



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-65 & 169TH AVE NE

COUNTY: ANOKA

REF. POINT: 020.943

DATE: 3/13/1996

OPERATOR: DR

Speed	Approach Description	Lanes
55	Major App1: TH-65 NB, S OF 169TH AVE NE	4
55	Major App3: TH-65 SB, N OF 169TH AVE NE	4
10	Minor App2: 169TH AVE NE EB, W OF TH-65	1
40	Minor App4: 169TH AVE NE WB, E OF TH-65	2

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630				105/52		140/70		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	161	30	191	/	2	4	/	/	/
1:00 - 2:00	91	34	125	/	4	3	/	/	/
2:00 - 3:00	75	42	117	/	4	3	/	/	/
3:00 - 4:00	67	64	131	/	3	4	/	/	/
4:00 - 5:00	49	245	294	/	10	12	/	/	/
5:00 - 6:00	95	819	914	X/X	32	44	/	/	/
6:00 - 7:00	211	1262	1473	X/X	59	127	/X	/X	/X
7:00 - 8:00	414	1044	1458	X/X	50	98	/	/X	/X
8:00 - 9:00	383	728	1111	X/X	49	65	/	/	/
9:00 - 10:00	415	614	1029	X/X	34	37	/	/	/
10:00 - 11:00	446	525	971	X/X	24	25	/	/	/
11:00 - 12:00	490	539	1029	X/X	32	41	/	/	/
12:00 - 13:00	562	507	1069	X/X	31	33	/	/	/
13:00 - 14:00	586	548	1134	X/X	26	34	/	/	/
14:00 - 15:00	732	559	1291	X/X	42	30	/	/	/
15:00 - 16:00	1152	571	1723	X/X	46	43	/	/	/
16:00 - 17:00	1565	528	2093	X/X	45	48	/	/	/
17:00 - 18:00	1575	550	2125	X/X	43	59	/	/	/
18:00 - 19:00	1008	477	1485	X/X	49	75	/	/X	/X
19:00 - 20:00	684	332	1016	X/X	38	39	/	/	/
20:00 - 21:00	536	248	784	X/X	21	25	/	/	/
21:00 - 22:00	510	260	770	X/X	25	26	/	/	/
22:00 - 23:00	321	194	515	X/	21	16	/	/	/
23:00 - 24:00	252	104	356	/	7	7	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	0	8	Not satisfied
Warrant 2	3	8	Not satisfied
Warrant 6	7	8	Not satisfied
Warrant 8	1	8	Not satisfied
Warrant 9	2	4	Not satisfied
Warrant 11	1	1	Satisfied

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

Speed	Approach Description	Lanes
55	Major App1: TH-65 NB, S OF 169TH AVE NE	4
55	Major App3: TH-65 SB, N OF 169TH AVE NE	4
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40	Minor App4: 169TH AVE NE WB, E OF TH-65	2

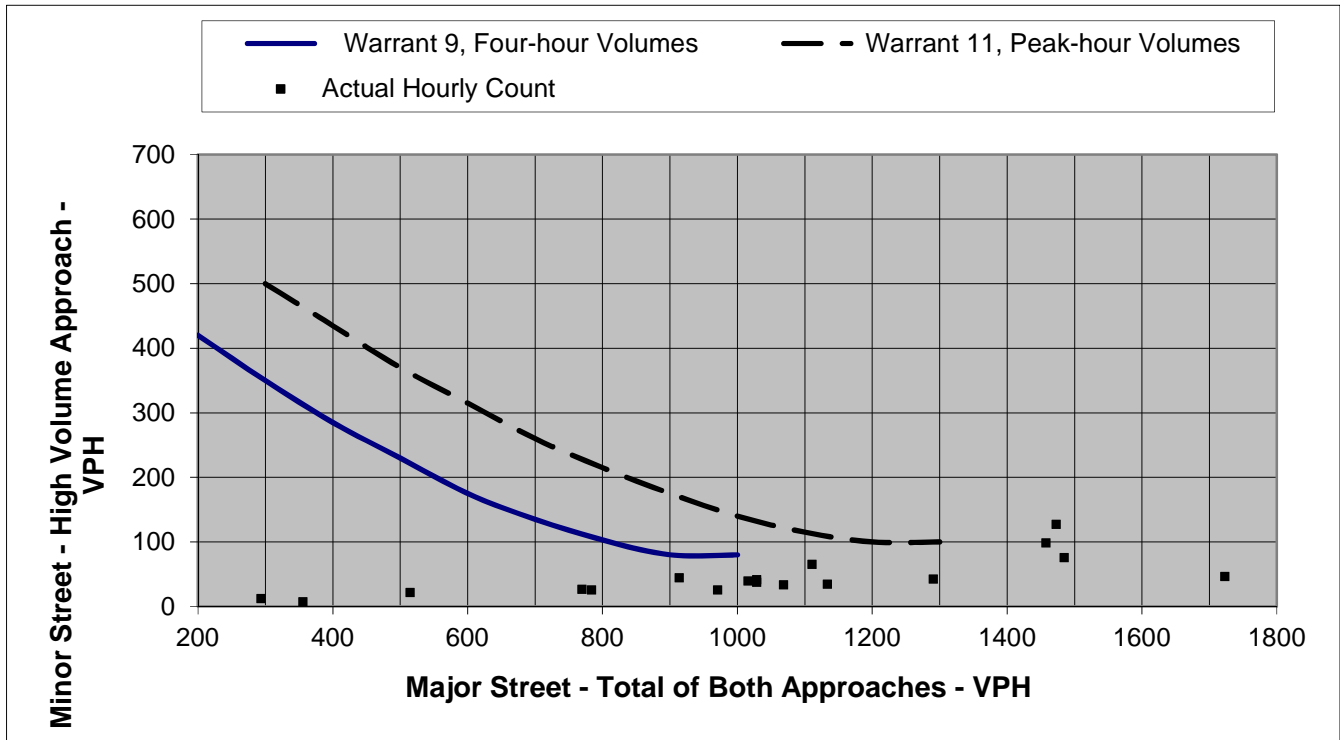


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		191	4
300	350	500	125	4
400	285	435	117	4
500	230	370	131	4
600	175	315	294	12
700	135	260	914	44
800	103	215	1473	127
900	80	175	1458	98
1000	80	140	1111	65
1100		115	1029	37
1200		100	971	25
1300		100	1029	41
1400			1069	33
1500			1134	34
1600			1291	42
1700			1723	46
1800			2093	48
			2125	59
			1485	75
			1016	39
			784	25
			770	26
			515	21
			356	7

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-65 & 169TH AVE NE

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DATE: 3/13/1996

OPERATOR: DR

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55	Major App3: TH-65 SB, N OF 169TH AVE NE	4
10	Minor App2: 169TH AVE NE EB, W OF TH-65	1
40	Minor App4: 169TH AVE NE WB, E OF TH-65	2

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	161	30	2	4	197	6	/
1:00 - 2:00	91	34	4	3	132	7	/
2:00 - 3:00	75	42	4	3	124	7	/
3:00 - 4:00	67	64	3	4	138	7	/
4:00 - 5:00	49	245	10	12	316	22	/
5:00 - 6:00	95	819	32	44	990	76	X/
6:00 - 7:00	211	1262	59	127	1659	186	X/X
7:00 - 8:00	414	1044	50	98	1606	148	X/X
8:00 - 9:00	383	728	49	65	1225	114	X/
9:00 - 10:00	415	614	34	37	1100	71	X/
10:00 - 11:00	446	525	24	25	1020	49	X/
11:00 - 12:00	490	539	32	41	1102	73	X/
12:00 - 13:00	562	507	31	33	1133	64	X/
13:00 - 14:00	586	548	26	34	1194	60	X/
14:00 - 15:00	732	559	42	30	1363	72	X/
15:00 - 16:00	1152	571	46	43	1812	89	X/
16:00 - 17:00	1565	528	45	48	2186	93	X/
17:00 - 18:00	1575	550	43	59	2227	102	X/
18:00 - 19:00	1008	477	49	75	1609	124	X/
19:00 - 20:00	684	332	38	39	1093	77	X/
20:00 - 21:00	536	248	21	25	830	46	X/
21:00 - 22:00	510	260	25	26	821	51	X/
22:00 - 23:00	321	194	21	16	552	37	X/
23:00 - 24:00	252	104	7	7	370	14	X/

Allway Stop Warrant: Met (Hr) 2 Required (Hr) 8 Not satisfied

REMARKS: _____