



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH-61 & CSAH 30/CSAH 31 VIKING BLVD

COUNTY: CHISAGO

REF. POINT: 165.111

DATE: 5/21/1998

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: TH-61 NB, S OF CSAH 31/VIKING BLVD	2
40	Major App3: CSAH 30 SB, N OF TH61/FOREST BLVD	2
30	Minor App2: TH-61 EB, W OF FOREST BLVD	2
30	Minor App4: CSAH 31 WB, E OF FOREST BLVD	1

0.70 FACTOR USED? YES

POPULATION < 10,000? YES

EXISTING SIGNAL ? NO

HOUR	420/630				140/70		105/52		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	23	22	45	/	80	6	/X	/	/
1:00 - 2:00	18	15	33	/	61	3	/	/	/
2:00 - 3:00	13	29	42	/	41	2	/	/	/
3:00 - 4:00	10	24	34	/	42	6	/	/	/
4:00 - 5:00	37	32	69	/	29	14	/	/	/
5:00 - 6:00	127	120	247	/	23	55	/	/X	/
6:00 - 7:00	247	276	523	X/	83	129	/X	X/X	X/
7:00 - 8:00	305	314	619	X/	187	149	X/X	X/X	X/
8:00 - 9:00	345	208	553	X/	296	102	X/X	/X	X/
9:00 - 10:00	351	197	548	X/	312	123	X/X	X/X	X/
10:00 - 11:00	325	194	519	X/	336	83	X/X	/X	X/
11:00 - 12:00	354	174	528	X/	178	110	X/X	X/X	X/
12:00 - 13:00	365	198	563	X/	294	126	X/X	X/X	X/
13:00 - 14:00	309	189	498	X/	361	109	X/X	X/X	X/
14:00 - 15:00	311	171	482	X/	309	99	X/X	/X	X/
15:00 - 16:00	292	205	497	X/	344	142	X/X	X/X	X/
16:00 - 17:00	294	231	525	X/	501	177	X/X	X/X	X/
17:00 - 18:00	420	180	600	X/	591	194	X/X	X/X	X/
18:00 - 19:00	409	172	581	X/	581	129	X/X	X/X	X/
19:00 - 20:00	310	139	449	X/	480	91	X/X	/X	X/
20:00 - 21:00	297	102	399	/	338	79	X/X	/X	/
21:00 - 22:00	274	97	371	/	326	56	X/X	/X	/
22:00 - 23:00	114	37	151	/	248	25	X/X	/	/
23:00 - 24:00	51	29	80	/	129	11	/X	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	14	8	Satisfied
Warrant 2	0	8	Not satisfied
Warrant 6	16	8	Satisfied, check accident record
Warrant 8	10	8	Satisfied
Warrant 9	14	4	Satisfied
Warrant 11	4	1	Satisfied

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OPERATOR: DR

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

Speed	Approach Description	Lanes
40	Major App1: TH-61 NB, S OF CSAH 31/VIKING BLVD	2
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30	Minor App2: TH-61 EB, W OF FOREST BLVD	2
30	Minor App4: CSAH 31 WB, E OF FOREST BLVD	1

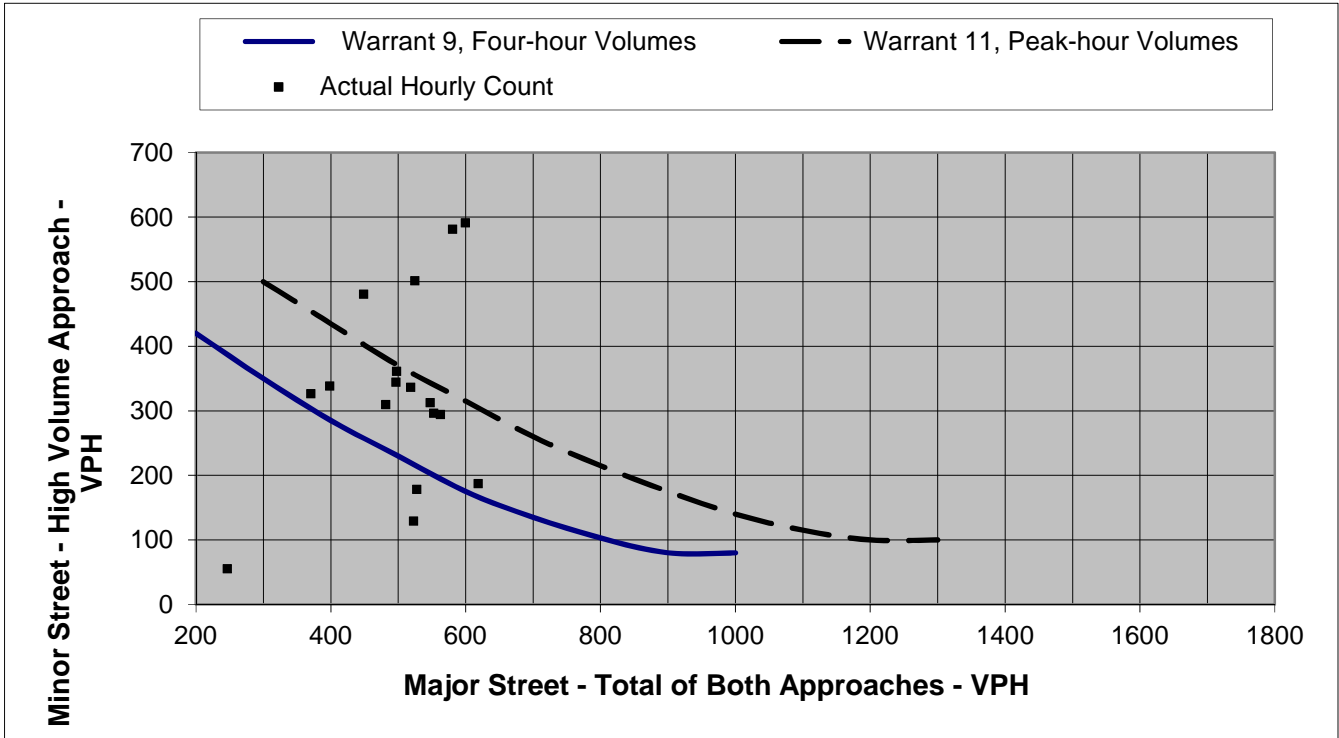


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	420		45	80
300	350	500	33	61
400	285	435	42	41
500	230	370	34	42
600	175	315	69	29
700	135	260	247	55
800	103	215	523	129
900	80	175	619	187
1000	80	140	553	296
1100		115	548	312
1200		100	519	336
1300		100	528	178
1400			563	294
1500			498	361
1600			482	309
1700			497	344
1800			525	501
			600	591
			581	581
			449	480
			399	338
			371	326
			151	248
			80	129

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-61 & CSAH 30/CSAH 31 VIKING BLVD

COUNTY: CHISAGO

REF. POINT: 165.111

DATE: 5/21/1998

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: TH-61 NB, S OF CSAH 31/VIKING BLVD	2
40	Major App3: CSAH 30 SB, N OF TH61/FOREST BLVD	2
30	Minor App2: TH-61 EB, W OF FOREST BLVD	2
30	Minor App4: CSAH 31 WB, E OF FOREST BLVD	1

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	23	22	80	6	131	86	/
1:00 - 2:00	18	15	61	3	97	64	/
2:00 - 3:00	13	29	41	2	85	43	/
3:00 - 4:00	10	24	42	6	82	48	/
4:00 - 5:00	37	32	29	14	112	43	/
5:00 - 6:00	127	120	23	55	325	78	/
6:00 - 7:00	247	276	83	129	735	212	X/X
7:00 - 8:00	305	314	187	149	955	336	X/X
8:00 - 9:00	345	208	296	102	951	398	X/X
9:00 - 10:00	351	197	312	123	983	435	X/X
10:00 - 11:00	325	194	336	83	938	419	X/X
11:00 - 12:00	354	174	178	110	816	288	X/X
12:00 - 13:00	365	198	294	126	983	420	X/X
13:00 - 14:00	309	189	361	109	968	470	X/X
14:00 - 15:00	311	171	309	99	890	408	X/X
15:00 - 16:00	292	205	344	142	983	486	X/X
16:00 - 17:00	294	231	501	177	1203	678	X/X
17:00 - 18:00	420	180	591	194	1385	785	X/X
18:00 - 19:00	409	172	581	129	1291	710	X/X
19:00 - 20:00	310	139	480	91	1020	571	X/X
20:00 - 21:00	297	102	338	79	816	417	X/X
21:00 - 22:00	274	97	326	56	753	382	X/X
22:00 - 23:00	114	37	248	25	424	273	X/X
23:00 - 24:00	51	29	129	11	220	140	/X

Met (Hr) Required (Hr)

Allway Stop Warrant: **17** 8 **Satisfied**

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

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