



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH 55 AT CSAH 19 IN MEDINA

COUNTY: HENNEPIN

REF. POINT: 170+00.715

DATE: 3/21/2005

OPERATOR: MAR

Speed	Approach Description	Lanes
55	Major App1: TH 55 EB	3
55	Major App3: TH 55 WB	3
45	Minor App2: CSAH 19 NB	2
55	Minor App4: CSAH 19 SB	2

0.70 FACTOR USED?

YES

POPULATION < 10,000?

N

EXISTING SIGNAL ?

Y

THRESHOLDS 1A/1B:

420/630

140/70

140/70

HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A/1B	MINOR APP. 2	MINOR 2 1A/1B	MINOR APP. 4	MINOR 4 1A/1B	MET SAME 1A/1B
0:00 - 1:00	20	69	89	/	13	/	5	/	/
1:00 - 2:00	15	57	72	/	8	/	6	/	/
2:00 - 3:00	16	25	41	/	4	/	3	/	/
3:00 - 4:00	42	25	67	/	6	/	2	/	/
4:00 - 5:00	164	26	190	/	14	/	16	/	/
5:00 - 6:00	683	51	734	X/X	52	/	93	/X	/X
6:00 - 7:00	1154	153	1307	X/X	167	X/X	287	X/X	X/X
7:00 - 8:00	1178	238	1416	X/X	198	X/X	402	X/X	X/X
8:00 - 9:00	680	259	939	X/X	175	X/X	220	X/X	X/X
9:00 - 10:00	429	292	721	X/X	169	X/X	124	/X	X/X
10:00 - 11:00	381	300	681	X/X	147	X/X	117	/X	X/X
11:00 - 12:00	351	380	731	X/X	158	X/X	115	/X	X/X
12:00 - 13:00	335	381	716	X/X	214	X/X	106	/X	X/X
13:00 - 14:00	364	420	784	X/X	187	X/X	105	/X	X/X
14:00 - 15:00	378	608	986	X/X	184	X/X	124	/X	X/X
15:00 - 16:00	301	986	1287	X/X	270	X/X	113	/X	X/X
16:00 - 17:00	321	1169	1490	X/X	316	X/X	145	X/X	X/X
17:00 - 18:00	266	1113	1379	X/X	300	X/X	135	/X	X/X
18:00 - 19:00	244	634	878	X/X	159	X/X	86	/X	X/X
19:00 - 20:00	166	392	558	X/	103	/X	56	/	/
20:00 - 21:00	154	299	453	X/	68	/	38	/	/
21:00 - 22:00	103	257	360	/	50	/	33	/	/
22:00 - 23:00	79	168	247	/	41	/	32	/	/
23:00 - 24:00	29	140	169	/	22	/	15	/	/

Met (Hr)      Required (Hr)

Warrant 1A	13	8	Satisfied
Warrant 1B	14	8	Satisfied
Warrant 2	13	4	Satisfied
Warrant 3	7	1	Satisfied
Warrant 7	15	8	Satisfied, check accident record

Four Hour Warrant				Peak Hour Warrant		
Major App	Minor App			Major App	Minor App	
	1 & 1	2 & 1	2 & 2		1 & 1	2 & 1
300	360	440	590	400	475	570
400	310	390	530	500	425	520
500	260	340	460	600	370	465
600	215	290	390	700	330	420
700	180	245	330	800	280	370
800	150	205	280	900	240	330
900	125	170	235	1000	204	285
1000	100	145	195	1100	175	250
1100	85	120	165	1200	150	220
1200	80	100	135	1300	130	190
1300	80	83	115	1400	115	160
1400	80	80	115	1500	100	140
1500	80	80	115	1600	100	115
1600	80	80	115	1700	100	100
1700	80	80	115	1800	100	100
1800	80	80	115			

Four Hour Warrant Factored				Peak Hour Warrant Factored		
Major App	Minor App			Major App	Minor App	
	1 & 1	2 & 1	2 & 2		1 & 1	2 & 1
200	250	320	420	300	320	380
300	210	265	350	400	270	335
400	170	215	285	500	225	285
500	130	170	230	600	180	240
600	93	130	175	700	145	200
700	70	100	135	800	115	160
800	60	80	103	900	90	135
900	60	65	80	1000	75	110
1000	60	60	80	1100	75	95
1100	60	60	80	1200	75	75
1200	60	60	80	1300	75	75
1300	60	60	80	1400	75	75
1400	60	60	80	1500	75	75
1500	60	60	80	1600	75	75
1600	60	60	80	1700	75	75
1700	60	60	80	1800	75	75
1800	60	60	80			

2 & 2  
725  
665  
600  
540  
480  
425  
375  
330  
285  
250  
220  
187  
165  
150  
150

ctored

2 & 2  
500  
435  
370  
315  
260  
215  
175  
140  
115  
100  
100  
100  
100  
100  
100  
100

LOCATION: TH 55 AT CSAH 19 IN MEDINA

COUNTY: HENNEPIN

REF. POINT: 170+00.715

DATE: 3/21/2005

OPERATOR: MAR

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55	Major App1: TH 55 EB	3
55	Major App3: TH 55 WB	3
45	Minor App2: CSAH 19 NB	2
55	Minor App4: CSAH 19 SB	2

0.70 FACTOR USED? YES  
 POPULATION < 10,000? N  
 EXISTING SIGNAL ? Y

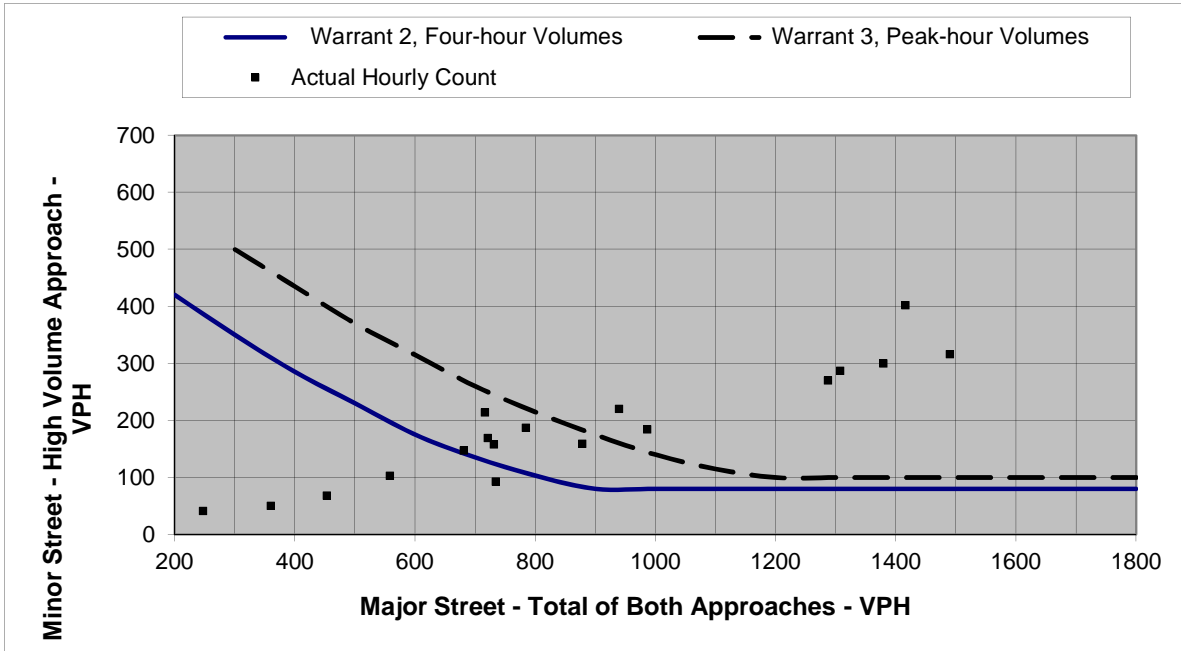


Figure 1. Four Hour and Peak Hour Warrant Analysis

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

Major	Warrant Criteria		Actual Hourly Count	
	Warrant 2, F	Warrant 3, Pe	Major	Actual Hourly Count
200	420		89	13
300	350	500	72	8
400	285	435	41	4
500	230	370	67	6
600	175	315	190	16
700	135	260	734	93
800	103	215	1307	287
900	80	175	1416	402
1000	80	140	939	220
1100	80	115	721	169
1200	80	100	681	147
1300	80	100	731	158
1400	80	100	716	214
1500	80	100	784	187
1600	80	100	986	184
1700	80	100	1287	270
1800	80	100	1490	316
			1379	300
			878	159
			558	103
			453	68
			360	50
			247	41
			169	22



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### ALL WAY STOP WARRANT

LOCATION: TH 55 AT CSAH 19 IN MEDINA

COUNTY: HENNEPIN

REF. POINT: 170+00.715

DATE: 3/21/2005

OPERATOR: MAR

Speed	Approach Description	Lanes
55	Major App1: TH 55 EB	3
55	Major App3: TH 55 WB	3
45	Minor App2: CSAH 19 NB	2
55	Minor App4: CSAH 19 SB	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	20	69	13	5	107	18	/
1:00 - 2:00	15	57	8	6	86	14	/
2:00 - 3:00	16	25	4	3	48	7	/
3:00 - 4:00	42	25	6	2	75	8	/
4:00 - 5:00	164	26	14	16	220	30	/
5:00 - 6:00	683	51	52	93	879	145	X/X
6:00 - 7:00	1154	153	167	287	1761	454	X/X
7:00 - 8:00	1178	238	198	402	2016	600	X/X
8:00 - 9:00	680	259	175	220	1334	395	X/X
9:00 - 10:00	429	292	169	124	1014	293	X/X
10:00 - 11:00	381	300	147	117	945	264	X/X
11:00 - 12:00	351	380	158	115	1004	273	X/X
12:00 - 13:00	335	381	214	106	1036	320	X/X
13:00 - 14:00	364	420	187	105	1076	292	X/X
14:00 - 15:00	378	608	184	124	1294	308	X/X
15:00 - 16:00	301	986	270	113	1670	383	X/X
16:00 - 17:00	321	1169	316	145	1951	461	X/X
17:00 - 18:00	266	1113	300	135	1814	435	X/X
18:00 - 19:00	244	634	159	86	1123	245	X/X
19:00 - 20:00	166	392	103	56	717	159	X/X
20:00 - 21:00	154	299	68	38	559	106	X/
21:00 - 22:00	103	257	50	33	443	83	X/
22:00 - 23:00	79	168	41	32	320	73	/
23:00 - 24:00	29	140	22	15	206	37	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **15** 8 **Satisfied**

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

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