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_  
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