



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-49 & I-35W S RAMP
 COUNTY: ANOKA
 REF. POINT: 036.468
 DATE: 8/22/1996
 OPERATOR: DR

Speed	Approach Description	Lanes
55	Major App1: TH-49 NB, S OF I-35W S RAMP	1
55	Major App3: TH-49 SB, N OF I-35W S RAMP	1
55	Minor App2: I-35W EXIT RAMP TO TH-49 S RAMP	2
0	Minor App4: N/A	0

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

HOUR	350/525			140/70		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	43	30	73	/	40	0	/	/	/
1:00 - 2:00	22	12	34	/	20	0	/	/	/
2:00 - 3:00	7	4	11	/	10	0	/	/	/
3:00 - 4:00	7	8	15	/	12	0	/	/	/
4:00 - 5:00	25	25	50	/	17	0	/	/	/
5:00 - 6:00	80	109	189	/	38	0	/	/	/
6:00 - 7:00	222	318	540	X/X	138	0	/X	/	/X
7:00 - 8:00	332	358	690	X/X	172	0	X/X	/	X/X
8:00 - 9:00	260	239	499	X/	150	0	X/X	/	X/
9:00 - 10:00	247	196	443	X/	162	0	X/X	/	X/
10:00 - 11:00	264	197	461	X/	175	0	X/X	/	X/
11:00 - 12:00	271	210	481	X/	185	0	X/X	/	X/
12:00 - 13:00	311	211	522	X/	202	0	X/X	/	X/
13:00 - 14:00	294	214	508	X/	216	0	X/X	/	X/
14:00 - 15:00	302	196	498	X/	234	0	X/X	/	X/
15:00 - 16:00	393	291	684	X/X	311	0	X/X	/	X/X
16:00 - 17:00	475	286	761	X/X	340	0	X/X	/	X/X
17:00 - 18:00	439	270	709	X/X	332	0	X/X	/	X/X
18:00 - 19:00	332	188	520	X/	257	0	X/X	/	X/
19:00 - 20:00	210	171	381	X/	147	0	X/X	/	X/
20:00 - 21:00	199	169	368	X/	142	0	X/X	/	X/
21:00 - 22:00	117	107	224	/	123	0	/X	/	/
22:00 - 23:00	87	62	149	/	82	0	/X	/	/
23:00 - 24:00	62	54	116	/	80	0	/X	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	14	8	Satisfied
Warrant 2	5	8	Not satisfied
Warrant 6	15	8	Satisfied, check accident record
Warrant 8	13	8	Satisfied
Warrant 9	13	4	Satisfied
Warrant 11	6	1	Satisfied

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OPERATOR: DR

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

Speed	Approach Description	Lanes
55	Major App1: TH-49 NB, S OF I-35W S RAMP	1
55	Major App3: TH-49 SB, N OF I-35W S RAMP	1
55	Minor App2: I-35W EXIT RAMP TO TH-49 S RAMP	2
0	Minor App4: N/A	0

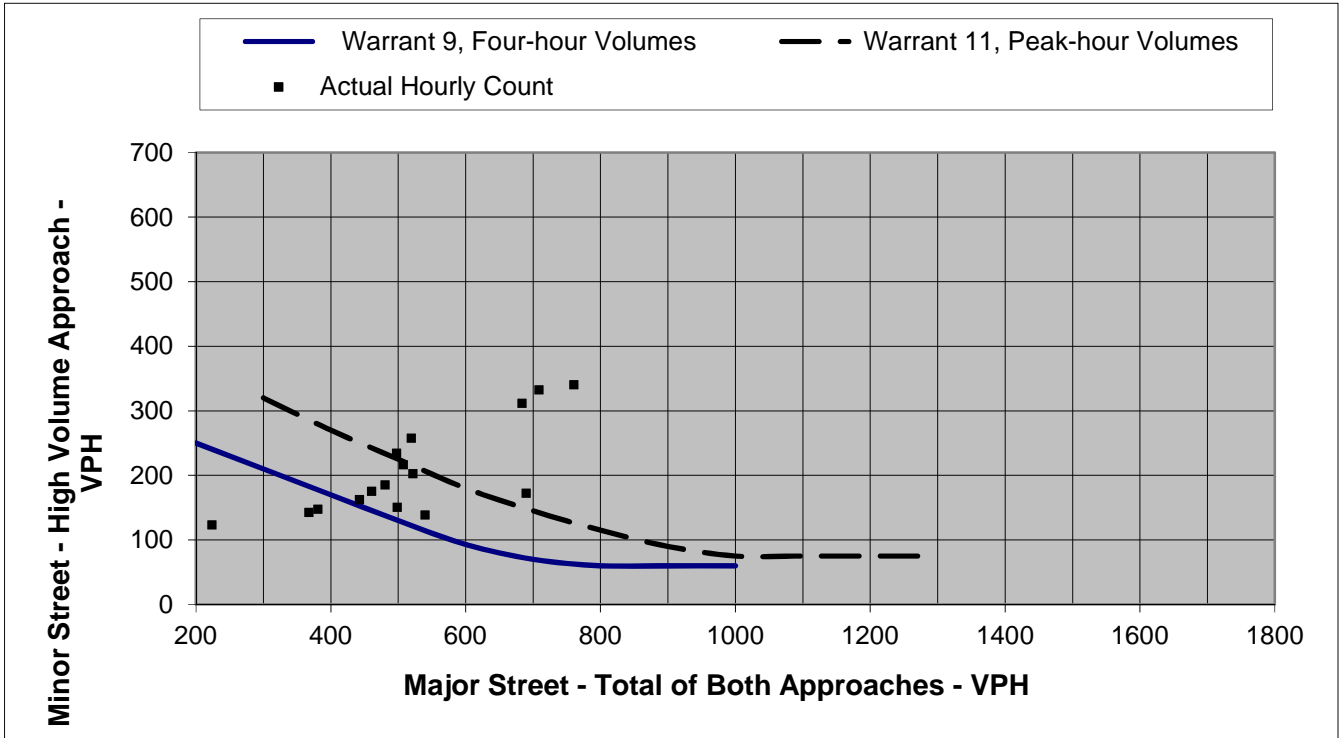


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	250		73	40
300	210	320	34	20
400	170	270	11	10
500	130	225	15	12
600	93	180	50	17
700	70	145	189	38
800	60	115	540	138
900	60	90	690	172
1000	60	75	499	150
1100		75	443	162
1200		75	461	175
1300		75	481	185
1400			522	202
1500			508	216
1600			498	234
1700			684	311
1800			761	340
			709	332
			520	257
			381	147
			368	142
			224	123
			149	82
			116	80

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-49 & I-35W S RAMP

COUNTY: ANOKA

REF. POINT: 036.468

DATE: 8/22/1996

OPERATOR: DR

Speed	Approach Description	Lanes
55	Major App1: TH-49 NB, S OF I-35W S RAMP	1
55	Major App3: TH-49 SB, N OF I-35W S RAMP	1
55	Minor App2: I-35W EXIT RAMP TO TH-49 S RAMP	2
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	43	30	40	0	113	40	/
1:00 - 2:00	22	12	20	0	54	20	/
2:00 - 3:00	7	4	10	0	21	10	/
3:00 - 4:00	7	8	12	0	27	12	/
4:00 - 5:00	25	25	17	0	67	17	/
5:00 - 6:00	80	109	38	0	227	38	/
6:00 - 7:00	222	318	138	0	678	138	X/
7:00 - 8:00	332	358	172	0	862	172	X/X
8:00 - 9:00	260	239	150	0	649	150	X/X
9:00 - 10:00	247	196	162	0	605	162	X/X
10:00 - 11:00	264	197	175	0	636	175	X/X
11:00 - 12:00	271	210	185	0	666	185	X/X
12:00 - 13:00	311	211	202	0	724	202	X/X
13:00 - 14:00	294	214	216	0	724	216	X/X
14:00 - 15:00	302	196	234	0	732	234	X/X
15:00 - 16:00	393	291	311	0	995	311	X/X
16:00 - 17:00	475	286	340	0	1101	340	X/X
17:00 - 18:00	439	270	332	0	1041	332	X/X
18:00 - 19:00	332	188	257	0	777	257	X/X
19:00 - 20:00	210	171	147	0	528	147	X/X
20:00 - 21:00	199	169	142	0	510	142	X/X
21:00 - 22:00	117	107	123	0	347	123	/
22:00 - 23:00	87	62	82	0	231	82	/
23:00 - 24:00	62	54	80	0	196	80	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **14** 8 **Satisfied**

REMARKS: _____

