



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-280 EAST RAMPS - COMO & EUSTIS

COUNTY: RAMSEY

REF. POINT: 001.858

DATE: 8/12/1996

OPERATOR: RE

Speed	Approach Description	Lanes
30	Major App1: COMO AVE. EB, W OF EUSTIS ST.	1
30	Major App3: COMO AVE. WB, E OF EUSTIS ST.	1
30	Minor App2: EUSTIS ST. NB, S OF COMO AVE.	2
30	Minor App4: EUSTIS ST. SB, N OF COMO AVE.	1

0.70 FACTOR USED? NO

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	500/750				200/100		150/75		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	71	23	94	/	47	17	/	/	/
1:00 - 2:00	40	10	50	/	30	12	/	/	/
2:00 - 3:00	10	8	18	/	15	11	/	/	/
3:00 - 4:00	6	5	11	/	14	4	/	/	/
4:00 - 5:00	7	10	17	/	32	5	/	/	/
5:00 - 6:00	40	40	80	/	97	31	/	/	/
6:00 - 7:00	100	146	246	/	206	96	X/X	/X	/
7:00 - 8:00	188	371	559	X/	296	245	X/X	X/X	X/
8:00 - 9:00	223	329	552	X/	338	176	X/X	X/X	X/
9:00 - 10:00	251	261	512	X/	307	142	X/X	/X	X/
10:00 - 11:00	252	281	533	X/	401	133	X/X	/X	X/
11:00 - 12:00	321	307	628	X/	420	138	X/X	/X	X/
12:00 - 13:00	324	354	678	X/	380	173	X/X	X/X	X/
13:00 - 14:00	305	340	645	X/	343	151	X/X	X/X	X/
14:00 - 15:00	324	341	665	X/	373	165	X/X	X/X	X/
15:00 - 16:00	403	319	722	X/	350	141	X/X	/X	X/
16:00 - 17:00	448	374	822	X/X	341	192	X/X	X/X	X/X
17:00 - 18:00	379	327	706	X/	371	183	X/X	X/X	X/
18:00 - 19:00	240	263	503	X/	259	123	X/X	/X	X/
19:00 - 20:00	186	191	377	/	200	85	X/X	/X	/
20:00 - 21:00	164	181	345	/	194	72	/X	/	/
21:00 - 22:00	135	149	284	/	194	71	/X	/	/
22:00 - 23:00	86	90	176	/	158	65	/X	/	/
23:00 - 24:00	72	48	120	/	101	28	/X	/	/

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

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COUNTY: RAMSEY

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OPERATOR: RE

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

Speed	Approach Description	Lanes
30	Major App1: COMO AVE. EB, W OF EUSTIS ST.	1
30	Major App3: COMO AVE. WB, E OF EUSTIS ST.	1
30	Minor App2: EUSTIS ST. NB, S OF COMO AVE.	2
30	Minor App4: EUSTIS ST. SB, N OF COMO AVE.	1

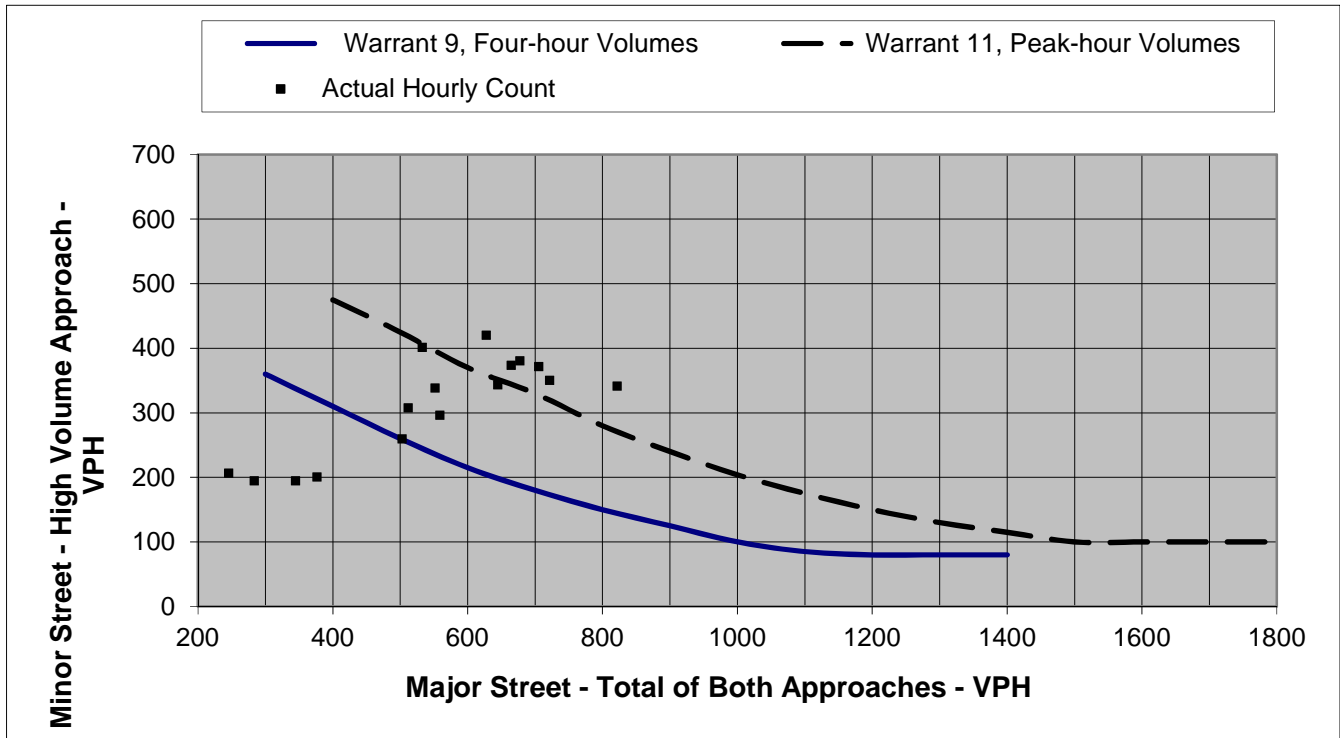


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			94	47
300	360		50	30
400	310	475	18	15
500	260	425	11	14
600	215	370	17	32
700	180	330	80	97
800	150	280	246	206
900	125	240	559	296
1000	100	204	552	338
1100	85	175	512	307
1200	80	150	533	401
1300	80	130	628	420
1400	80	115	678	380
1500		100	645	343
1600		100	665	373
1700		100	722	350
1800		100	822	341
			706	371
			503	259
			377	200
			345	194
			284	194
			176	158
			120	101

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-280 EAST RAMPS - COMO & EUSTIS

COUNTY: RAMSEY

REF. POINT: 001.858

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
30	Major App1: COMO AVE. EB, W OF EUSTIS ST.	1
30	Major App3: COMO AVE. WB, E OF EUSTIS ST.	1
30	Minor App2: EUSTIS ST. NB, S OF COMO AVE.	2
30	Minor App4: EUSTIS ST. SB, N OF COMO AVE.	1

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	71	23	47	17	158	64	/
1:00 - 2:00	40	10	30	12	92	42	/
2:00 - 3:00	10	8	15	11	44	26	/
3:00 - 4:00	6	5	14	4	29	18	/
4:00 - 5:00	7	10	32	5	54	37	/
5:00 - 6:00	40	40	97	31	208	128	/
6:00 - 7:00	100	146	206	96	548	302	X/X
7:00 - 8:00	188	371	296	245	1100	541	X/X
8:00 - 9:00	223	329	338	176	1066	514	X/X
9:00 - 10:00	251	261	307	142	961	449	X/X
10:00 - 11:00	252	281	401	133	1067	534	X/X
11:00 - 12:00	321	307	420	138	1186	558	X/X
12:00 - 13:00	324	354	380	173	1231	553	X/X
13:00 - 14:00	305	340	343	151	1139	494	X/X
14:00 - 15:00	324	341	373	165	1203	538	X/X
15:00 - 16:00	403	319	350	141	1213	491	X/X
16:00 - 17:00	448	374	341	192	1355	533	X/X
17:00 - 18:00	379	327	371	183	1260	554	X/X
18:00 - 19:00	240	263	259	123	885	382	X/X
19:00 - 20:00	186	191	200	85	662	285	X/X
20:00 - 21:00	164	181	194	72	611	266	X/X
21:00 - 22:00	135	149	194	71	549	265	X/X
22:00 - 23:00	86	90	158	65	399	223	/X
23:00 - 24:00	72	48	101	28	249	129	/

Met (Hr) Required (Hr)

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

REMARKS: _____

