



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-10 AT FOLEY BLVD

COUNTY: ANOKA

REF. POINT: 231+00.948

DATE: 12/4/1996

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: FOLEY BLVD NB, S OF TH-10	3
40	Major App3: FOLEY BLVD SB, N OF TH-10	2
30	Minor App2: 99TH AVE NW EB, E OF FOLEY BLVD	2
55	Minor App4: TH-10 ENTRANCE RAMP FROM FOLEY BLVD	1

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

HOUR	335/503			111/55			83/41		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	86	29	115	/	10	1	/	/	/
1:00 - 2:00	49	13	62	/	7	0	/	/	/
2:00 - 3:00	30	19	49	/	5	3	/	/	/
3:00 - 4:00	25	25	50	/	10	1	/	/	/
4:00 - 5:00	21	112	133	/	26	0	/	/	/
5:00 - 6:00	61	535	596	X/X	98	4	/X	/	/X
6:00 - 7:00	160	1085	1245	X/X	226	7	X/X	/	X/X
7:00 - 8:00	199	1039	1238	X/X	270	10	X/X	/	X/X
8:00 - 9:00	177	566	743	X/X	195	12	X/X	/	X/X
9:00 - 10:00	165	361	526	X/X	157	6	X/X	/	X/X
10:00 - 11:00	172	299	471	X/	131	13	X/X	/	X/
11:00 - 12:00	213	276	489	X/	122	15	X/X	/	X/
12:00 - 13:00	287	298	585	X/X	126	12	X/X	/	X/X
13:00 - 14:00	281	346	627	X/X	151	16	X/X	/	X/X
14:00 - 15:00	451	378	829	X/X	182	15	X/X	/	X/X
15:00 - 16:00	734	415	1149	X/X	172	12	X/X	/	X/X
16:00 - 17:00	1123	464	1587	X/X	175	24	X/X	/	X/X
17:00 - 18:00	1258	405	1663	X/X	176	5	X/X	/	X/X
18:00 - 19:00	562	367	929	X/X	172	4	X/X	/	X/X
19:00 - 20:00	335	243	578	X/X	152	7	X/X	/	X/X
20:00 - 21:00	291	183	474	X/	98	2	/X	/	/
21:00 - 22:00	256	152	408	X/	67	2	/X	/	/
22:00 - 23:00	152	110	262	/	46	3	/	/	/
23:00 - 24:00	112	78	190	/	24	1	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	14	8	Satisfied
Warrant 2	13	8	Satisfied
Warrant 6	17	8	Satisfied, check accident record
Warrant 8	16	8	Satisfied
Warrant 9	8	4	Satisfied
Warrant 11	6	1	Satisfied

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 EXISTING SIGNAL ? YES

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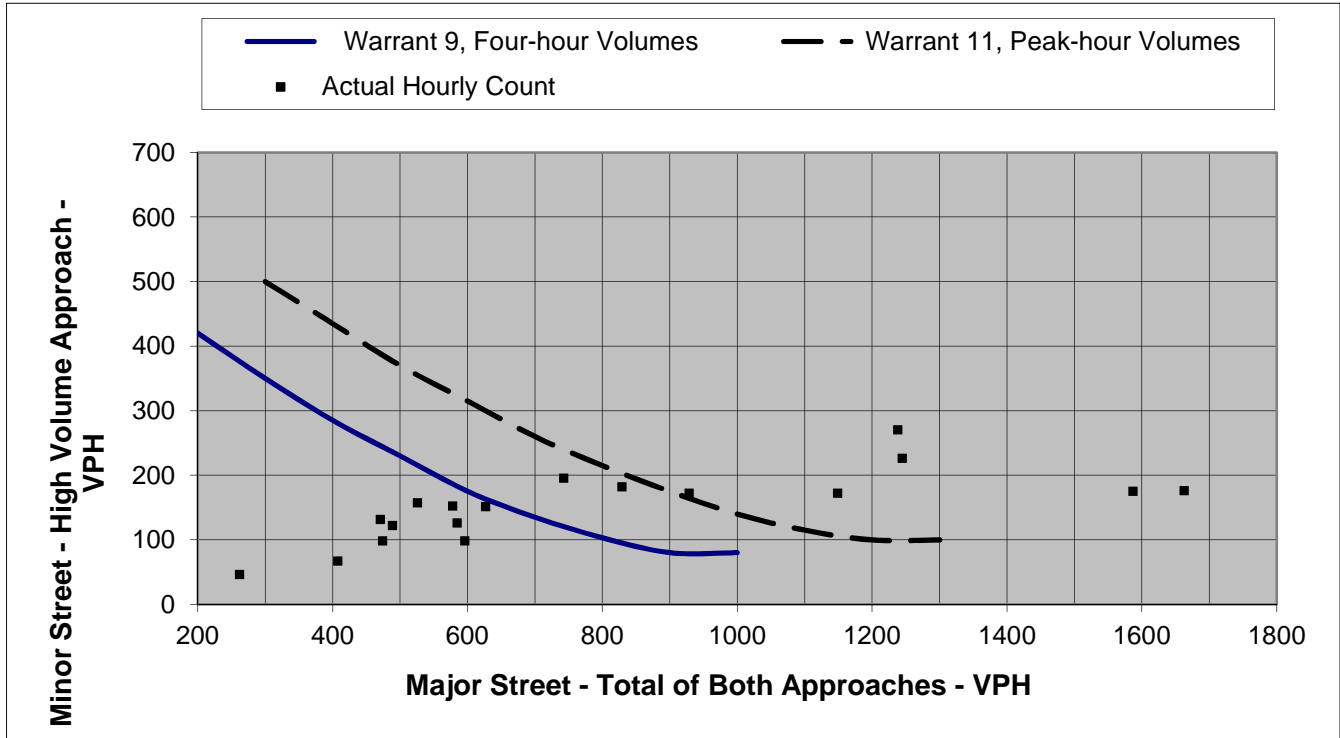


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		115	10
300	350	500	62	7
400	285	435	49	5
500	230	370	50	10
600	175	315	133	26
700	135	260	596	98
800	103	215	1245	226
900	80	175	1238	270
1000	80	140	743	195
1100		115	526	157
1200		100	471	131
1300		100	489	122
1400			585	126
1500			627	151
1600			829	182
1700			1149	172
1800			1587	175
			1663	176
			929	172
			578	152
			474	98
			408	67
			262	46
			190	24

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-10 AT FOLEY BLVD

COUNTY: ANOKA

REF. POINT: 231+00.948

DATE: 12/4/1996

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: FOLEY BLVD NB, S OF TH-10	3
40	Major App3: FOLEY BLVD SB, N OF TH-10	2
30	Minor App2: 99TH AVE NW EB, E OF FOLEY BLVD	2
55	Minor App4: TH-10 ENTRANCE RAMP FROM FOLEY BLVD	1

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	86	29	10	1	126	11	/
1:00 - 2:00	49	13	7	0	69	7	/
2:00 - 3:00	30	19	5	3	57	8	/
3:00 - 4:00	25	25	10	1	61	11	/
4:00 - 5:00	21	112	26	0	159	26	/
5:00 - 6:00	61	535	98	4	698	102	X/
6:00 - 7:00	160	1085	226	7	1478	233	X/X
7:00 - 8:00	199	1039	270	10	1518	280	X/X
8:00 - 9:00	177	566	195	12	950	207	X/X
9:00 - 10:00	165	361	157	6	689	163	X/X
10:00 - 11:00	172	299	131	13	615	144	X/X
11:00 - 12:00	213	276	122	15	626	137	X/
12:00 - 13:00	287	298	126	12	723	138	X/
13:00 - 14:00	281	346	151	16	794	167	X/X
14:00 - 15:00	451	378	182	15	1026	197	X/X
15:00 - 16:00	734	415	172	12	1333	184	X/X
16:00 - 17:00	1123	464	175	24	1786	199	X/X
17:00 - 18:00	1258	405	176	5	1844	181	X/X
18:00 - 19:00	562	367	172	4	1105	176	X/X
19:00 - 20:00	335	243	152	7	737	159	X/X
20:00 - 21:00	291	183	98	2	574	100	X/
21:00 - 22:00	256	152	67	2	477	69	X/
22:00 - 23:00	152	110	46	3	311	49	/
23:00 - 24:00	112	78	24	1	215	25	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **12** 8 **Satisfied**

REMARKS: _____

