



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH 169 AT FERRY PWKY

COUNTY: ANOKA

REF. POINT: 146+00.144

DATE: #REF!

OPERATOR: MAR

Speed	Approach Description	Lanes
35	Major App1: TH 169 NB	3
30	Major App3: TH 169 SB	3
30	Minor App2: FERRY PWKY	2
0	Minor App4: 0	0

0.70 FACTOR USED?

N

POPULATION < 10,000?

EXISTING SIGNAL ?

THRESHOLDS 1A/1B:

600/900

200/100

HOUR	MAJOR APP. 1	MAJOR APP. 3	TOTAL 1+3	MAJOR 1A/1B	MINOR APP. 2	MINOR 2 1A/1B	MINOR APP. 4	MINOR 4 1A/1B	MET SAME 1A/1B
0:00 - 1:00	203	114	317	/	0	/			/
1:00 - 2:00	150	73	223	/	1	/			/
2:00 - 3:00	101	101	202	/	0	/			/
3:00 - 4:00	78	100	178	/	0	/			/
4:00 - 5:00	101	278	379	/	2	/			/
5:00 - 6:00	250	969	1219	X/X	2	/			/
6:00 - 7:00	817	2201	3018	X/X	9	/			/
7:00 - 8:00	1325	2278	3603	X/X	6	/			/
8:00 - 9:00	1235	1549	2784	X/X	6	/			/
9:00 - 10:00	1160	982	2142	X/X	9	/			/
10:00 - 11:00	1170	899	2069	X/X	10	/			/
11:00 - 12:00	1272	1276	2548	X/X	13	/			/
12:00 - 13:00	1341	1259	2600	X/X	15	/			/
13:00 - 14:00	1374	1061	2435	X/X	11	/			/
14:00 - 15:00	1780	1030	2810	X/X	11	/			/
15:00 - 16:00	2145	1559	3704	X/X	15	/			/
16:00 - 17:00	1787	1579	3366	X/X	16	/			/
17:00 - 18:00	2447	1524	3971	X/X	13	/			/
18:00 - 19:00	1713	1005	2718	X/X	10	/			/
19:00 - 20:00	1301	726	2027	X/X	14	/			/
20:00 - 21:00	967	665	1632	X/X	11	/			/
21:00 - 22:00	791	562	1353	X/X	10	/			/
22:00 - 23:00	258	340	598	/	5	/			/
23:00 - 24:00	312	185	497	/	3	/			/

Met (Hr)      Required (Hr)

Warrant 1A	0	8	Not satisfied
Warrant 1B	0	8	Not satisfied
Warrant 2	0	4	Not satisfied
Warrant 3	0	1	Not satisfied
Warrant 7	0	8	Not satisfied

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	115
1400	80	80	115
1500	80	80	115
1600	80	80	115
1700	80	80	115
1800	80	80	115

Peak Hour Warrant		
Major App	Minor App	
	1 & 1	2 & 1
400	475	570
500	425	520
600	370	465
700	330	420
800	280	370
900	240	330
1000	204	285
1100	175	250
1200	150	220
1300	130	190
1400	115	160
1500	100	140
1600	100	115
1700	100	100
1800	100	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
1100	60	60	80
1200	60	60	80
1300	60	60	80
1400	60	60	80
1500	60	60	80
1600	60	60	80
1700	60	60	80
1800	60	60	80

Peak Hour Warrant Factored		
Major App	Minor App	
	1 & 1	2 & 1
300	320	380
400	270	335
500	225	285
600	180	240
700	145	200
800	115	160
900	90	135
1000	75	110
1100	75	95
1200	75	75
1300	75	75
1400	75	75
1500	75	75
1600	75	75
1700	75	75
1800	75	75

2 & 2  
725  
665  
600  
540  
480  
425  
375  
330  
285  
250  
220  
187  
165  
150  
150

ctored

2 & 2  
500  
435  
370  
315  
260  
215  
175  
140  
115  
100  
100  
100  
100  
100  
100  
100

LOCATION: TH 169 AT FERRY PWKY  
 COUNTY: ANOKA

REF. POINT: 146+00.144  
 DATE: #REF!

OPERATOR: MAR

Speed	Approach Description	Lanes
35	Major App1: TH 169 NB	3
30	Major App3: TH 169 SB	3
30	Minor App2: FERRY PWKY	2
0	Minor App4: 0	0

0.70 FACTOR USED? N  
 POPULATION < 10,000? N  
 EXISTING SIGNAL ? Y

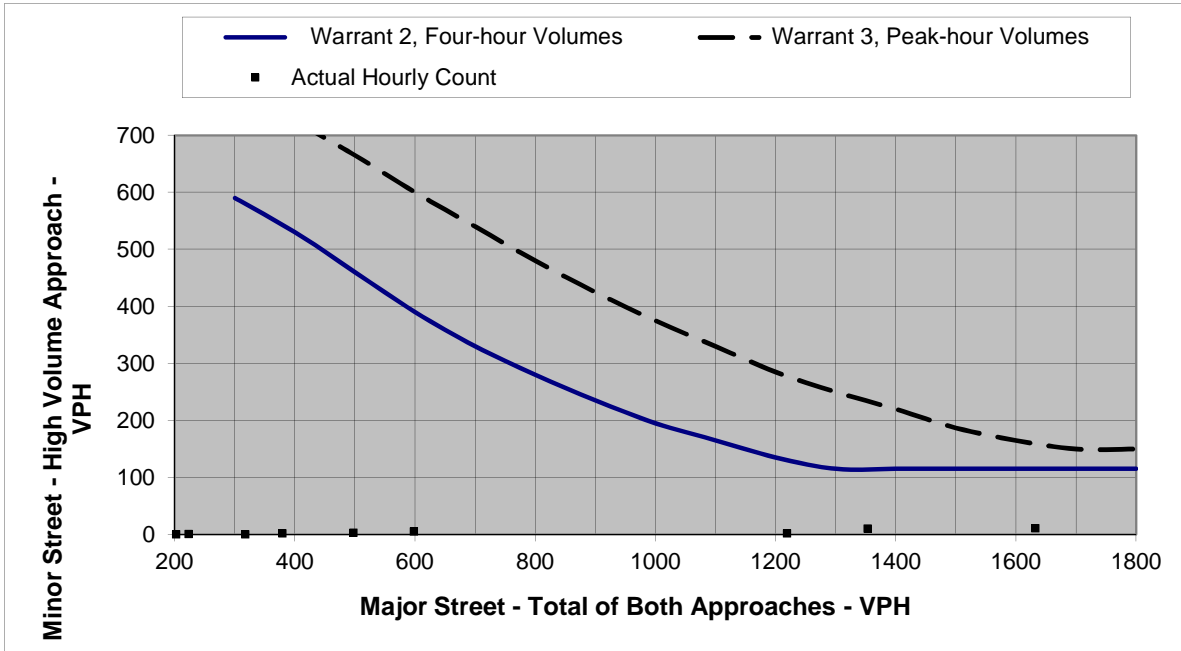


Figure 1. Four Hour and Peak Hour Warrant Analysis

Note: For data points outside the graph range, check the minor street volume against the lower thresholds

Major	Warrant Criteria		Actual Hourly Count	
	Warrant 2, F	Warrant 3, Pe	Major	Actual Hourly Count
200			317	0
300	590		223	1
400	530	725	202	0
500	460	665	178	0
600	390	600	379	2
700	330	540	1219	2
800	280	480	3018	9
900	235	425	3603	6
1000	195	375	2784	6
1100	165	330	2142	9
1200	135	285	2069	10
1300	115	250	2548	13
1400	115	220	2600	15
1500	115	187	2435	11
1600	115	165	2810	11
1700	115	150	3704	15
1800	115	150	3366	16
			3971	13
			2718	10
			2027	14
			1632	11
			1353	10
			598	5
			497	3



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### ALL WAY STOP WARRANT

LOCATION: TH 169 AT FERRY PWKY

COUNTY: ANOKA

REF. POINT: 146+00.144

DATE: #REF!

OPERATOR: MAR

Speed	Approach Description	Lanes
35	Major App1: TH 169 NB	3
30	Major App3: TH 169 SB	3
30	Minor App2: FERRY PWKY	2
0	Minor App4: 0	0

0.70 FACTOR USED? No

HOUR					300	200	WARRANT MET
	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	MAJOR TOTAL Σ (APP. 1 & APP. 3)	MINOR TOTAL APP. 2 + APP. 4	
0:00 - 1:00	203	114	0		317	0	X/
1:00 - 2:00	150	73	1		223	1	/
2:00 - 3:00	101	101	0		202	0	/
3:00 - 4:00	78	100	0		178	0	/
4:00 - 5:00	101	278	2		379	2	X/
5:00 - 6:00	250	969	2		1219	2	X/
6:00 - 7:00	817	2201	9		3018	9	X/
7:00 - 8:00	1325	2278	6		3603	6	X/
8:00 - 9:00	1235	1549	6		2784	6	X/
9:00 - 10:00	1160	982	9		2142	9	X/
10:00 - 11:00	1170	899	10		2069	10	X/
11:00 - 12:00	1272	1276	13		2548	13	X/
12:00 - 13:00	1341	1259	15		2600	15	X/
13:00 - 14:00	1374	1061	11		2435	11	X/
14:00 - 15:00	1780	1030	11		2810	11	X/
15:00 - 16:00	2145	1559	15		3704	15	X/
16:00 - 17:00	1787	1579	16		3366	16	X/
17:00 - 18:00	2447	1524	13		3971	13	X/
18:00 - 19:00	1713	1005	10		2718	10	X/
19:00 - 20:00	1301	726	14		2027	14	X/
20:00 - 21:00	967	665	11		1632	11	X/
21:00 - 22:00	791	562	10		1353	10	X/
22:00 - 23:00	258	340	5		598	5	X/
23:00 - 24:00	312	185	3		497	3	X/

Met (Hr) Required (Hr)

Allway Stop Warrant: 0 8 Not satisfied

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