



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH-19 & CSAH-37  
 COUNTY: SCOTT  
 REF. POINT: 151.949  
 DATE: 10/21/1997  
 OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-19 EB, W OF CSAH-37	1
45	Major App3: TH-19 WB, E OF CSAH-37	1
30	Minor App2: CSAH-37 SB, N OF TH-19	1
0	Minor App4: N/A	0

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

HOUR	350/525			105/52		0/0		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	20	26	46	/	7	0	/	/	/
1:00 - 2:00	24	14	38	/	3	0	/	/	/
2:00 - 3:00	10	7	17	/	5	0	/	/	/
3:00 - 4:00	17	16	33	/	2	0	/	/	/
4:00 - 5:00	41	16	57	/	9	0	/	/	/
5:00 - 6:00	122	84	206	/	57	0	/X	/	/
6:00 - 7:00	211	142	353	X/	101	0	/X	/	/
7:00 - 8:00	270	335	605	X/X	157	0	X/X	/	X/X
8:00 - 9:00	252	272	524	X/	115	0	X/X	/	X/
9:00 - 10:00	279	231	510	X/	133	0	X/X	/	X/
10:00 - 11:00	247	227	474	X/	123	0	X/X	/	X/
11:00 - 12:00	261	253	514	X/	136	0	X/X	/	X/
12:00 - 13:00	301	248	549	X/X	187	0	X/X	/	X/X
13:00 - 14:00	266	255	521	X/	150	0	X/X	/	X/
14:00 - 15:00	303	293	596	X/X	207	0	X/X	/	X/X
15:00 - 16:00	229	340	569	X/X	220	0	X/X	/	X/X
16:00 - 17:00	367	428	795	X/X	200	0	X/X	/	X/X
17:00 - 18:00	381	401	782	X/X	190	0	X/X	/	X/X
18:00 - 19:00	267	347	614	X/X	175	0	X/X	/	X/X
19:00 - 20:00	193	216	409	X/	141	0	X/X	/	X/
20:00 - 21:00	150	162	312	/	94	0	/X	/	/
21:00 - 22:00	116	124	240	/	58	0	/X	/	/
22:00 - 23:00	80	77	157	/	48	0	/	/	/
23:00 - 24:00	36	35	71	/	15	0	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	13	8	Satisfied
Warrant 2	7	8	Not satisfied
Warrant 6	15	8	Satisfied, check accident record
Warrant 8	12	8	Satisfied
Warrant 9	10	4	Satisfied
Warrant 11	4	1	Satisfied

LOCATION: TH-19 & CSAH-37

COUNTY: SCOTT

REF. POINT: 151.949

DATE: 10/21/1997

OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-19 EB, W OF CSAH-37	1
45	Major App3: TH-19 WB, E OF CSAH-37	1
30	Minor App2: CSAH-37 SB, N OF TH-19	1
0	Minor App4: N/A	0

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

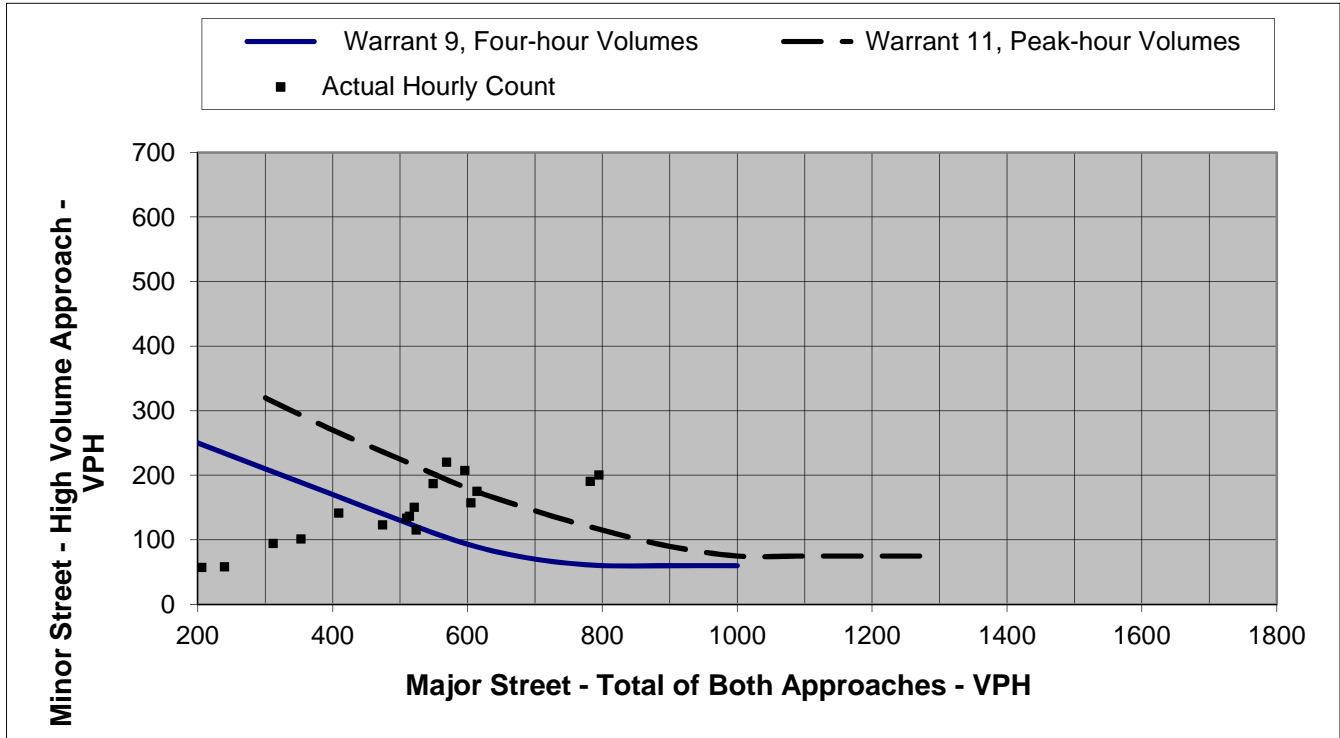


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	250		46	7
300	210	320	38	3
400	170	270	17	5
500	130	225	33	2
600	93	180	57	9
700	70	145	206	57
800	60	115	353	101
900	60	90	605	157
1000	60	75	524	115
1100		75	510	133
1200		75	474	123
1300		75	514	136
1400			549	187
1500			521	150
1600			596	207
1700			569	220
1800			795	200
			782	190
			614	175
			409	141
			312	94
			240	58
			157	48
			71	15

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-19 & CSAH-37

COUNTY: SCOTT

REF. POINT: 151.949

DATE: 10/21/1997

OPERATOR: DR

Speed	Approach Description	Lanes
45	Major App1: TH-19 EB, W OF CSAH-37	1
45	Major App3: TH-19 WB, E OF CSAH-37	1
30	Minor App2: CSAH-37 SB, N OF TH-19	1
0	Minor App4: N/A	0

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	20	26	7	0	53	7	/
1:00 - 2:00	24	14	3	0	41	3	/
2:00 - 3:00	10	7	5	0	22	5	/
3:00 - 4:00	17	16	2	0	35	2	/
4:00 - 5:00	41	16	9	0	66	9	/
5:00 - 6:00	122	84	57	0	263	57	/
6:00 - 7:00	211	142	101	0	454	101	X/
7:00 - 8:00	270	335	157	0	762	157	X/X
8:00 - 9:00	252	272	115	0	639	115	X/
9:00 - 10:00	279	231	133	0	643	133	X/
10:00 - 11:00	247	227	123	0	597	123	X/
11:00 - 12:00	261	253	136	0	650	136	X/
12:00 - 13:00	301	248	187	0	736	187	X/X
13:00 - 14:00	266	255	150	0	671	150	X/X
14:00 - 15:00	303	293	207	0	803	207	X/X
15:00 - 16:00	229	340	220	0	789	220	X/X
16:00 - 17:00	367	428	200	0	995	200	X/X
17:00 - 18:00	381	401	190	0	972	190	X/X
18:00 - 19:00	267	347	175	0	789	175	X/X
19:00 - 20:00	193	216	141	0	550	141	X/X
20:00 - 21:00	150	162	94	0	406	94	X/
21:00 - 22:00	116	124	58	0	298	58	/
22:00 - 23:00	80	77	48	0	205	48	/
23:00 - 24:00	36	35	15	0	86	15	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **9** **8** **Satisfied**

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

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