



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-5 AT CSAH 10 W JCT

COUNTY: CARVER

REF. POINT: 032.167

DATE: 032+00.167

OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-5 EB, W OF JCT OF CSAH 10	3
45	Major App3: TH-5 WB, E OF JCT OF CSAH 10	3
30	Minor App2: TH-284 NB, S OF JCT OF TH-5	2
30	Minor App4: CSAH 10 SB, N OF TH-5	2

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630		140/70		140/70		WARRANT MET APP. 2	WARRANT MET APP. 4	MET SAME HOURS
	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	WARRANT MET	MINOR APP. 2	MINOR APP. 4			
0:00 - 1:00	26	51	77	/	17	13	/	/	/
1:00 - 2:00	15	30	45	/	9	11	/	/	/
2:00 - 3:00	12	26	38	/	8	4	/	/	/
3:00 - 4:00	31	16	47	/	13	5	/	/	/
4:00 - 5:00	62	20	82	/	12	9	/	/	/
5:00 - 6:00	319	96	415	/	82	47	/X	/	/
6:00 - 7:00	487	224	711	X/X	165	105	X/X	/X	X/X
7:00 - 8:00	571	483	1054	X/X	319	173	X/X	X/X	X/X
8:00 - 9:00	337	366	703	X/X	212	131	X/X	/X	X/X
9:00 - 10:00	287	341	628	X/	180	129	X/X	/X	X/
10:00 - 11:00	294	321	615	X/	201	144	X/X	X/X	X/
11:00 - 12:00	338	332	670	X/X	249	166	X/X	X/X	X/X
12:00 - 13:00	364	392	756	X/X	249	188	X/X	X/X	X/X
13:00 - 14:00	335	398	733	X/X	217	152	X/X	X/X	X/X
14:00 - 15:00	381	532	913	X/X	273	204	X/X	X/X	X/X
15:00 - 16:00	415	614	1029	X/X	323	218	X/X	X/X	X/X
16:00 - 17:00	401	794	1195	X/X	415	254	X/X	X/X	X/X
17:00 - 18:00	433	717	1150	X/X	275	225	X/X	X/X	X/X
18:00 - 19:00	289	500	789	X/X	183	140	X/X	X/X	X/X
19:00 - 20:00	232	301	533	X/	162	129	X/X	/X	X/
20:00 - 21:00	172	233	405	/	107	93	/X	/X	/
21:00 - 22:00	139	209	348	/	91	88	/X	/X	/
22:00 - 23:00	78	133	211	/	56	33	/	/	/
23:00 - 24:00	57	88	145	/	26	22	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	14	8	Satisfied
Warrant 2	11	8	Satisfied
Warrant 6	14	8	Satisfied, check accident record
Warrant 8	14	8	Satisfied
Warrant 9	13	4	Satisfied
Warrant 11	6	1	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-5 EB, W OF JCT OF CSAH 10	3
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30	Minor App2: TH-284 NB, S OF JCT OF TH-5	2
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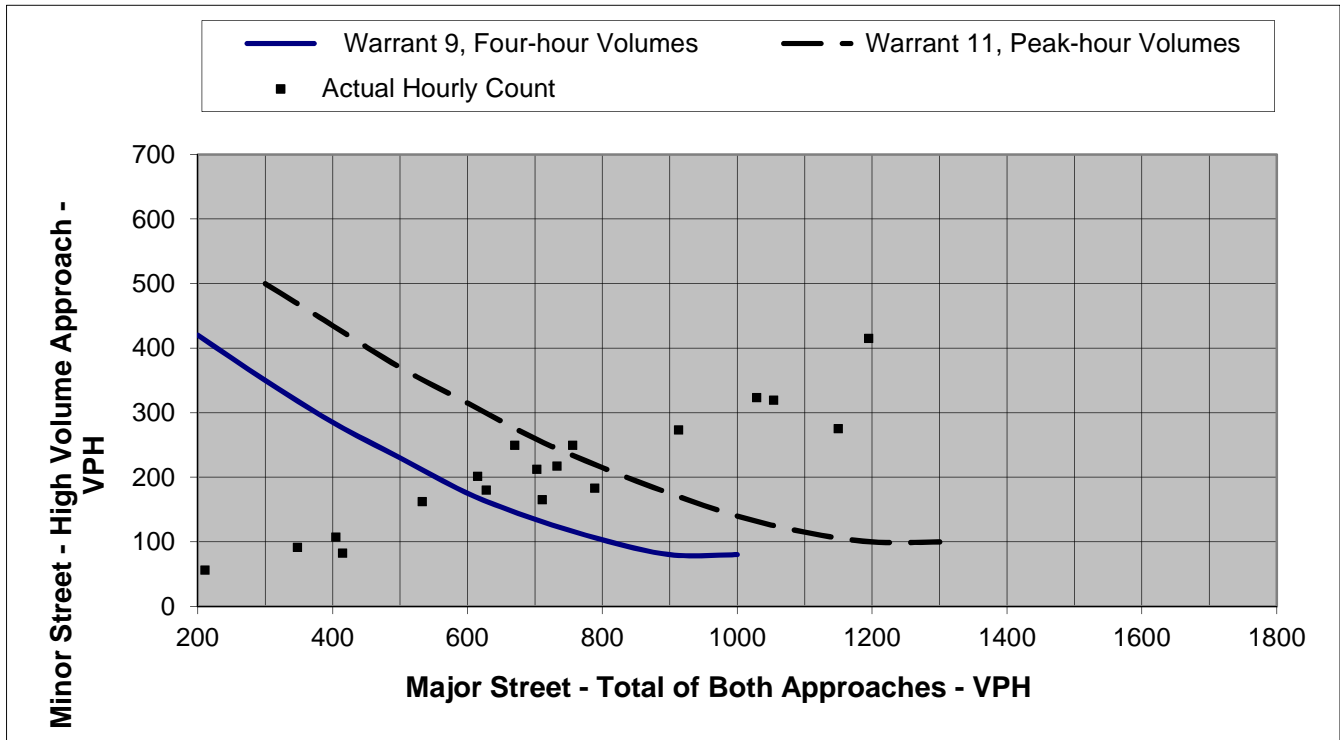


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		77	17
300	350	500	45	11
400	285	435	38	8
500	230	370	47	13
600	175	315	82	12
700	135	260	415	82
800	103	215	711	165
900	80	175	1054	319
1000	80	140	703	212
1100		115	628	180
1200		100	615	201
1300		100	670	249
1400			756	249
1500			733	217
1600			913	273
1700			1029	323
1800			1195	415
			1150	275
			789	183
			533	162
			405	107
			348	91
			211	56
			145	26

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-5 AT CSAH 10 W JCT

COUNTY: CARVER

REF. POINT: 032.167

DATE: 032+00.167

OPERATOR: DR

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45	Major App3: TH-5 WB, E OF JCT OF CSAH 10	3
30	Minor App2: TH-284 NB, S OF JCT OF TH-5	2
30	Minor App4: CSAH 10 SB, N OF TH-5	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	26	51	17	13	107	30	/
1:00 - 2:00	15	30	9	11	65	20	/
2:00 - 3:00	12	26	8	4	50	12	/
3:00 - 4:00	31	16	13	5	65	18	/
4:00 - 5:00	62	20	12	9	103	21	/
5:00 - 6:00	319	96	82	47	544	129	X/
6:00 - 7:00	487	224	165	105	981	270	X/X
7:00 - 8:00	571	483	319	173	1546	492	X/X
8:00 - 9:00	337	366	212	131	1046	343	X/X
9:00 - 10:00	287	341	180	129	937	309	X/X
10:00 - 11:00	294	321	201	144	960	345	X/X
11:00 - 12:00	338	332	249	166	1085	415	X/X
12:00 - 13:00	364	392	249	188	1193	437	X/X
13:00 - 14:00	335	398	217	152	1102	369	X/X
14:00 - 15:00	381	532	273	204	1390	477	X/X
15:00 - 16:00	415	614	323	218	1570	541	X/X
16:00 - 17:00	401	794	415	254	1864	669	X/X
17:00 - 18:00	433	717	275	225	1650	500	X/X
18:00 - 19:00	289	500	183	140	1112	323	X/X
19:00 - 20:00	232	301	162	129	824	291	X/X
20:00 - 21:00	172	233	107	93	605	200	X/X
21:00 - 22:00	139	209	91	88	527	179	X/X
22:00 - 23:00	78	133	56	33	300	89	/
23:00 - 24:00	57	88	26	22	193	48	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **16** 8 **Satisfied**

REMARKS: _____
