



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: I-35E & MARYLAND AVE., W RAMPS

COUNTY: RAMSEY

REF. POINT: 109.342

DATE: 10/26/1995

OPERATOR: DR

Speed	Approach Description	Lanes
30	Major App1: MARYLAND AVE. EB, W OF W RAMPS OF I-35E	3
30	Major App3: MARYLAND AVE. WB, E OF W RAMPS OF I-35E	3
0	Minor App2: N/A	0
30	Minor App4: I-35E SB RAMP TO MARYLAND AVE.	2

0.70 FACTOR USED? NO

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	600/900			0/0		200/100		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	84	158	242	/	0	69	/	/	/
1:00 - 2:00	61	112	173	/	0	55	/	/	/
2:00 - 3:00	34	72	106	/	0	40	/	/	/
3:00 - 4:00	28	69	97	/	0	34	/	/	/
4:00 - 5:00	39	132	171	/	0	44	/	/	/
5:00 - 6:00	92	336	428	/	0	114	/	/X	/
6:00 - 7:00	225	843	1068	X/X	0	322	/	X/X	X/X
7:00 - 8:00	413	1222	1635	X/X	0	342	/	X/X	X/X
8:00 - 9:00	403	966	1369	X/X	0	359	/	X/X	X/X
9:00 - 10:00	389	818	1207	X/X	0	319	/	X/X	X/X
10:00 - 11:00	427	836	1263	X/X	0	310	/	X/X	X/X
11:00 - 12:00	516	936	1452	X/X	0	297	/	X/X	X/X
12:00 - 13:00	514	976	1490	X/X	0	388	/	X/X	X/X
13:00 - 14:00	562	974	1536	X/X	0	368	/	X/X	X/X
14:00 - 15:00	649	1133	1782	X/X	0	410	/	X/X	X/X
15:00 - 16:00	827	1152	1979	X/X	0	485	/	X/X	X/X
16:00 - 17:00	1011	1034	2045	X/X	0	480	/	X/X	X/X
17:00 - 18:00	895	966	1861	X/X	0	441	/	X/X	X/X
18:00 - 19:00	645	946	1591	X/X	0	421	/	X/X	X/X
19:00 - 20:00	446	702	1148	X/X	0	313	/	X/X	X/X
20:00 - 21:00	378	602	980	X/X	0	247	/	X/X	X/X
21:00 - 22:00	330	503	833	X/	0	222	/	X/X	X/
22:00 - 23:00	223	403	626	X/	0	167	/	/X	/
23:00 - 24:00	157	244	401	/	0	131	/	/X	/

	Met (Hr)	Required (Hr)	
Warrant 1	16	8	Satisfied
Warrant 2	15	8	Satisfied
Warrant 6	17	8	Satisfied, check accident record
Warrant 8	16	8	Satisfied
Warrant 9	15	4	Satisfied
Warrant 11	13	1	Satisfied

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COUNTY: RAMSEY

REF. POINT: 109.342

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OPERATOR: DR

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

Speed	Approach Description	Lanes
30	Major App1: MARYLAND AVE. EB, W OF W RAMPS OF I-35E	3
30	Major App3: MARYLAND AVE. WB, E OF W RAMPS OF I-35E	3
0	Minor App2: N/A	0
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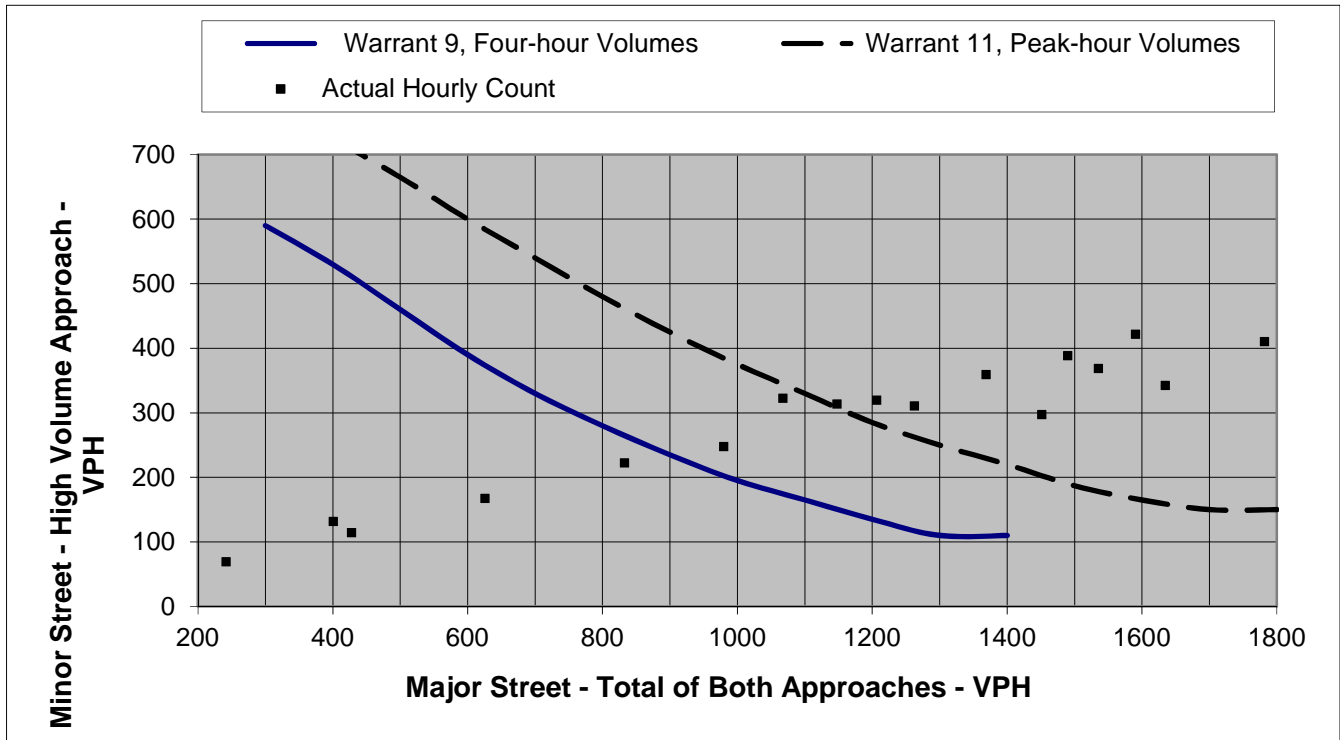


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			242	69
300	590		173	55
400	530	725	106	40
500	460	665	97	34
600	390	600	171	44
700	330	540	428	114
800	280	480	1068	322
900	235	425	1635	342
1000	195	375	1369	359
1100	165	330	1207	319
1200	135	285	1263	310
1300	110	250	1452	297
1400	110	220	1490	388
1500		187	1536	368
1600		165	1782	410
1700		150	1979	485
1800		150	2045	480
			1861	441
			1591	421
			1148	313
			980	247
			833	222
			626	167
			401	131

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: I-35E & MARYLAND AVE., W RAMPS

COUNTY: RAMSEY

REF. POINT: 109.342

DATE: 10/26/1995

OPERATOR: DR

Speed	Approach Description	Lanes
30	Major App1: MARYLAND AVE. EB, W OF W RAMPS OF I-35E	3
30	Major App3: MARYLAND AVE. WB, E OF W RAMPS OF I-35E	3
0	Minor App2: N/A	0
30	Minor App4: I-35E SB RAMP TO MARYLAND AVE.	2

0.70 FACTOR USED? No

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	500	200	WARRANT MET
					TOTAL Σ (APP.1 to APP. 4)	MINOR TOTAL APP. 2 + APP. 4	
0:00 - 1:00	84	158	0	69	311	69	/
1:00 - 2:00	61	112	0	55	228	55	/
2:00 - 3:00	34	72	0	40	146	40	/
3:00 - 4:00	28	69	0	34	131	34	/
4:00 - 5:00	39	132	0	44	215	44	/
5:00 - 6:00	92	336	0	114	542	114	X/
6:00 - 7:00	225	843	0	322	1390	322	X/X
7:00 - 8:00	413	1222	0	342	1977	342	X/X
8:00 - 9:00	403	966	0	359	1728	359	X/X
9:00 - 10:00	389	818	0	319	1526	319	X/X
10:00 - 11:00	427	836	0	310	1573	310	X/X
11:00 - 12:00	516	936	0	297	1749	297	X/X
12:00 - 13:00	514	976	0	388	1878	388	X/X
13:00 - 14:00	562	974	0	368	1904	368	X/X
14:00 - 15:00	649	1133	0	410	2192	410	X/X
15:00 - 16:00	827	1152	0	485	2464	485	X/X
16:00 - 17:00	1011	1034	0	480	2525	480	X/X
17:00 - 18:00	895	966	0	441	2302	441	X/X
18:00 - 19:00	645	946	0	421	2012	421	X/X
19:00 - 20:00	446	702	0	313	1461	313	X/X
20:00 - 21:00	378	602	0	247	1227	247	X/X
21:00 - 22:00	330	503	0	222	1055	222	X/X
22:00 - 23:00	223	403	0	167	793	167	X/
23:00 - 24:00	157	244	0	131	532	131	X/

Met (Hr) Required (Hr)

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

REMARKS: _____

