



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-61 & BEAM AVE/CSAH 19

COUNTY: RAMSEY

REF. POINT: 142.823

DATE: 10/8/1995

OPERATOR: DR

Speed	Approach Description	Lanes
50	Major App1: TH-61 NB, S OF BEAM AVE (NO FREE RIGHT TU	4
50	Major App3: TH-61 SB, N OF JCT OF BEAM AVE/CSAH 19	4
30	Minor App2: BEAM AVE EB, W OF JCT OF TH-61	2
45	Minor App4: BEAM AVE WB, E OF TH-61 (NO FREE RIGHT TL	3

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630			140/70		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	85	81	166	/	4	53	/	/	/
1:00 - 2:00	43	56	99	/	1	23	/	/	/
2:00 - 3:00	29	31	60	/	1	12	/	/	/
3:00 - 4:00	22	15	37	/	1	11	/	/	/
4:00 - 5:00	33	54	87	/	7	15	/	/	/
5:00 - 6:00	129	194	323	/	11	43	/	/	/
6:00 - 7:00	400	841	1241	X/X	53	161	/	X/X	X/X
7:00 - 8:00	611	1447	2058	X/X	96	289	/X	X/X	X/X
8:00 - 9:00	665	827	1492	X/X	86	281	/X	X/X	X/X
9:00 - 10:00	628	749	1377	X/X	77	345	/X	X/X	X/X
10:00 - 11:00	781	805	1586	X/X	100	460	/X	X/X	X/X
11:00 - 12:00	875	893	1768	X/X	92	650	/X	X/X	X/X
12:00 - 13:00	918	890	1808	X/X	121	806	/X	X/X	X/X
13:00 - 14:00	898	914	1812	X/X	121	743	/X	X/X	X/X
14:00 - 15:00	940	1018	1958	X/X	104	745	/X	X/X	X/X
15:00 - 16:00	1259	999	2258	X/X	118	817	/X	X/X	X/X
16:00 - 17:00	1556	1095	2651	X/X	149	895	X/X	X/X	X/X
17:00 - 18:00	1564	1062	2626	X/X	135	791	/X	X/X	X/X
18:00 - 19:00	1009	950	1959	X/X	112	640	/X	X/X	X/X
19:00 - 20:00	773	787	1560	X/X	96	661	/X	X/X	X/X
20:00 - 21:00	624	579	1203	X/X	72	589	/X	X/X	X/X
21:00 - 22:00	406	416	822	X/X	39	424	/	X/X	X/X
22:00 - 23:00	234	253	487	X/	14	149	/	X/X	X/
23:00 - 24:00	156	135	291	/	4	102	/	/X	/

	Met (Hr)	Required (Hr)	
Warrant 1	17	8	Satisfied
Warrant 2	16	8	Satisfied
Warrant 6	17	8	Satisfied, check accident record
Warrant 8	16	8	Satisfied
Warrant 9	16	4	Satisfied
Warrant 11	16	1	Satisfied

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COUNTY: RAMSEY

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OPERATOR: DR

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

Speed	Approach Description	Lanes
50	Major App1: TH-61 NB, S OF BEAM AVE (NO FREE RIGHT TU	4
50	Major App3: TH-61 SB, N OF JCT OF BEAM AVE/CSAH 19	4
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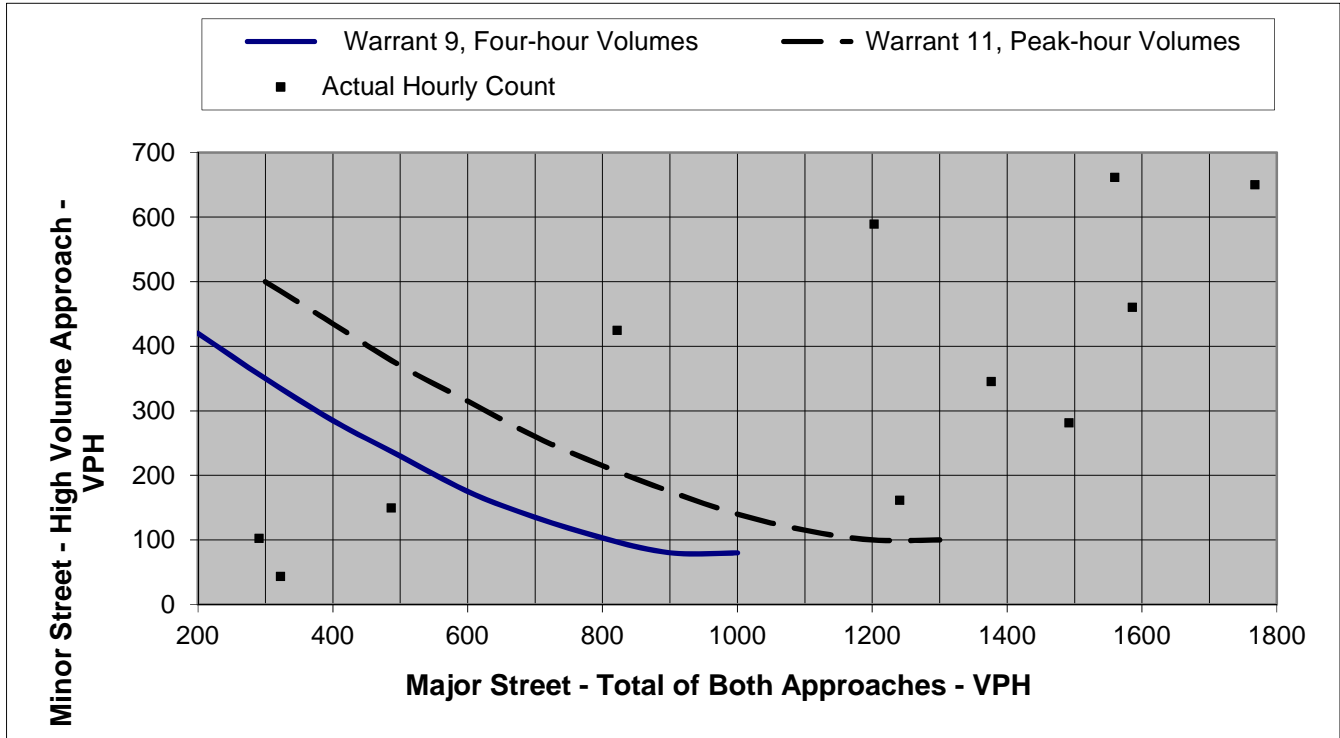


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		166	53
300	350	500	99	23
400	285	435	60	12
500	230	370	37	11
600	175	315	87	15
700	135	260	323	43
800	103	215	1241	161
900	80	175	2058	289
1000	80	140	1492	281
1100		115	1377	345
1200		100	1586	460
1300		100	1768	650
1400			1808	806
1500			1812	743
1600			1958	745
1700			2258	817
1800			2651	895
			2626	791
			1959	640
			1560	661
			1203	589
			822	424
			487	149
			291	102

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 & BEAM AVE/CSAH 19

COUNTY: RAMSEY

REF. POINT: 142.823

DATE: 10/8/1995

OPERATOR: DR

Speed	Approach Description	Lanes
50	Major App1: TH-61 NB, S OF BEAM AVE (NO FREE RIGHT T	4
50	Major App3: TH-61 SB, N OF JCT OF BEAM AVE/CSAH 19	4
30	Minor App2: BEAM AVE EB, W OF JCT OF TH-61	2
45	Minor App4: BEAM AVE WB, E OF TH-61 (NO FREE RIGHT T	3

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	85	81	4	53	223	57	/
1:00 - 2:00	43	56	1	23	123	24	/
2:00 - 3:00	29	31	1	12	73	13	/
3:00 - 4:00	22	15	1	11	49	12	/
4:00 - 5:00	33	54	7	15	109	22	/
5:00 - 6:00	129	194	11	43	377	54	X/
6:00 - 7:00	400	841	53	161	1455	214	X/X
7:00 - 8:00	611	1447	96	289	2443	385	X/X
8:00 - 9:00	665	827	86	281	1859	367	X/X
9:00 - 10:00	628	749	77	345	1799	422	X/X
10:00 - 11:00	781	805	100	460	2146	560	X/X
11:00 - 12:00	875	893	92	650	2510	742	X/X
12:00 - 13:00	918	890	121	806	2735	927	X/X
13:00 - 14:00	898	914	121	743	2676	864	X/X
14:00 - 15:00	940	1018	104	745	2807	849	X/X
15:00 - 16:00	1259	999	118	817	3193	935	X/X
16:00 - 17:00	1556	1095	149	895	3695	1044	X/X
17:00 - 18:00	1564	1062	135	791	3552	926	X/X
18:00 - 19:00	1009	950	112	640	2711	752	X/X
19:00 - 20:00	773	787	96	661	2317	757	X/X
20:00 - 21:00	624	579	72	589	1864	661	X/X
21:00 - 22:00	406	416	39	424	1285	463	X/X
22:00 - 23:00	234	253	14	149	650	163	X/X
23:00 - 24:00	156	135	4	102	397	106	X/

Met (Hr) Required (Hr)

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

REMARKS: _____
