



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: I-35W AT CO.RD.E2, WEST 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 W RAMPS OF I-35W	2
35	Major App3: CO.RD.E2 WB, E OF W RAMPS OF I-35W	1
55	Minor App2: I-35W SB 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	34	59	93	/	26	0	/		/
1:00 - 2:00	28	33	61	/	20	0	/		/
2:00 - 3:00	31	22	53	/	11	0	/		/
3:00 - 4:00	18	10	28	/	23	0	/		/
4:00 - 5:00	24	24	48	/	41	0	/		/
5:00 - 6:00	66	49	115	/	141	0	/X		/
6:00 - 7:00	247	194	441	/	224	0	X/X		/
7:00 - 8:00	565	371	936	X/X	215	0	X/X		X/X
8:00 - 9:00	425	307	732	X/	242	0	X/X		X/
9:00 - 10:00	335	280	615	X/	189	0	/X		/
10:00 - 11:00	315	238	553	/	168	0	/X		/
11:00 - 12:00	378	293	671	X/	190	0	/X		/
12:00 - 13:00	395	352	747	X/	208	0	X/X		X/
13:00 - 14:00	346	370	716	X/	207	0	X/X		X/
14:00 - 15:00	394	416	810	X/	230	0	X/X		X/
15:00 - 16:00	502	483	985	X/X	230	0	X/X		X/X
16:00 - 17:00	547	581	1128	X/X	226	0	X/X		X/X
17:00 - 18:00	519	516	1035	X/X	194	0	/X		/X
18:00 - 19:00	292	338	630	X/	163	0	/X		/
19:00 - 20:00	181	241	422	/	132	0	/X		/
20:00 - 21:00	132	214	346	/	120	0	/X		/
21:00 - 22:00	121	209	330	/	121	0	/X		/
22:00 - 23:00	69	148	217	/	103	0	/X		/
23:00 - 24:00	61	80	141	/	50	0	/		/

	Met (Hr)	Required (Hr)	
Warrant 1	7	8	Not satisfied
Warrant 2	4	8	Not satisfied
Warrant 6	12	8	Satisfied, check accident record
Warrant 8	7	8	Not satisfied
Warrant 9	3	4	Not satisfied
Warrant 11	0	1	Not satisfied

LOCATION: I-35W AT CO.RD.E2, WEST 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 W RAMPS OF I-35W	2
35	Major App3: CO.RD.E2 WB, E OF W RAMPS OF I-35W	1
55	Minor App2: I-35W SB RAMP TO CO.RD.E2	2
0	Minor App4: N/A	0

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

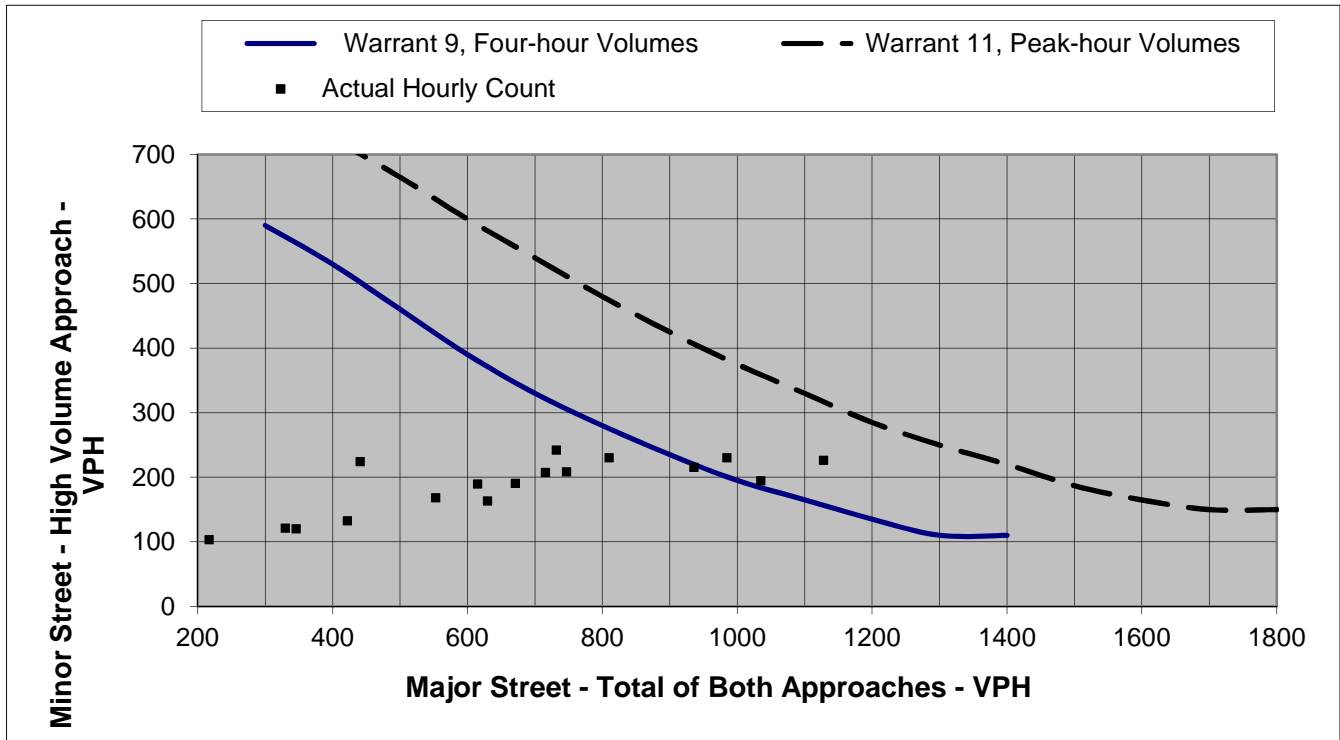


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			93	26
300	590		61	20
400	530	725	53	11
500	460	665	28	23
600	390	600	48	41
700	330	540	115	141
800	280	480	441	224
900	235	425	936	215
1000	195	375	732	242
1100	165	330	615	189
1200	135	285	553	168
1300	110	250	671	190
1400	110	220	747	208
1500		187	716	207
1600		165	810	230
1700		150	985	230
1800		150	1128	226
			1035	194
			630	163
			422	132
			346	120
			330	121
			217	103
			141	50

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, WEST 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 W RAMPS OF I-35W	2
35	Major App3: CO.RD.E2 WB, E OF W RAMPS OF I-35W	1
55	Minor App2: I-35W SB 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	34	59	26	0	119	26	/
1:00 - 2:00	28	33	20	0	81	20	/
2:00 - 3:00	31	22	11	0	64	11	/
3:00 - 4:00	18	10	23	0	51	23	/
4:00 - 5:00	24	24	41	0	89	41	/
5:00 - 6:00	66	49	141	0	256	141	/X
6:00 - 7:00	247	194	224	0	665	224	X/X
7:00 - 8:00	565	371	215	0	1151	215	X/X
8:00 - 9:00	425	307	242	0	974	242	X/X
9:00 - 10:00	335	280	189	0	804	189	X/X
10:00 - 11:00	315	238	168	0	721	168	X/X
11:00 - 12:00	378	293	190	0	861	190	X/X
12:00 - 13:00	395	352	208	0	955	208	X/X
13:00 - 14:00	346	370	207	0	923	207	X/X
14:00 - 15:00	394	416	230	0	1040	230	X/X
15:00 - 16:00	502	483	230	0	1215	230	X/X
16:00 - 17:00	547	581	226	0	1354	226	X/X
17:00 - 18:00	519	516	194	0	1229	194	X/X
18:00 - 19:00	292	338	163	0	793	163	X/X
19:00 - 20:00	181	241	132	0	554	132	X/
20:00 - 21:00	132	214	120	0	466	120	X/
21:00 - 22:00	121	209	121	0	451	121	X/
22:00 - 23:00	69	148	103	0	320	103	/
23:00 - 24:00	61	80	50	0	191	50	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **13** 8 **Satisfied**

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



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: CO.RD.E2 EB, W OF W 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		37	32	39	28			34	
1:00 - 2:00		24	23	26	39			28	
2:00 - 3:00		29	37	31	30			31	
3:00 - 4:00		19	10	16	28			18	
4:00 - 5:00		23	21	33	21			24	
5:00 - 6:00		68	61	66	69			66	
6:00 - 7:00		253	261	247	228			247	
7:00 - 8:00		574	633	533	521			565	
8:00 - 9:00		386	530	419	368			425	
9:00 - 10:00		324	340	322	355			335	
10:00 - 11:00		299	330	318	316			315	
11:00 - 12:00	379	410	371	354				378	
12:00 - 13:00	367	389	408	417				395	
13:00 - 14:00	354	345	349	338				346	
14:00 - 15:00	408	387	399	383				394	
15:00 - 16:00	486	505	490	530				502	
16:00 - 17:00	572	566	534	518				547	
17:00 - 18:00	527	549	521	479				519	
18:00 - 19:00	279	296	303	291				292	
19:00 - 20:00	166	196	192	171				181	
20:00 - 21:00	133	130	141	127				132	
21:00 - 22:00	129	102	130	125				121	
22:00 - 23:00	62	71	66	78				69	
23:00 - 24:00	57	64	60	66				61	
<b>TOTAL</b>	<b>3919</b>	<b>6046</b>	<b>6242</b>	<b>5927</b>	<b>2003</b>			<b>6025</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\EBE235WR



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: I-35W SB 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		20	29	23	32			26	
1:00 - 2:00		19	19	23	21			20	
2:00 - 3:00		7	11	10	17			11	
3:00 - 4:00		20	15	27	32			23	
4:00 - 5:00		43	42	44	38			41	
5:00 - 6:00		131	126	138	170			141	
6:00 - 7:00		242	187	246	221			224	
7:00 - 8:00		234	175	194	259			215	
8:00 - 9:00		226	256	235	253			242	
9:00 - 10:00		200	212	172	172			189	
10:00 - 11:00		167	181	158				168	
11:00 - 12:00	174	212	172	202				190	
12:00 - 13:00	201	212	200	221				208	
13:00 - 14:00	199	222	201	206				207	
14:00 - 15:00	235	238	224	224				230	
15:00 - 16:00	236	232	231	223				230	
16:00 - 17:00	227	214	224	240				226	
17:00 - 18:00	176	198	197	206				194	
18:00 - 19:00	160	148	142	205				163	
19:00 - 20:00	114	151	121	144				132	
20:00 - 21:00	116	124	126	115				120	
21:00 - 22:00	138	129	123	96				121	
22:00 - 23:00	105	96	101	110				103	
23:00 - 24:00	47	55	37	61				50	
<b>TOTAL</b>	<b>2128</b>	<b>3540</b>	<b>3352</b>	<b>3523</b>	<b>1215</b>			<b>3474</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\S35WE2WR





# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: CO.RD.E2 WB, E OF W 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		61	57					59	
1:00 - 2:00		31	35					33	
2:00 - 3:00		24	21					22	
3:00 - 4:00		11	9					10	
4:00 - 5:00		22	26					24	
5:00 - 6:00		47	52					49	
6:00 - 7:00		194	195					194	
7:00 - 8:00		381	361					371	
8:00 - 9:00		307	307					307	
9:00 - 10:00		280						280	
10:00 - 11:00		238						238	
11:00 - 12:00		293						293	
12:00 - 13:00	350	355						352	
13:00 - 14:00	343	398						370	
14:00 - 15:00	391	441						416	
15:00 - 16:00	449	518						483	
16:00 - 17:00	553	610						581	
17:00 - 18:00	473	560						516	
18:00 - 19:00	335	341						338	
19:00 - 20:00	239	244						241	
20:00 - 21:00	217	212						214	
21:00 - 22:00	211	207						209	
22:00 - 23:00	141	156						148	
23:00 - 24:00	76	85						80	
<b>TOTAL</b>	<b>3778</b>	<b>6016</b>	<b>1063</b>					<b>5828</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\WBE235WR



# 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 -->