



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-952A & CRUSADER AVE

COUNTY: DAKOTA

REF. POINT: 127.181

DATE: 11/20/1997

OPERATOR: DR

Speed	Approach Description	Lanes
35	Major App1: TH-952A NB, S OF CRUSADER AVE	3
35	Major App3: TH-952A SB, N OF CRUSADER AVE	3
30	Minor App2: CRUSADER AVE EB, W OF TH-952A	1
30	Minor App4: EXIT FROM FRANK'S NURSERY WB, E OF TH-95	1

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

HOUR	600/900			150/75		150/75		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	67	90	157	/	1	0	/	/	/
1:00 - 2:00	51	51	102	/	4	0	/	/	/
2:00 - 3:00	30	27	57	/	1	0	/	/	/
3:00 - 4:00	27	28	55	/	0	0	/	/	/
4:00 - 5:00	44	49	93	/	4	0	/	/	/
5:00 - 6:00	92	113	205	/	4	0	/	/	/
6:00 - 7:00	272	214	486	/	6	1	/	/	/
7:00 - 8:00	586	368	954	X/X	15	2	/	/	/
8:00 - 9:00	593	424	1017	X/X	17	8	/	/	/
9:00 - 10:00	619	562	1181	X/X	29	20	/	/	/
10:00 - 11:00	673	661	1334	X/X	21	24	/	/	/
11:00 - 12:00	853	799	1652	X/X	35	29	/	/	/
12:00 - 13:00	967	1003	1970	X/X	42	41	/	/	/
13:00 - 14:00	930	972	1902	X/X	31	38	/	/	/
14:00 - 15:00	842	913	1755	X/X	35	39	/	/	/
15:00 - 16:00	946	1028	1974	X/X	35	47	/	/	/
16:00 - 17:00	992	1050	2042	X/X	38	40	/	/	/
17:00 - 18:00	1031	1095	2126	X/X	41	33	/	/	/
18:00 - 19:00	850	939	1789	X/X	48	23	/	/	/
19:00 - 20:00	662	749	1411	X/X	35	26	/	/	/
20:00 - 21:00	494	600	1094	X/X	23	11	/	/	/
21:00 - 22:00	342	400	742	X/	8	7	/	/	/
22:00 - 23:00	176	213	389	/	5	3	/	/	/
23:00 - 24:00	112	119	231	/	4	0	/	/	/

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

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

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30	Minor App2: CRUSADER AVE EB, W OF TH-952A	1
30	Minor App4: EXIT FROM FRANK'S NURSERY WB, E OF TH-95	1

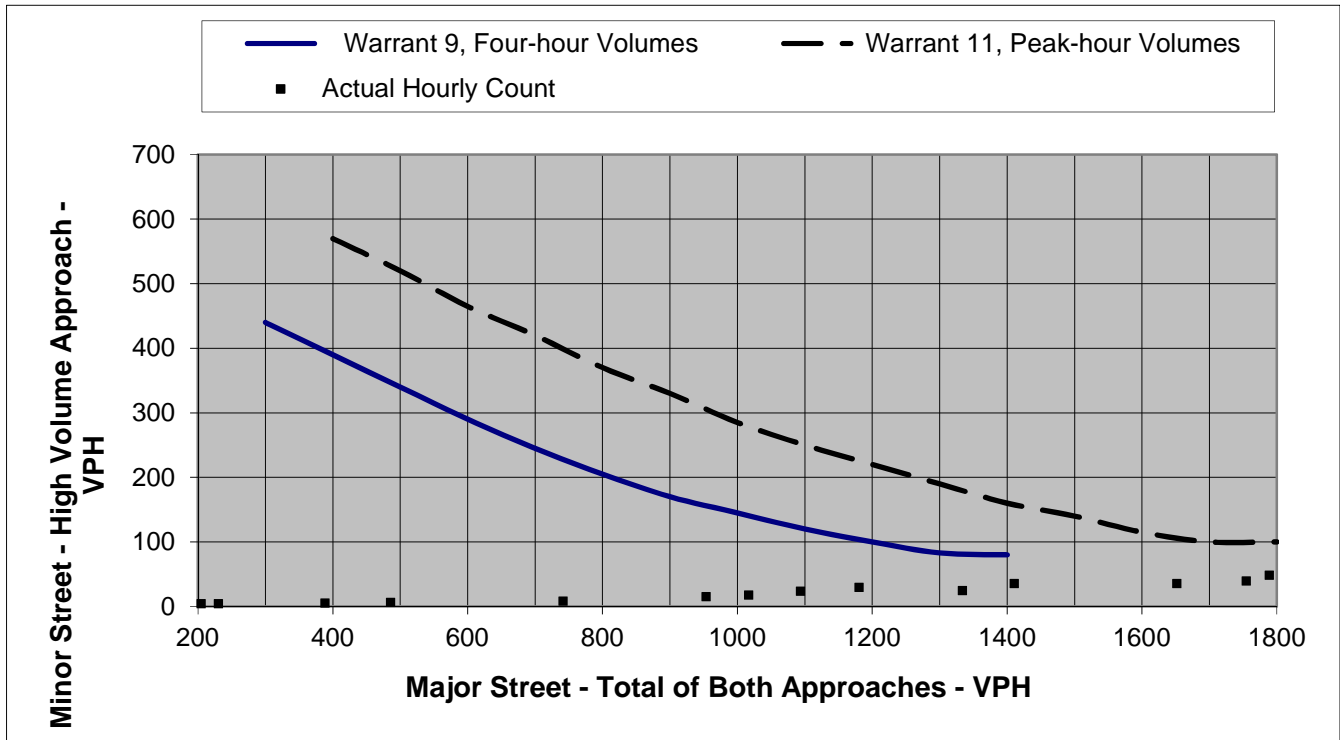


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			157	1
300	440		102	4
400	390	570	57	1
500	340	520	55	0
600	290	465	93	4
700	245	420	205	4
800	205	370	486	6
900	170	330	954	15
1000	145	285	1017	17
1100	120	250	1181	29
1200	100	220	1334	24
1300	83	190	1652	35
1400	80	160	1970	42
1500		140	1902	38
1600		115	1755	39
1700		100	1974	47
1800		100	2042	40
			2126	41
			1789	48
			1411	35
			1094	23
			742	8
			389	5
			231	4

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-952A & CRUSADER AVE

COUNTY: DAKOTA

REF. POINT: 127.181

DATE: 11/20/1997

OPERATOR: DR

Speed	Approach Description	Lanes
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35	Major App3: TH-952A SB, N OF CRUSADER AVE	3
30	Minor App2: CRUSADER AVE EB, W OF TH-952A	1
30	Minor App4: EXIT FROM FRANK'S NURSERY WB, E OF TH-952A	1

0.70 FACTOR USED? No

HOUR	MAJOR APP. 1	MAJOR APP. 3	MINOR APP. 2	MINOR APP. 4	500	200	WARRANT MET
					TOTAL Σ (APP.1 to APP. 4)	MINOR TOTAL APP. 2 + APP. 4	
0:00 - 1:00	67	90	1	0	158	1	/
1:00 - 2:00	51	51	4	0	106	4	/
2:00 - 3:00	30	27	1	0	58	1	/
3:00 - 4:00	27	28	0	0	55	0	/
4:00 - 5:00	44	49	4	0	97	4	/
5:00 - 6:00	92	113	4	0	209	4	/
6:00 - 7:00	272	214	6	1	493	7	/
7:00 - 8:00	586	368	15	2	971	17	X/
8:00 - 9:00	593	424	17	8	1042	25	X/
9:00 - 10:00	619	562	29	20	1230	49	X/
10:00 - 11:00	673	661	21	24	1379	45	X/
11:00 - 12:00	853	799	35	29	1716	64	X/
12:00 - 13:00	967	1003	42	41	2053	83	X/
13:00 - 14:00	930	972	31	38	1971	69	X/
14:00 - 15:00	842	913	35	39	1829	74	X/
15:00 - 16:00	946	1028	35	47	2056	82	X/
16:00 - 17:00	992	1050	38	40	2120	78	X/
17:00 - 18:00	1031	1095	41	33	2200	74	X/
18:00 - 19:00	850	939	48	23	1860	71	X/
19:00 - 20:00	662	749	35	26	1472	61	X/
20:00 - 21:00	494	600	23	11	1128	34	X/
21:00 - 22:00	342	400	8	7	757	15	X/
22:00 - 23:00	176	213	5	3	397	8	/
23:00 - 24:00	112	119	4	0	235	4	/

Allway Stop Warrant: Met (Hr) 0 Required (Hr) 8 Not satisfied

REMARKS: _____

