



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: I-35W & CO.RD.E2 , E RAMPS

COUNTY: RAMSEY

REF. POINT: 026.067

DATE: 10/7/1997

OPERATOR: RE

Speed	Approach Description	Lanes
30	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	1
30	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	500/750			200/100			0/0		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	42	29	71	/	38	0	/	/	/
1:00 - 2:00	41	12	53	/	19	0	/	/	/
2:00 - 3:00	42	11	53	/	19	0	/	/	/
3:00 - 4:00	32	7	39	/	9	0	/	/	/
4:00 - 5:00	31	11	42	/	12	0	/	/	/
5:00 - 6:00	85	47	132	/	31	0	/	/	/
6:00 - 7:00	296	159	455	/	84	0	/	/	/
7:00 - 8:00	787	318	1105	X/X	158	0	/X	/	/X
8:00 - 9:00	497	255	752	X/X	166	0	/X	/	/X
9:00 - 10:00	318	192	510	X/	163	0	/X	/	/
10:00 - 11:00	309	193	502	X/	163	0	/X	/	/
11:00 - 12:00	364	225	589	X/	199	0	/X	/	/
12:00 - 13:00	336	244	580	X/	221	0	X/X	/	X/
13:00 - 14:00	353	263	616	X/	205	0	X/X	/	X/
14:00 - 15:00	357	324	681	X/	220	0	X/X	/	X/
15:00 - 16:00	456	435	891	X/X	246	0	X/X	/	X/X
16:00 - 17:00	474	562	1036	X/X	233	0	X/X	/	X/X
17:00 - 18:00	563	548	1111	X/X	251	0	X/X	/	X/X
18:00 - 19:00	379	344	723	X/	221	0	X/X	/	X/
19:00 - 20:00	271	215	486	/	171	0	/X	/	/
20:00 - 21:00	204	179	383	/	150	0	/X	/	/
21:00 - 22:00	183	196	379	/	146	0	/X	/	/
22:00 - 23:00	189	118	307	/	92	0	/	/	/
23:00 - 24:00	109	69	178	/	63	0	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	7	8	Not satisfied
Warrant 2	5	8	Not satisfied
Warrant 6	13	8	Satisfied, check accident record
Warrant 8	7	8	Not satisfied
Warrant 9	7	4	Satisfied
Warrant 11	3	1	Satisfied

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COUNTY: RAMSEY

REF. POINT: 026.067

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OPERATOR: RE

Speed	Approach Description	Lanes
30	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	1
30	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

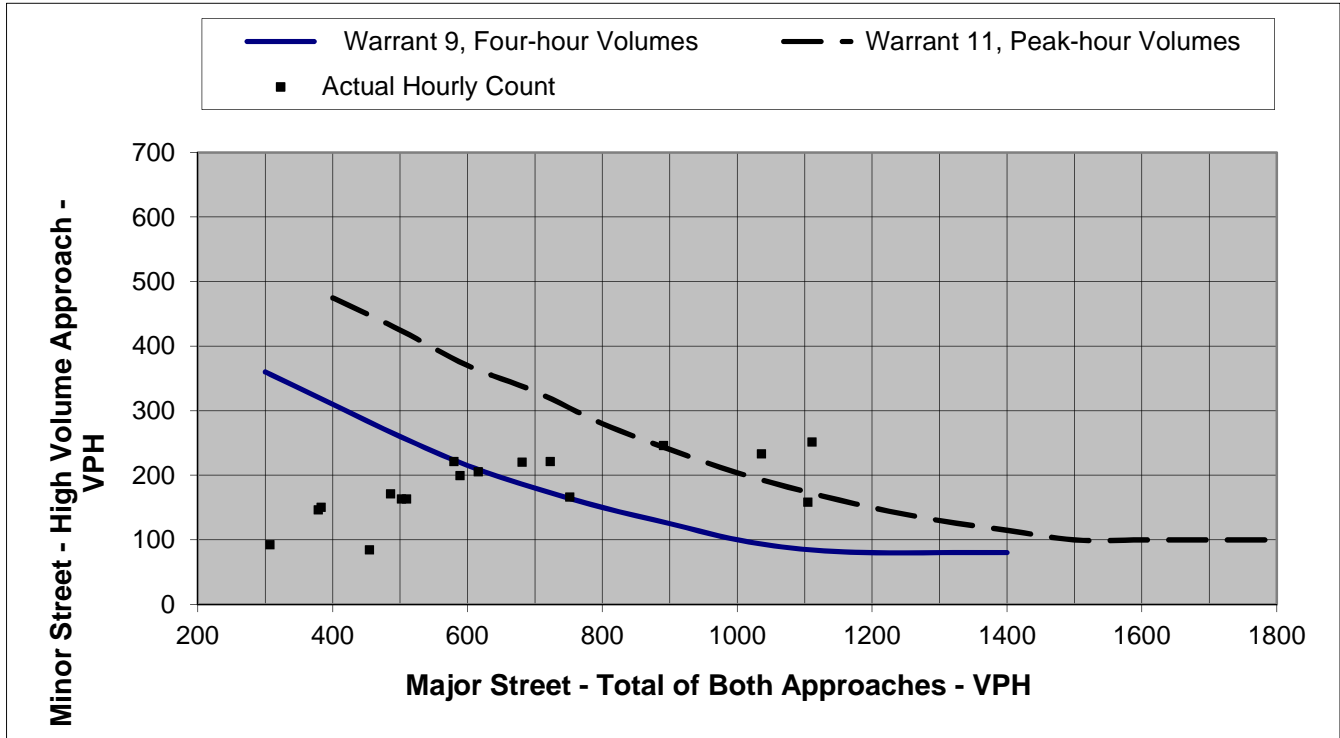


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			71	38
300	360		53	19
400	310	475	53	19
500	260	425	39	9
600	215	370	42	12
700	180	330	132	31
800	150	280	455	84
900	125	240	1105	158
1000	100	204	752	166
1100	85	175	510	163
1200	80	150	502	163
1300	80	130	589	199
1400	80	115	580	221
1500		100	616	205
1600		100	681	220
1700		100	891	246
1800		100	1036	233
			1111	251
			723	221
			486	171
			383	150
			379	146
			307	92
			178	63

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

### TRAFFIC COUNT DATA

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

COUNTY: RAMSEY

REF. PT.: 026.067

SITE CODE: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 7, 1997**

DATE HOUR \ DAY	6 MON.	7 TUE.	8 WED.	9 THU.	10 FRI.	11 SAT.	12 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			33	48	47			42	
1:00 - 2:00			31	34	59			41	
2:00 - 3:00			42	50	36			42	
3:00 - 4:00			34	34	29			32	
4:00 - 5:00			32	37	25			31	
5:00 - 6:00			70	95	92			85	
6:00 - 7:00			288	313	289			296	
7:00 - 8:00			744	897	720			787	
8:00 - 9:00			481	585	425			497	
9:00 - 10:00			282	314	360			318	
10:00 - 11:00			289	330	310			309	
11:00 - 12:00			346	355	392			364	
12:00 - 13:00		302	361	345				336	
13:00 - 14:00		362	326	372				353	
14:00 - 15:00		341	338	394				357	
15:00 - 16:00		449	436	483				456	
16:00 - 17:00		454	474	495				474	
17:00 - 18:00		559	559	573				563	
18:00 - 19:00		368	385	384				379	
19:00 - 20:00		281	229	304				271	
20:00 - 21:00		196	195	222				204	
21:00 - 22:00		166	190	194				183	
22:00 - 23:00		196	146	225				189	
23:00 - 24:00		103	118	106				109	
<b>TOTAL</b>		<b>3777</b>	<b>6429</b>	<b>7189</b>	<b>2784</b>			<b>6718</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\35W&E2EJ.DA1



# 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: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 14, 1997**

DATE HOUR \ DAY	13 MON.	14 TUE.	15 WED.	16 THU.	17 FRI.	18 SAT.	19 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			39	41	36			38	
1:00 - 2:00			12	21	24			19	
2:00 - 3:00			21	20	18			19	
3:00 - 4:00			3	8	18			9	
4:00 - 5:00			7	18	12			12	
5:00 - 6:00			35	23	35			31	
6:00 - 7:00			98	78	76			84	
7:00 - 8:00			156	146	174			158	
8:00 - 9:00			164	175	159			166	
9:00 - 10:00			159	165	165			163	
10:00 - 11:00			154	171	166			163	
11:00 - 12:00			188	215	196			199	
12:00 - 13:00			207	213	243			221	
13:00 - 14:00			184	204	227			205	
14:00 - 15:00		214	202	244				220	
15:00 - 16:00		237	262	240				246	
16:00 - 17:00		236	233	230				233	
17:00 - 18:00		264	249	241				251	
18:00 - 19:00		216	223	226				221	
19:00 - 20:00		152	194	167				171	
20:00 - 21:00		156	151	143				150	
21:00 - 22:00		134	142	164				146	
22:00 - 23:00		81	106	90				92	
23:00 - 24:00		52	64	73				63	
<b>TOTAL</b>		1742	3253	3316	1549			3280	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\35W&E2EJ.DA2





# 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: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 7, 1997**

DATE HOUR \ DAY	6 MON.	7 TUE.	8 WED.	9 THU.	10 FRI.	11 SAT.	12 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			32	32	25			29	
1:00 - 2:00			12	9	16			12	
2:00 - 3:00			9	13	11			11	
3:00 - 4:00			5	8	9			7	
4:00 - 5:00			11	13	11			11	
5:00 - 6:00			62	43	36			47	
6:00 - 7:00			163	156	160			159	
7:00 - 8:00			308	344	303			318	
8:00 - 9:00			271	244	252			255	
9:00 - 10:00			185	183	208			192	
10:00 - 11:00			181	199	200			193	
11:00 - 12:00			207	228	242			225	
12:00 - 13:00		238	276	218				244	
13:00 - 14:00		274	264	253				263	
14:00 - 15:00		320	321	331				324	
15:00 - 16:00		451	414	441				435	
16:00 - 17:00		588	542	556				562	
17:00 - 18:00		597	543	506				548	
18:00 - 19:00		332	331	371				344	
19:00 - 20:00		212	213	221				215	
20:00 - 21:00		202	169	167				179	
21:00 - 22:00		193	163	234				196	
22:00 - 23:00		127	92	136				118	
23:00 - 24:00		86	53	69				69	
<b>TOTAL</b>		<b>3620</b>	<b>4827</b>	<b>4975</b>	<b>1473</b>			<b>4956</b>	

24 HOURS FACTOR:

FACTORED ADT:

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

CORRECTED AADT: \_\_\_\_\_

DATA FILE --> a:\35W&E2EJ.DA3



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: N/A  
 COUNTY: RAMSEY  
 REF. PT.: 026.067

SITE CODE: APPRAOCH

OPERATOR: RE

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 --> a:\35W&E2EJ.DA4