



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: I-35E & RANDOLPH, W RAMPS

COUNTY: RAMSEY

REF. POINT: 104.329

DATE: 11/4/1996

OPERATOR: DR

Speed	Approach Description	Lanes
30	Major App1: RANDOLPH AVE. EB, W OF W RAMPS OF I-35E	2
30	Major App3: RANDOLPH AVE. WB, E OF W RAMPS OF I-35E	2
0	Minor App2: N/A	0
30	Minor App4: I-35E SB RAMP TO RANDOLPH AVE.	2

0.70 FACTOR USED? NO

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	600/900			0/0		200/100		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	111	14	125	/	0	29	/	/	/
1:00 - 2:00	59	9	68	/	0	13	/	/	/
2:00 - 3:00	27	12	39	/	0	7	/	/	/
3:00 - 4:00	14	2	16	/	0	7	/	/	/
4:00 - 5:00	41	9	50	/	0	9	/	/	/
5:00 - 6:00	120	35	155	/	0	44	/	/	/
6:00 - 7:00	506	166	672	X/	0	72	/	/	/
7:00 - 8:00	1072	213	1285	X/X	0	179	/	/X	/X
8:00 - 9:00	913	224	1137	X/X	0	217	/	X/X	X/X
9:00 - 10:00	600	176	776	X/	0	185	/	/X	/
10:00 - 11:00	538	238	776	X/	0	138	/	/X	/
11:00 - 12:00	629	305	934	X/X	0	167	/	/X	/X
12:00 - 13:00	682	332	1014	X/X	0	163	/	/X	/X
13:00 - 14:00	658	288	946	X/X	0	154	/	/X	/X
14:00 - 15:00	876	316	1192	X/X	0	196	/	/X	/X
15:00 - 16:00	1124	605	1729	X/X	0	253	/	X/X	X/X
16:00 - 17:00	1212	718	1930	X/X	0	247	/	X/X	X/X
17:00 - 18:00	1228	738	1966	X/X	0	261	/	X/X	X/X
18:00 - 19:00	852	507	1359	X/X	0	201	/	X/X	X/X
19:00 - 20:00	569	335	904	X/X	0	133	/	/X	/X
20:00 - 21:00	500	273	773	X/	0	122	/	/X	/
21:00 - 22:00	481	219	700	X/	0	111	/	/X	/
22:00 - 23:00	271	182	453	/	0	74	/	/	/
23:00 - 24:00	153	92	245	/	0	46	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	5	8	Not satisfied
Warrant 2	11	8	Satisfied
Warrant 6	14	8	Satisfied, check accident record
Warrant 8	10	8	Satisfied
Warrant 9	7	4	Satisfied
Warrant 11	3	1	Satisfied

LOCATION: I-35E & RANDOLPH, W RAMPS

COUNTY: RAMSEY

REF. POINT: 104.329

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OPERATOR: DR

0.70 FACTOR USED? NO

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

Speed	Approach Description	Lanes
30	Major App1: RANDOLPH AVE. EB, W OF W RAMPS OF I-35E	2
30	Major App3: RANDOLPH AVE. WB, E OF W RAMPS OF I-35E	2
0	Minor App2: N/A	0
30	Minor App4: I-35E SB RAMP TO RANDOLPH AVE.	2

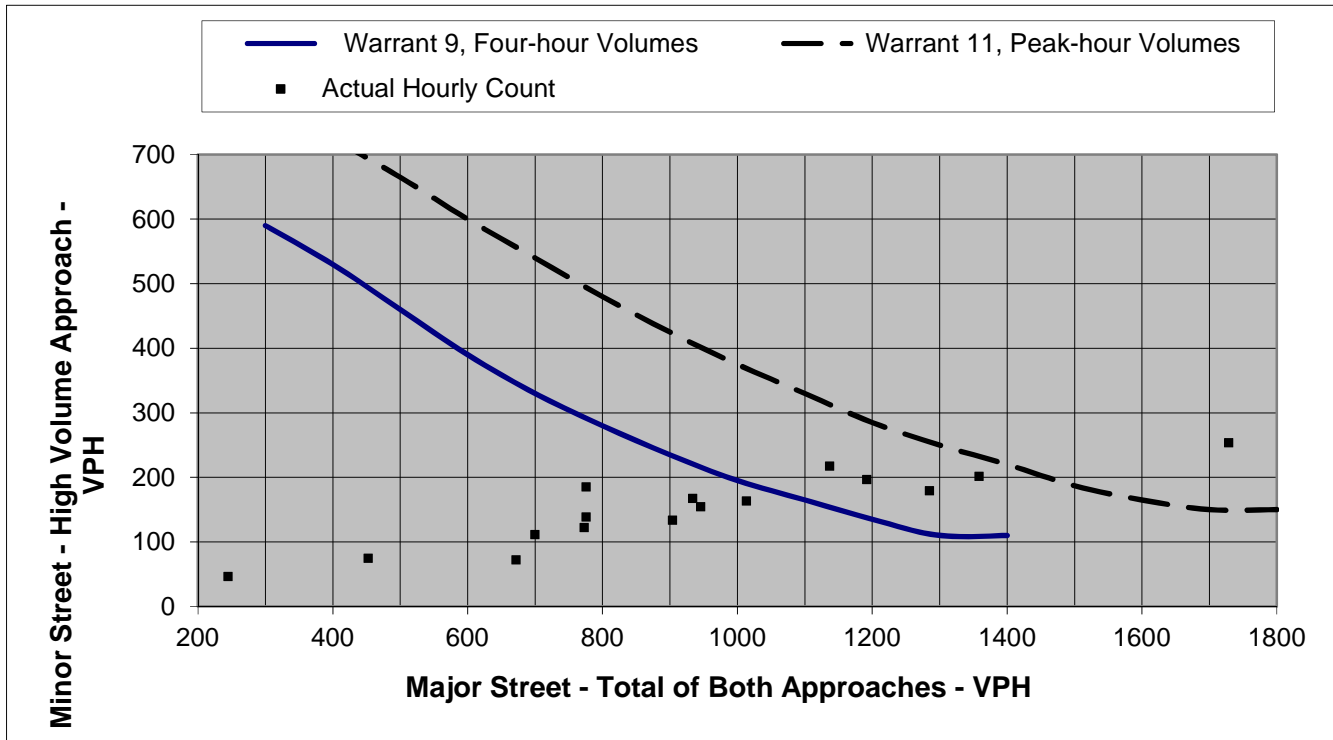


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			125	29
300	590		68	13
400	530	725	39	7
500	460	665	16	7
600	390	600	50	9
700	330	540	155	44
800	280	480	672	72
900	235	425	1285	179
1000	195	375	1137	217
1100	165	330	776	185
1200	135	285	776	138
1300	110	250	934	167
1400	110	220	1014	163
1500		187	946	154
1600		165	1192	196
1700		150	1729	253
1800		150	1930	247
			1966	261
			1359	201
			904	133
			773	122
			700	111
			453	74
			245	46

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: I-35E & RANDOLPH, W RAMPS

COUNTY: RAMSEY

REF. POINT: 104.329

DATE: 11/4/1996

OPERATOR: DR

Speed	Approach Description	Lanes
30	Major App1: RANDOLPH AVE. EB, W OF W RAMPS OF I-35E	2
30	Major App3: RANDOLPH AVE. WB, E OF W RAMPS OF I-35E	2
0	Minor App2: N/A	0
30	Minor App4: I-35E SB RAMP TO RANDOLPH AVE.	2

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	111	14	0	29	154	29	/
1:00 - 2:00	59	9	0	13	81	13	/
2:00 - 3:00	27	12	0	7	46	7	/
3:00 - 4:00	14	2	0	7	23	7	/
4:00 - 5:00	41	9	0	9	59	9	/
5:00 - 6:00	120	35	0	44	199	44	/
6:00 - 7:00	506	166	0	72	744	72	X/
7:00 - 8:00	1072	213	0	179	1464	179	X/
8:00 - 9:00	913	224	0	217	1354	217	X/X
9:00 - 10:00	600	176	0	185	961	185	X/
10:00 - 11:00	538	238	0	138	914	138	X/
11:00 - 12:00	629	305	0	167	1101	167	X/
12:00 - 13:00	682	332	0	163	1177	163	X/
13:00 - 14:00	658	288	0	154	1100	154	X/
14:00 - 15:00	876	316	0	196	1388	196	X/
15:00 - 16:00	1124	605	0	253	1982	253	X/X
16:00 - 17:00	1212	718	0	247	2177	247	X/X
17:00 - 18:00	1228	738	0	261	2227	261	X/X
18:00 - 19:00	852	507	0	201	1560	201	X/X
19:00 - 20:00	569	335	0	133	1037	133	X/
20:00 - 21:00	500	273	0	122	895	122	X/
21:00 - 22:00	481	219	0	111	811	111	X/
22:00 - 23:00	271	182	0	74	527	74	X/
23:00 - 24:00	153	92	0	46	291	46	/

Allway Stop Warrant: Met (Hr) 5 Required (Hr) 8 Not satisfied

REMARKS: _____

