



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: I-35W AT CO.RD.E2, EAST RAMPS
 COUNTY: RAMSEY
 REF. POINT: 026.067
 DATE: 4/8/2002
 OPERATOR: RE

Speed	Approach Description	Lanes
35	Major App1: CO.RD.E2 EB, W OF E RAMPS OF I-35W	1
35	Major App3: CO.RD.E2 WB, E OF E RAMPS OF I-35W	2
55	Minor App2: I-35W NB RAMP TO CO.RD.E2	2
0	Minor App4: N/A	0

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

HOUR	600/900				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	43	35	78	/	40	0	/		/
1:00 - 2:00	35	21	56	/	23	0	/		/
2:00 - 3:00	32	12	44	/	16	0	/		/
3:00 - 4:00	20	3	23	/	10	0	/		/
4:00 - 5:00	22	14	36	/	20	0	/		/
5:00 - 6:00	71	41	112	/	28	0	/		/
6:00 - 7:00	216	158	374	/	103	0	/X		/
7:00 - 8:00	506	359	865	X/	181	0	/X		/
8:00 - 9:00	425	246	671	X/	192	0	/X		/
9:00 - 10:00	342	210	552	/	189	0	/X		/
10:00 - 11:00	313	180	493	/	185	0	/X		/
11:00 - 12:00	388	202	590	/	190	0	/X		/
12:00 - 13:00	389	258	647	X/	220	0	X/X		X/
13:00 - 14:00	368	269	637	X/	229	0	X/X		X/
14:00 - 15:00	476	340	816	X/	257	0	X/X		X/
15:00 - 16:00	576	460	1036	X/X	232	0	X/X		X/X
16:00 - 17:00	654	679	1333	X/X	179	0	/X		/X
17:00 - 18:00	652	706	1358	X/X	173	0	/X		/X
18:00 - 19:00	333	328	661	X/	205	0	X/X		X/
19:00 - 20:00	245	224	469	/	133	0	/X		/
20:00 - 21:00	201	195	396	/	128	0	/X		/
21:00 - 22:00	192	191	383	/	118	0	/X		/
22:00 - 23:00	119	153	272	/	85	0	/		/
23:00 - 24:00	91	71	162	/	47	0	/		/

	Met (Hr)	Required (Hr)	
Warrant 1	5	8	Not satisfied
Warrant 2	3	8	Not satisfied
Warrant 6	12	8	Satisfied, check accident record
Warrant 8	5	8	Not satisfied
Warrant 9	3	4	Not satisfied
Warrant 11	0	1	Not satisfied

LOCATION: I-35W AT CO.RD.E2, EAST RAMPS

COUNTY: RAMSEY

REF. POINT: 026.067

DATE: 4/8/2002

OPERATOR: RE

Speed	Approach Description	Lanes
35	Major App1: CO.RD.E2 EB, W OF E RAMPS OF I-35W	1
35	Major App3: CO.RD.E2 WB, E OF E RAMPS OF I-35W	2
55	Minor App2: I-35W NB RAMP TO CO.RD.E2	2
0	Minor App4: N/A	0

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

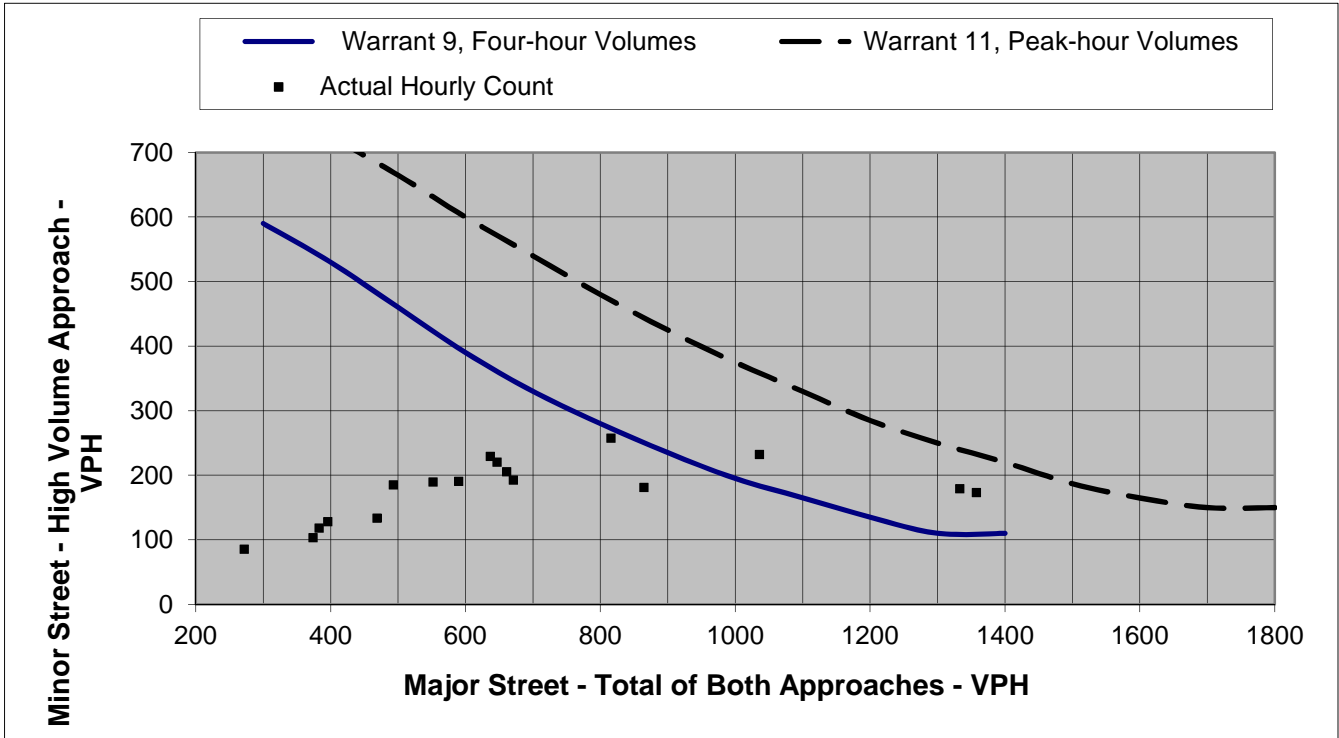


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			78	40
300	590		56	23
400	530	725	44	16
500	460	665	23	10
600	390	600	36	20
700	330	540	112	28
800	280	480	374	103
900	235	425	865	181
1000	195	375	671	192
1100	165	330	552	189
1200	135	285	493	185
1300	110	250	590	190
1400	110	220	647	220
1500		187	637	229
1600		165	816	257
1700		150	1036	232
1800		150	1333	179
			1358	173
			661	205
			469	133
			396	128
			383	118
			272	85
			162	47

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-35W AT CO.RD.E2, EAST RAMPS

COUNTY: RAMSEY

REF. POINT: 026.067

DATE: 4/8/2002

OPERATOR: RE

Speed	Approach Description	Lanes
35	Major App1: CO.RD.E2 EB, W OF E RAMPS OF I-35W	1
35	Major App3: CO.RD.E2 WB, E OF E RAMPS OF I-35W	2
55	Minor App2: I-35W NB RAMP TO CO.RD.E2	2
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	43	35	40	0	118	40	/
1:00 - 2:00	35	21	23	0	79	23	/
2:00 - 3:00	32	12	16	0	60	16	/
3:00 - 4:00	20	3	10	0	33	10	/
4:00 - 5:00	22	14	20	0	56	20	/
5:00 - 6:00	71	41	28	0	140	28	/
6:00 - 7:00	216	158	103	0	477	103	X/
7:00 - 8:00	506	359	181	0	1046	181	X/X
8:00 - 9:00	425	246	192	0	863	192	X/X
9:00 - 10:00	342	210	189	0	741	189	X/X
10:00 - 11:00	313	180	185	0	678	185	X/X
11:00 - 12:00	388	202	190	0	780	190	X/X
12:00 - 13:00	389	258	220	0	867	220	X/X
13:00 - 14:00	368	269	229	0	866	229	X/X
14:00 - 15:00	476	340	257	0	1073	257	X/X
15:00 - 16:00	576	460	232	0	1268	232	X/X
16:00 - 17:00	654	679	179	0	1512	179	X/X
17:00 - 18:00	652	706	173	0	1531	173	X/X
18:00 - 19:00	333	328	205	0	866	205	X/X
19:00 - 20:00	245	224	133	0	602	133	X/
20:00 - 21:00	201	195	128	0	524	128	X/
21:00 - 22:00	192	191	118	0	501	118	X/
22:00 - 23:00	119	153	85	0	357	85	X/
23:00 - 24:00	91	71	47	0	209	47	/

Met (Hr) Required (Hr)

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

REMARKS: _____



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: CO.RD.E2 EB, W OF E RAMPS OF I-35W

COUNTY: RAMSEY

REF. PT.: 026.067

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **April 8, 2002**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		48	38					43	
1:00 - 2:00		31	40					35	
2:00 - 3:00		28	37					32	
3:00 - 4:00		23	18					20	
4:00 - 5:00		18	27					22	
5:00 - 6:00		73	69					71	
6:00 - 7:00		209	223					216	
7:00 - 8:00		495	518					506	
8:00 - 9:00		363	488					425	
9:00 - 10:00		342						342	
10:00 - 11:00		313						313	
11:00 - 12:00		388						388	
12:00 - 13:00	385	393						389	
13:00 - 14:00	367	370						368	
14:00 - 15:00	452	501						476	
15:00 - 16:00	552	601						576	
16:00 - 17:00	632	677						654	
17:00 - 18:00	591	713						652	
18:00 - 19:00	340	326						333	
19:00 - 20:00	209	282						245	
20:00 - 21:00	196	207						201	
21:00 - 22:00	200	185						192	
22:00 - 23:00	106	132						119	
23:00 - 24:00	87	95						91	
TOTAL	4117	6813	1458					6709	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\EBE235ER



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: I-35W NB RAMP TO CO.RD.E2

COUNTY: RAMSEY

REF. PT.: 026.067

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **April 8, 2002**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		33	42	42	43			40	
1:00 - 2:00		23	21	16	33			23	
2:00 - 3:00		14	17	16	20			16	
3:00 - 4:00		9	10	10	13			10	
4:00 - 5:00		19	21	21	19			20	
5:00 - 6:00		29	27	30	28			28	
6:00 - 7:00		103	104	111	95			103	
7:00 - 8:00		172	174	181	200			181	
8:00 - 9:00		178	193	207	191			192	
9:00 - 10:00		184	194	191	187			189	
10:00 - 11:00		178	202	177				185	
11:00 - 12:00		185	193	194				190	
12:00 - 13:00	221	232	217	213				220	
13:00 - 14:00	202	260	244	213				229	
14:00 - 15:00	223	263	289	253				257	
15:00 - 16:00	248	244	234	204				232	
16:00 - 17:00	224	135	203	156				179	
17:00 - 18:00	207	154	165	169				173	
18:00 - 19:00	188	224	177	231				205	
19:00 - 20:00	124	153	117	141				133	
20:00 - 21:00	134	116	150	112				128	
21:00 - 22:00	101	130	119	123				118	
22:00 - 23:00	71	92	99	79				85	
23:00 - 24:00	35	43	47	63				47	
TOTAL	1978	3173	3259	3153	829			3183	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\N35WE2ER



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: CO.RD.E2 WB, E OF E RAMPS OF I-35W

COUNTY: RAMSEY

REF. PT.: 026.067

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **April 8, 2002**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		41	38	36	27			35	
1:00 - 2:00		20	22	22	23			21	
2:00 - 3:00		15	10	8	17			12	
3:00 - 4:00		4	3	5	3			3	
4:00 - 5:00		11	14	18	14			14	
5:00 - 6:00		41	39	42	45			41	
6:00 - 7:00		169	154	168	141			158	
7:00 - 8:00		381	344	372	340			359	
8:00 - 9:00		242	249	275	220			246	
9:00 - 10:00		197	205	220	218			210	
10:00 - 11:00		171	180	189				180	
11:00 - 12:00	194	219	189	206				202	
12:00 - 13:00	272	262	231	269				258	
13:00 - 14:00	260	278	264	276				269	
14:00 - 15:00	296	331	382	352				340	
15:00 - 16:00	384	516	447	496				460	
16:00 - 17:00	591	793	640	692				679	
17:00 - 18:00	563	728	836	700				706	
18:00 - 19:00	341	334	294	345				328	
19:00 - 20:00	251	218	199	231				224	
20:00 - 21:00	216	204	171	189				195	
21:00 - 22:00	256	187	141	182				191	
22:00 - 23:00	141	156	99	216				153	
23:00 - 24:00	66	66	67	87				71	
TOTAL	3831	5584	5218	5596	1048			5355	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\WBE235ER



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #:

COUNTY:

REF. PT.:

SITE CODE:

OPERATOR:

FOR COUNTS BEGINNING:

DATE HOUR \ DAY	MON.	TUE.	WED.	THU.	FRI.	SAT.	SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00									
1:00 - 2:00									
2:00 - 3:00									
3:00 - 4:00									
4:00 - 5:00									
5:00 - 6:00									
6:00 - 7:00									
7:00 - 8:00									
8:00 - 9:00									
9:00 - 10:00									
10:00 - 11:00									
11:00 - 12:00									
12:00 - 13:00									
13:00 - 14:00									
14:00 - 15:00									
15:00 - 16:00									
16:00 - 17:00									
17:00 - 18:00									
18:00 - 19:00									
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									

TOTAL

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE -->