



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-156 & JOHN E CARROLL AVE

COUNTY: DAKOTA

REF. POINT: 001.193

DATE: 3/15/1995

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: TH-156 NB, S OF JCT OF JOHN E CARROLL AVE	4
40	Major App3: TH-156 SB, N OF JCT OF JOHN E CARROLL AVE	4
30	Minor App2: CO RD 14/GRAND AVE EB, W OF JCT OF TH-156	4
30	Minor App4: JOHN E CARROLL AVE WB, E OF JCT OF TH-156	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	51	47	98	/	8	17	/	/	/
1:00 - 2:00	25	40	65	/	3	2	/	/	/
2:00 - 3:00	25	32	57	/	3	4	/	/	/
3:00 - 4:00	27	21	48	/	5	2	/	/	/
4:00 - 5:00	36	28	64	/	13	7	/	/	/
5:00 - 6:00	81	105	186	/	31	13	/	/	/
6:00 - 7:00	199	188	387	/	81	52	/X	/	/
7:00 - 8:00	274	307	581	X/	118	117	/X	/X	/
8:00 - 9:00	275	317	592	X/	116	112	/X	/X	/
9:00 - 10:00	256	277	533	X/	104	106	/X	/X	/
10:00 - 11:00	254	346	600	X/	94	102	/X	/X	/
11:00 - 12:00	315	376	691	X/X	142	213	X/X	X/X	X/X
12:00 - 13:00	327	392	719	X/X	154	228	X/X	X/X	X/X
13:00 - 14:00	306	418	724	X/X	132	123	/X	/X	/X
14:00 - 15:00	321	408	729	X/X	131	148	/X	X/X	X/X
15:00 - 16:00	339	473	812	X/X	169	172	X/X	X/X	X/X
16:00 - 17:00	332	492	824	X/X	174	188	X/X	X/X	X/X
17:00 - 18:00	297	450	747	X/X	156	145	X/X	X/X	X/X
18:00 - 19:00	261	302	563	X/	86	101	/X	/X	/
19:00 - 20:00	157	197	354	/	63	62	/	/	/
20:00 - 21:00	138	206	344	/	45	46	/	/	/
21:00 - 22:00	119	210	329	/	46	41	/	/	/
22:00 - 23:00	6	110	116	/	19	30	/	/	/
23:00 - 24:00	64	100	164	/	12	24	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	6	8	Not satisfied
Warrant 2	7	8	Not satisfied
Warrant 6	12	8	Satisfied, check accident record
Warrant 8	9	8	Satisfied
Warrant 9	7	4	Satisfied
Warrant 11	0	1	Not satisfied

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OPERATOR: DR

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

Speed	Approach Description	Lanes
40	Major App1: TH-156 NB, S OF JCT OF JOHN E CARROLL AVE	4
40	Major App3: TH-156 SB, N OF JCT OF JOHN E CARROLL AVE	4
30	Minor App2: CO RD 14/GRAND AVE EB, W OF JCT OF TH-156	4
30	Minor App4: JOHN E CARROLL AVE WB, E OF JCT OF TH-156	3

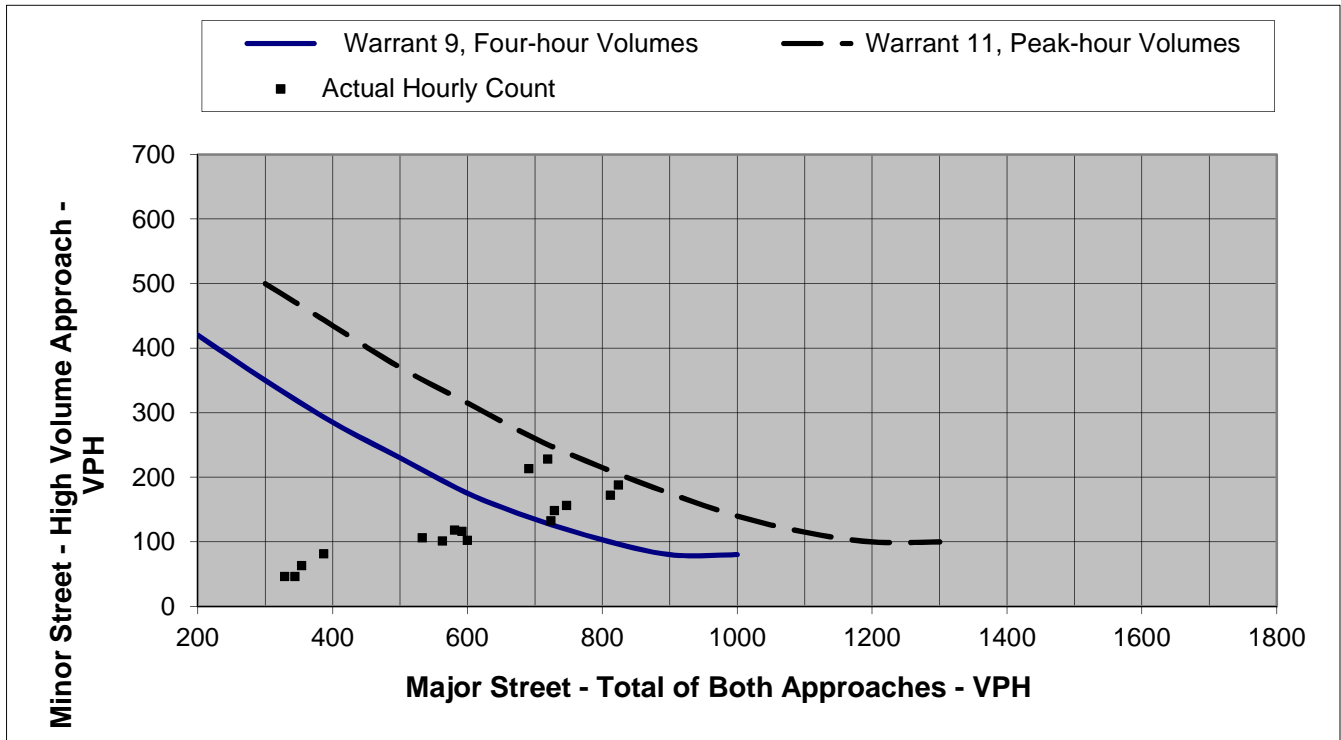


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		98	17
300	350	500	65	3
400	285	435	57	4
500	230	370	48	5
600	175	315	64	13
700	135	260	186	31
800	103	215	387	81
900	80	175	581	118
1000	80	140	592	116
1100		115	533	106
1200		100	600	102
1300		100	691	213
1400			719	228
1500			724	132
1600			729	148
1700			812	172
1800			824	188
			747	156
			563	101
			354	63
			344	46
			329	46
			116	30
			164	24

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-56 & JOHN E CARROLL AVE

COUNTY: DAKOTA

REF. POINT: 001.193

DATE: 3/15/1995

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: TH-56 NB, S OF JCT OF JOHN E CARROLL AVE	4
40	Major App3: TH-56 SB, N OF JCT OF JOHN E CARROLL AVE	4
30	Minor App2: CO RD 14/GRAND AVE EB, W OF JCT OF TH-56	4
30	Minor App4: JOHN E CARROLL AVE WB, E OF JCT OF TH-56	315

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	51	47	8	17	123	25	/
1:00 - 2:00	25	40	3	2	70	5	/
2:00 - 3:00	25	32	3	4	64	7	/
3:00 - 4:00	27	21	5	2	55	7	/
4:00 - 5:00	36	28	13	7	84	20	/
5:00 - 6:00	81	105	31	13	230	44	/
6:00 - 7:00	199	188	81	52	520	133	X/
7:00 - 8:00	274	307	118	117	816	235	X/X
8:00 - 9:00	275	317	116	112	820	228	X/X
9:00 - 10:00	256	277	104	106	743	210	X/X
10:00 - 11:00	254	346	94	102	796	196	X/X
11:00 - 12:00	315	376	142	213	1046	355	X/X
12:00 - 13:00	327	392	154	228	1101	382	X/X
13:00 - 14:00	306	418	132	123	979	255	X/X
14:00 - 15:00	321	408	131	148	1008	279	X/X
15:00 - 16:00	339	473	169	172	1153	341	X/X
16:00 - 17:00	332	492	174	188	1186	362	X/X
17:00 - 18:00	297	450	156	145	1048	301	X/X
18:00 - 19:00	261	302	86	101	750	187	X/X
19:00 - 20:00	157	197	63	62	479	125	X/
20:00 - 21:00	138	206	45	46	435	91	X/
21:00 - 22:00	119	210	46	41	416	87	X/
22:00 - 23:00	6	110	19	30	165	49	/
23:00 - 24:00	64	100	12	24	200	36	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **12** 8 **Satisfied**

REMARKS: _____

