



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH-13 & CO RD 42  
 COUNTY: WRIGHT  
 REF. POINT: 088.529  
 DATE: 7/29/1997  
 OPERATOR: DR

Speed	Approach Description	Lanes
55	Major App1: ON TH-13, NB APPROACH TO CO RD 42	4
55	Major App3: ON TH-13, SB APPROACH TO CO RD 42	4
55	Minor App2: ON CO RD 42, EB APPROACH TO TH-13	3
55	Minor App4: ON CO RD 42, WB APPROACH TO TH-13	3

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	127	44	171	/	4	9	/	/	/
1:00 - 2:00	80	38	118	/	3	4	/	/	/
2:00 - 3:00	79	42	121	/	1	2	/	/	/
3:00 - 4:00	47	63	110	/	4	4	/	/	/
4:00 - 5:00	49	189	238	/	25	11	/	/	/
5:00 - 6:00	104	788	892	X/X	154	60	X/X	/	X/X
6:00 - 7:00	255	1366	1621	X/X	425	110	X/X	/X	X/X
7:00 - 8:00	499	1195	1694	X/X	329	147	X/X	X/X	X/X
8:00 - 9:00	429	790	1219	X/X	124	111	/X	/X	/X
9:00 - 10:00	470	532	1002	X/X	78	89	/X	/X	/X
10:00 - 11:00	455	492	947	X/X	54	95	/	/X	/X
11:00 - 12:00	480	508	988	X/X	59	80	/	/X	/X
12:00 - 13:00	474	508	982	X/X	59	90	/	/X	/X
13:00 - 14:00	554	535	1089	X/X	60	107	/	/X	/X
14:00 - 15:00	671	615	1286	X/X	79	84	/X	/X	/X
15:00 - 16:00	1052	644	1696	X/X	70	160	/X	X/X	X/X
16:00 - 17:00	1376	585	1961	X/X	82	286	/X	X/X	X/X
17:00 - 18:00	1429	582	2011	X/X	83	335	/X	X/X	X/X
18:00 - 19:00	995	455	1450	X/X	84	201	/X	X/X	X/X
19:00 - 20:00	587	355	942	X/X	67	123	/	/X	/X
20:00 - 21:00	402	274	676	X/X	38	75	/	/X	/X
21:00 - 22:00	350	251	601	X/	36	52	/	/	/
22:00 - 23:00	248	205	453	X/	24	33	/	/	/
23:00 - 24:00	225	96	321	/	9	18	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	7	8	Not satisfied
Warrant 2	16	8	Satisfied
Warrant 6	16	8	Satisfied, check accident record
Warrant 8	9	8	Satisfied
Warrant 9	15	4	Satisfied
Warrant 11	7	1	Satisfied

LOCATION: TH-13 & CO RD 42

COUNTY: WRIGHT

REF. POINT: 088.529

DATE: 7/29/1997

OPERATOR: DR

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

Speed	Approach Description	Lanes
55	Major App1: ON TH-13, NB APPROACH TO CO RD 42	4
55	Major App3: ON TH-13, SB APPROACH TO CO RD 42	4
55	Minor App2: ON CO RD 42, EB APPROACH TO TH-13	3
55	Minor App4: ON CO RD 42, WB APPROACH TO TH-13	3

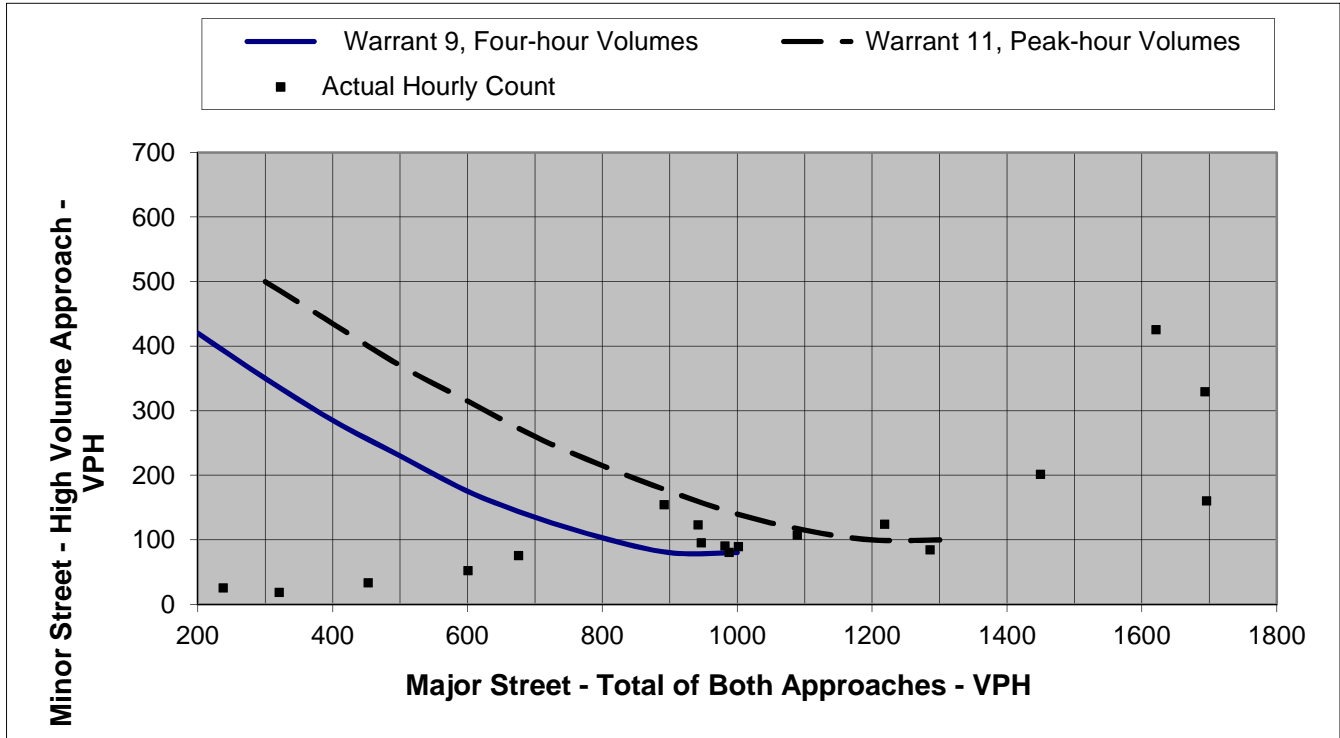


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		171	9
300	350	500	118	4
400	285	435	121	2
500	230	370	110	4
600	175	315	238	25
700	135	260	892	154
800	103	215	1621	425
900	80	175	1694	329
1000	80	140	1219	124
1100		115	1002	89
1200		100	947	95
1300		100	988	80
1400			982	90
1500			1089	107
1600			1286	84
1700			1696	160
1800			1961	286
			2011	335
			1450	201
			942	123
			676	75
			601	52
			453	33
			321	18

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-101 & CO RD 42

COUNTY: WRIGHT

REF. POINT: 088.529

DATE: 7/29/1997

OPERATOR: DR

Speed	Approach Description	Lanes
55	Major App1: ON TH-101, NB APPROACH TO CO RD 42	4
55	Major App3: ON TH-101, SB APPROACH TO CO RD 42	4
55	Minor App2: ON CO RD 42, EB APPROACH TO TH-101	3
55	Minor App4: ON CO RD 42, WB APPROACH TO TH-101	3

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	127	44	4	9	184	13	/
1:00 - 2:00	80	38	3	4	125	7	/
2:00 - 3:00	79	42	1	2	124	3	/
3:00 - 4:00	47	63	4	4	118	8	/
4:00 - 5:00	49	189	25	11	274	36	/
5:00 - 6:00	104	788	154	60	1106	214	X/X
6:00 - 7:00	255	1366	425	110	2156	535	X/X
7:00 - 8:00	499	1195	329	147	2170	476	X/X
8:00 - 9:00	429	790	124	111	1454	235	X/X
9:00 - 10:00	470	532	78	89	1169	167	X/X
10:00 - 11:00	455	492	54	95	1096	149	X/X
11:00 - 12:00	480	508	59	80	1127	139	X/
12:00 - 13:00	474	508	59	90	1131	149	X/X
13:00 - 14:00	554	535	60	107	1256	167	X/X
14:00 - 15:00	671	615	79	84	1449	163	X/X
15:00 - 16:00	1052	644	70	160	1926	230	X/X
16:00 - 17:00	1376	585	82	286	2329	368	X/X
17:00 - 18:00	1429	582	83	335	2429	418	X/X
18:00 - 19:00	995	455	84	201	1735	285	X/X
19:00 - 20:00	587	355	67	123	1132	190	X/X
20:00 - 21:00	402	274	38	75	789	113	X/
21:00 - 22:00	350	251	36	52	689	88	X/
22:00 - 23:00	248	205	24	33	510	57	X/
23:00 - 24:00	225	96	9	18	348	27	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **14** 8 **Satisfied**

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

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