



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: I-694 & VICTORIA AVE., S RAMPS

COUNTY: RAMSEY

REF. POINT: 043.606

DATE: 10/7/1996

OPERATOR: RE

Speed	Approach Description	Lanes
40	Major App1: VICTORIA AVE. NB, S OF S RAMPS OF I-694	3
40	Major App3: VICTORIA AVE. SB, N OF S RAMPS OF I-694	3
30	Minor App2: I-694 EB RAMP TO VICTORIA AVE.	1
0	Minor App4: N/A	0

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

HOUR	600/900			150/75			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	38	22	60	/	20	0	/	/	/
1:00 - 2:00	23	13	36	/	17	0	/	/	/
2:00 - 3:00	19	19	38	/	12	0	/	/	/
3:00 - 4:00	9	10	19	/	6	0	/	/	/
4:00 - 5:00	20	23	43	/	15	0	/	/	/
5:00 - 6:00	84	104	188	/	74	0	/	/	/
6:00 - 7:00	250	522	772	X/	197	0	X/X	/	X/
7:00 - 8:00	519	1063	1582	X/X	330	0	X/X	/	X/X
8:00 - 9:00	434	567	1001	X/X	268	0	X/X	/	X/X
9:00 - 10:00	320	343	663	X/	176	0	X/X	/	X/
10:00 - 11:00	287	246	533	/	148	0	/X	/	/
11:00 - 12:00	410	309	719	X/	187	0	X/X	/	X/
12:00 - 13:00	395	350	745	X/	219	0	X/X	/	X/
13:00 - 14:00	371	307	678	X/	215	0	X/X	/	X/
14:00 - 15:00	452	356	808	X/	240	0	X/X	/	X/
15:00 - 16:00	787	508	1295	X/X	269	0	X/X	/	X/X
16:00 - 17:00	1199	564	1763	X/X	252	0	X/X	/	X/X
17:00 - 18:00	1037	599	1636	X/X	332	0	X/X	/	X/X
18:00 - 19:00	563	471	1034	X/X	283	0	X/X	/	X/X
19:00 - 20:00	351	246	597	/	182	0	X/X	/	/
20:00 - 21:00	313	174	487	/	176	0	X/X	/	/
21:00 - 22:00	229	131	360	/	149	0	/X	/	/
22:00 - 23:00	102	77	179	/	88	0	/X	/	/
23:00 - 24:00	63	46	109	/	46	0	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	12	8	Satisfied
Warrant 2	6	8	Not satisfied
Warrant 6	15	8	Satisfied, check accident record
Warrant 8	9	8	Satisfied
Warrant 9	7	4	Satisfied
Warrant 11	5	1	Satisfied

LOCATION: I-694 & VICTORIA AVE., S RAMPS

COUNTY: RAMSEY

REF. POINT: 043.606

DATE: 10/7/1996

OPERATOR: RE

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

Speed	Approach Description	Lanes
40	Major App1: VICTORIA AVE. NB, S OF S RAMPS OF I-694	3
40	Major App3: VICTORIA AVE. SB, N OF S RAMPS OF I-694	3
30	Minor App2: I-694 EB RAMP TO VICTORIA AVE.	1
0	Minor App4: N/A	0

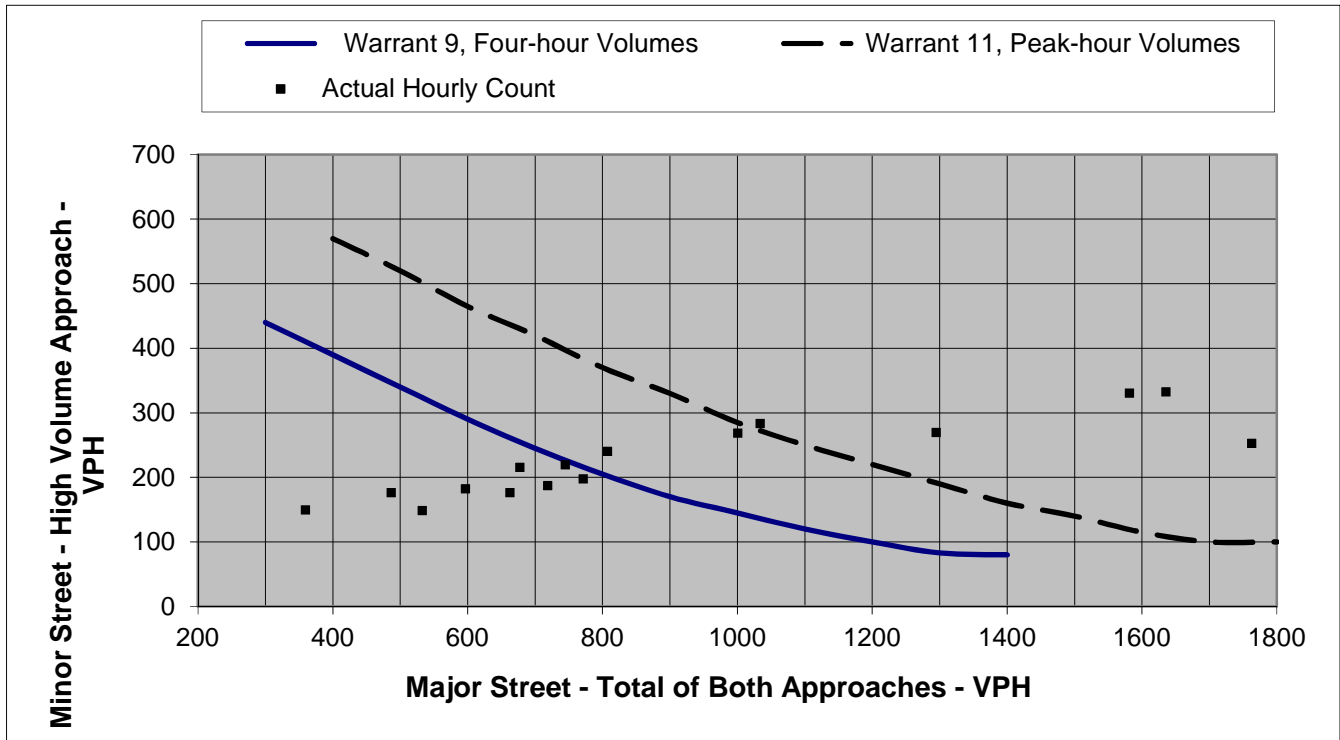


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			60	20
300	440		36	17
400	390	570	38	12
500	340	520	19	6
600	290	465	43	15
700	245	420	188	74
800	205	370	772	197
900	170	330	1582	330
1000	145	285	1001	268
1100	120	250	663	176
1200	100	220	533	148
1300	83	190	719	187
1400	80	160	745	219
1500		140	678	215
1600		115	808	240
1700		100	1295	269
1800		100	1763	252
			1636	332
			1034	283
			597	182
			487	176
			360	149
			179	88
			109	46

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-694 & VICTORIA AVE., S RAMPS

COUNTY: RAMSEY

REF. POINT: 043.606

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
40	Major App1: VICTORIA AVE. NB, S OF S RAMPS OF I-694	3
40	Major App3: VICTORIA AVE. SB, N OF S RAMPS OF I-694	3
30	Minor App2: I-694 EB RAMP TO VICTORIA AVE.	1
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	38	22	20	0	80	20	/
1:00 - 2:00	23	13	17	0	53	17	/
2:00 - 3:00	19	19	12	0	50	12	/
3:00 - 4:00	9	10	6	0	25	6	/
4:00 - 5:00	20	23	15	0	58	15	/
5:00 - 6:00	84	104	74	0	262	74	/
6:00 - 7:00	250	522	197	0	969	197	X/X
7:00 - 8:00	519	1063	330	0	1912	330	X/X
8:00 - 9:00	434	567	268	0	1269	268	X/X
9:00 - 10:00	320	343	176	0	839	176	X/X
10:00 - 11:00	287	246	148	0	681	148	X/X
11:00 - 12:00	410	309	187	0	906	187	X/X
12:00 - 13:00	395	350	219	0	964	219	X/X
13:00 - 14:00	371	307	215	0	893	215	X/X
14:00 - 15:00	452	356	240	0	1048	240	X/X
15:00 - 16:00	787	508	269	0	1564	269	X/X
16:00 - 17:00	1199	564	252	0	2015	252	X/X
17:00 - 18:00	1037	599	332	0	1968	332	X/X
18:00 - 19:00	563	471	283	0	1317	283	X/X
19:00 - 20:00	351	246	182	0	779	182	X/X
20:00 - 21:00	313	174	176	0	663	176	X/X
21:00 - 22:00	229	131	149	0	509	149	X/X
22:00 - 23:00	102	77	88	0	267	88	/
23:00 - 24:00	63	46	46	0	155	46	/

Met (Hr) Required (Hr)

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

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

\_\_\_\_\_

\_\_\_\_\_



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: VICTORIA AVE. NB, S OF S RAMPS OF I-694

COUNTY: RAMSEY

REF. PT.: 043.606

SITE CODE: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 7, 1996**

DATE HOUR \ DAY	7 MON.	8 TUE.	9 WED.	10 THU.	11 FRI.	12 SAT.	13 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		30	45	40				38	
1:00 - 2:00		27	14	28				23	
2:00 - 3:00		20	19	20				19	
3:00 - 4:00		8	8	12				9	
4:00 - 5:00		17	22	22				20	
5:00 - 6:00		87	88	77				84	
6:00 - 7:00		264	240	246				250	
7:00 - 8:00		528	502	528				519	
8:00 - 9:00		452	397	454				434	
9:00 - 10:00		314	335	312				320	
10:00 - 11:00		295	279					287	
11:00 - 12:00		435	385					410	
12:00 - 13:00		415	375					395	
13:00 - 14:00	359	356	400					371	
14:00 - 15:00	430	492	435					452	
15:00 - 16:00	784	803	774					787	
16:00 - 17:00	1149	1251	1197					1199	
17:00 - 18:00	1057	1065	989					1037	
18:00 - 19:00	573	606	512					563	
19:00 - 20:00	328	371	355					351	
20:00 - 21:00	339	294	307					313	
21:00 - 22:00	201	274	212					229	
22:00 - 23:00	105	113	90					102	
23:00 - 24:00	65	60	65					63	
<b>TOTAL</b>	<b>5390</b>	<b>8577</b>	<b>8045</b>	<b>1739</b>				<b>8275</b>	

24 HOURS FACTOR:

FACTORED ADT:

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

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

DATA FILE --> A:\694VICSR.da1



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: I-694 EB RAMP TO VICTORIA AVE.

COUNTY: RAMSEY

REF. PT.: 043.606

SITE CODE: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 7, 1996**

DATE HOUR \ DAY	7 MON.	8 TUE.	9 WED.	10 THU.	11 FRI.	12 SAT.	13 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		17	17	27				20	
1:00 - 2:00		19	15	19				17	
2:00 - 3:00		11	10	16				12	
3:00 - 4:00		4	7	7				6	
4:00 - 5:00		15	17	13				15	
5:00 - 6:00		75	70	79				74	
6:00 - 7:00		189	200	203				197	
7:00 - 8:00		332	347	311				330	
8:00 - 9:00		274	267	263				268	
9:00 - 10:00		171	182					176	
10:00 - 11:00		142	155					148	
11:00 - 12:00		190	185					187	
12:00 - 13:00	196	216	247					219	
13:00 - 14:00	190	234	223					215	
14:00 - 15:00	236	250	234					240	
15:00 - 16:00	270	292	246					269	
16:00 - 17:00	258	225	275					252	
17:00 - 18:00	335	307	355					332	
18:00 - 19:00	274	308	268					283	
19:00 - 20:00	204	162	181					182	
20:00 - 21:00	173	186	170					176	
21:00 - 22:00	128	168	151					149	
22:00 - 23:00	82	100	84					88	
23:00 - 24:00	43	49	46					46	
<b>TOTAL</b>	<b>2389</b>	<b>3936</b>	<b>3952</b>	<b>938</b>				<b>3901</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\694VICSR.da2





# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: VICTORIA AVE. SB, N OF S RAMPS OF I-694

COUNTY: RAMSEY

REF. PT.: 043.606

SITE CODE: APPRAOCH

OPERATOR: RE

FOR COUNTS BEGINNING: **October 7, 1996**

DATE HOUR \ DAY	7 MON.	8 TUE.	9 WED.	10 THU.	11 FRI.	12 SAT.	13 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		18	25	24				22	
1:00 - 2:00		17	7	16				13	
2:00 - 3:00		16	17	25				19	
3:00 - 4:00		13	7	11				10	
4:00 - 5:00		27	22	22				23	
5:00 - 6:00		104	119	90				104	
6:00 - 7:00		532	515	521				522	
7:00 - 8:00		1064	1059	1068				1063	
8:00 - 9:00		563	552	586				567	
9:00 - 10:00		337	351	341				343	
10:00 - 11:00		238	255					246	
11:00 - 12:00		314	304					309	
12:00 - 13:00		347	354					350	
13:00 - 14:00	298	352	271					307	
14:00 - 15:00	342	376	350					356	
15:00 - 16:00	476	574	476					508	
16:00 - 17:00	549	592	552					564	
17:00 - 18:00	601	636	562					599	
18:00 - 19:00	479	478	457					471	
19:00 - 20:00	262	230	247					246	
20:00 - 21:00	176	181	167					174	
21:00 - 22:00	110	148	137					131	
22:00 - 23:00	81	75	75					77	
23:00 - 24:00	36	54	50					46	
<b>TOTAL</b>	<b>3410</b>	<b>7286</b>	<b>6931</b>	<b>2704</b>				<b>7070</b>	

24 HOURS FACTOR:

FACTORED ADT:

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

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

DATA FILE --> A:\694VICSR.da3



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: N/A  
 COUNTY: RAMSEY  
 REF. PT.: 043.606

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:\694VICSR.da4