



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-95 /Manning Ave. at CSAH-18/40th St S/Bailey Rd

COUNTY: Washington

REF. POINT: 119.595

DATE: 9/28/2011

OPERATOR: RE

Speed	Approach Description	Lanes
55	Major App1: TH-95 /Manning Ave NB, S of CSAH-18/Bailey Rd.	2
55	Major App3: TH-95 /Manning Ave SB, N of CSAH-18/Bailey Rd	2
55	Minor App2: Bailey Rd EB, west of TH-95 /Manning Ave	2
55	Minor App4: CSAH-18 /40th St S WB, east of TH-95 /Manning Av	2

0.70 FACTOR USED?

YES

POPULATION < 10,000?

NO

EXISTING SIGNAL ?

NO

THRESHOLDS 1A/1B:

420/630

140/70

140/70

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	11	12	23	/	4	/	2	/	/
1:00 - 2:00	10	6	16	/	3	/	1	/	/
2:00 - 3:00	10	5	15	/	1	/	2	/	/
3:00 - 4:00	10	10	20	/	2	/	2	/	/
4:00 - 5:00	20	19	39	/	4	/	6	/	/
5:00 - 6:00	68	87	155	/	16	/	32	/	/
6:00 - 7:00	160	182	342	/	48	/	99	/X	/
7:00 - 8:00	285	247	532	X/	100	/X	158	X/X	X/
8:00 - 9:00	200	192	392	/	86	/X	119	/X	/
9:00 - 10:00	128	161	289	/	89	/X	80	/X	/
10:00 - 11:00	137	161	298	/	63	/	71	/X	/
11:00 - 12:00	154	165	319	/	73	/X	57	/	/
12:00 - 13:00	168	194	362	/	70	/X	53	/	/
13:00 - 14:00	157	190	347	/	64	/	65	/	/
14:00 - 15:00	176	239	415	/	79	/X	65	/	/
15:00 - 16:00	239	298	537	X/	133	/X	75	/X	/
16:00 - 17:00	266	399	665	X/X	153	X/X	71	/X	X/X
17:00 - 18:00	257	380	637	X/X	144	X/X	81	/X	X/X
18:00 - 19:00	184	256	440	X/	119	/X	77	/X	/
19:00 - 20:00	121	176	297	/	90	/X	52	/	/
20:00 - 21:00	80	138	218	/	58	/	41	/	/
21:00 - 22:00	74	126	200	/	38	/	23	/	/
22:00 - 23:00	45	63	108	/	22	/	12	/	/
23:00 - 24:00	24	29	53	/	10	/	5	/	/

Met (Hr) Required (Hr)

Warrant 1A	3	8	Not satisfied
Warrant 1B	2	8	Not satisfied
Warrant 2	1	4	Not satisfied
Warrant 3	0	1	Not satisfied
Warrant 7	6	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

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REF. POINT: 119.595

DATE: 9/28/2011

OPERATOR: RE

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

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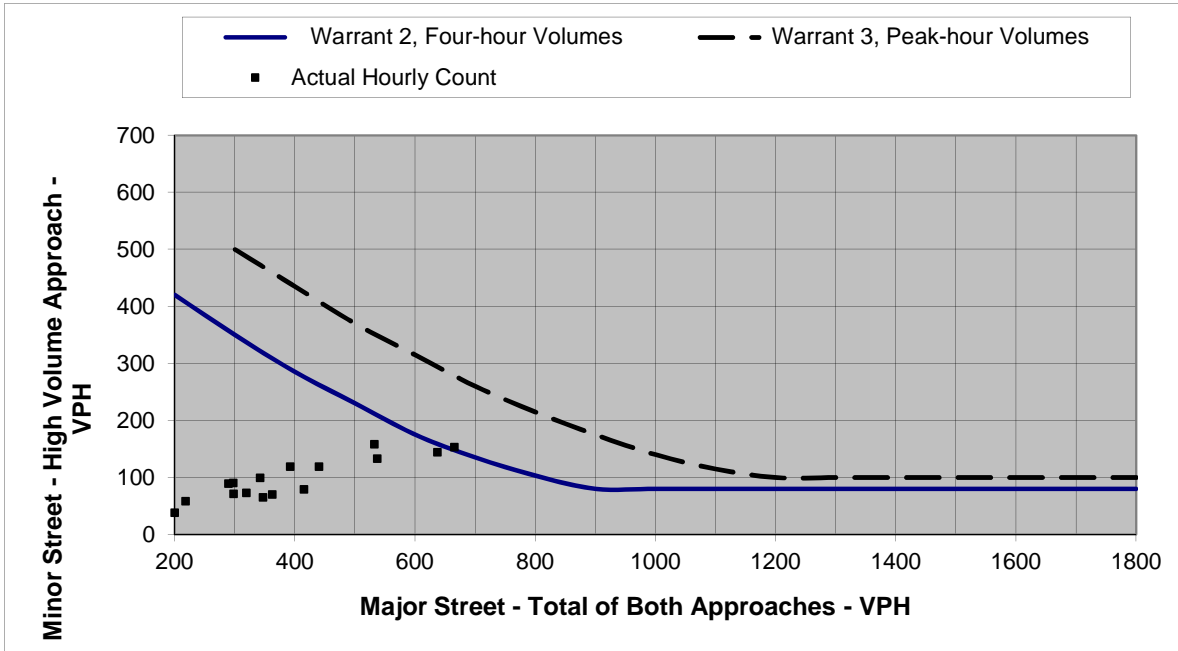


Figure 1. Four Hour and Peak Hour Warrant Analysis

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

Major	Warrant Criteria		Actual Hourly Count	
	Warrant 2, F	Warrant 3, Pe	Major	Actual Hourly Count
200	420		23	4
300	350	500	16	3
400	285	435	15	2
500	230	370	20	2
600	175	315	39	6
700	135	260	155	32
800	103	215	342	99
900	80	175	532	158
1000	80	140	392	119
1100	80	115	289	89
1200	80	100	298	71
1300	80	100	319	73
1400	80	100	362	70
1500	80	100	347	65
1600	80	100	415	79
1700	80	100	537	133
1800	80	100	665	153
			637	144
			440	119
			297	90
			218	58
			200	38
			108	22
			53	10



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

ALL WAY STOP WARRANT

LOCATION: TH-95 /Manning Ave. at CSAH-18/40th St S/Bailey Rd

COUNTY: Washington

REF. POINT: 119.595

DATE: 9/28/2011

OPERATOR: RE

Speed	Approach Description	Lanes
55	Major App1: TH-95 /Manning Ave NB, S of CSAH-18/Bailey Rd	2
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55	Minor App2: Bailey Rd EB, west of TH-95 /Manning Ave	2
55	Minor App4: CSAH-18 /40th St S WB, east of TH-95 /Manning	2

0.70 FACTOR USED? Yes

HOUR					210	140	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	11	12	4	2	23	6	/
1:00 - 2:00	10	6	3	1	16	4	/
2:00 - 3:00	10	5	1	2	15	3	/
3:00 - 4:00	10	10	2	2	20	4	/
4:00 - 5:00	20	19	4	6	39	10	/
5:00 - 6:00	68	87	16	32	155	48	/
6:00 - 7:00	160	182	48	99	342	147	X/X
7:00 - 8:00	285	247	100	158	532	258	X/X
8:00 - 9:00	200	192	86	119	392	205	X/X
9:00 - 10:00	128	161	89	80	289	169	X/X
10:00 - 11:00	137	161	63	71	298	134	X/
11:00 - 12:00	154	165	73	57	319	130	X/
12:00 - 13:00	168	194	70	53	362	123	X/
13:00 - 14:00	157	190	64	65	347	129	X/
14:00 - 15:00	176	239	79	65	415	144	X/X
15:00 - 16:00	239	298	133	75	537	208	X/X
16:00 - 17:00	266	399	153	71	665	224	X/X
17:00 - 18:00	257	380	144	81	637	225	X/X
18:00 - 19:00	184	256	119	77	440	196	X/X
19:00 - 20:00	121	176	90	52	297	142	X/X
20:00 - 21:00	80	138	58	41	218	99	X/
21:00 - 22:00	74	126	38	23	200	61	/
22:00 - 23:00	45	63	22	12	108	34	/
23:00 - 24:00	24	29	10	5	53	15	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **10** 8 **Satisfied**

REMARKS: _____

