



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: I94 & CSAH 152 S RAMP

COUNTY: HENNEPIN

REF. POINT: 220.483

DATE: 1/15/1997

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: BROOKLYN BLVD CSAH 152 NB, S OF I94	2
40	Major App3: BROOKLYN BLVD CSAH 152 SB, N OF I94	4
30	Minor App2: I94 EB EXIT RAMP (W/O FREE RIGHT)	1
0	Minor App4: N/A	0

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630			105/52			0/0		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	66	130	196	/	16	0	/	/	/
1:00 - 2:00	32	73	105	/	15	0	/	/	/
2:00 - 3:00	28	60	88	/	9	0	/	/	/
3:00 - 4:00	14	61	75	/	7	0	/	/	/
4:00 - 5:00	21	132	153	/	9	0	/	/	/
5:00 - 6:00	119	566	685	X/X	22	0	/	/	/
6:00 - 7:00	231	1858	2089	X/X	44	0	/	/	/
7:00 - 8:00	358	2369	2727	X/X	38	0	/	/	/
8:00 - 9:00	415	1349	1764	X/X	61	0	/X	/	/X
9:00 - 10:00	387	1045	1432	X/X	124	0	X/X	/	X/X
10:00 - 11:00	429	935	1364	X/X	98	0	/X	/	/X
11:00 - 12:00	547	941	1488	X/X	113	0	X/X	/	X/X
12:00 - 13:00	668	1077	1745	X/X	122	0	X/X	/	X/X
13:00 - 14:00	605	1065	1670	X/X	147	0	X/X	/	X/X
14:00 - 15:00	726	1217	1943	X/X	172	0	X/X	/	X/X
15:00 - 16:00	770	1388	2158	X/X	212	0	X/X	/	X/X
16:00 - 17:00	861	1373	2234	X/X	211	0	X/X	/	X/X
17:00 - 18:00	811	1127	1938	X/X	182	0	X/X	/	X/X
18:00 - 19:00	615	984	1599	X/X	147	0	X/X	/	X/X
19:00 - 20:00	496	754	1250	X/X	103	0	/X	/	/X
20:00 - 21:00	431	674	1105	X/X	88	0	/X	/	/X
21:00 - 22:00	351	640	991	X/X	77	0	/X	/	/X
22:00 - 23:00	159	388	547	X/	67	0	/X	/	/
23:00 - 24:00	98	234	332	/	51	0	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	9	8	Satisfied
Warrant 2	14	8	Satisfied
Warrant 6	16	8	Satisfied, check accident record
Warrant 8	12	8	Satisfied
Warrant 9	14	4	Satisfied
Warrant 11	11	1	Satisfied

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40	Major App3: BROOKLYN BLVD CSAH 152 SB, N OF I94	4
30	Minor App2: I94 EB EXIT RAMP (W/O FREE RIGHT)	1
0	Minor App4: N/A	0

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

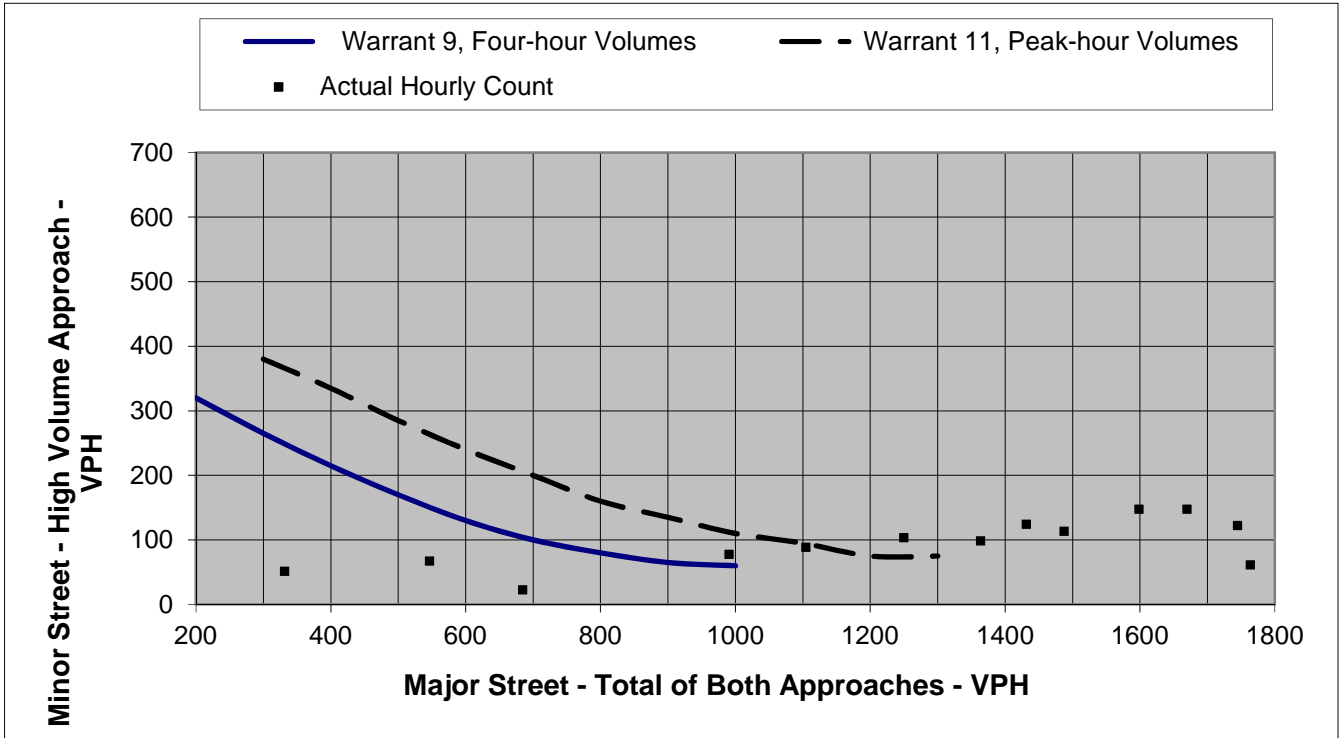


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	320		196	16
300	265	380	105	15
400	215	335	88	9
500	170	285	75	7
600	130	240	153	9
700	100	200	685	22
800	80	160	2089	44
900	65	135	2727	38
1000	60	110	1764	61
1100		95	1432	124
1200		75	1364	98
1300		75	1488	113
1400			1745	122
1500			1670	147
1600			1943	172
1700			2158	212
1800			2234	211
			1938	182
			1599	147
			1250	103
			1105	88
			991	77
			547	67
			332	51

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: I94 & CSAH 152 S RAMP

COUNTY: HENNEPIN

REF. POINT: 220.483

DATE: 1/15/1997

OPERATOR: DR

Speed	Approach Description	Lanes
40	Major App1: BROOKLYN BLVD CSAH 152 NB, S OF I94	2
40	Major App3: BROOKLYN BLVD CSAH 152 SB, N OF I94	4
30	Minor App2: I94 EB EXIT RAMP (W/O FREE RIGHT)	1
0	Minor App4: N/A	0

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	66	130	16	0	212	16	/
1:00 - 2:00	32	73	15	0	120	15	/
2:00 - 3:00	28	60	9	0	97	9	/
3:00 - 4:00	14	61	7	0	82	7	/
4:00 - 5:00	21	132	9	0	162	9	/
5:00 - 6:00	119	566	22	0	707	22	X/
6:00 - 7:00	231	1858	44	0	2133	44	X/
7:00 - 8:00	358	2369	38	0	2765	38	X/
8:00 - 9:00	415	1349	61	0	1825	61	X/
9:00 - 10:00	387	1045	124	0	1556	124	X/
10:00 - 11:00	429	935	98	0	1462	98	X/
11:00 - 12:00	547	941	113	0	1601	113	X/
12:00 - 13:00	668	1077	122	0	1867	122	X/
13:00 - 14:00	605	1065	147	0	1817	147	X/X
14:00 - 15:00	726	1217	172	0	2115	172	X/X
15:00 - 16:00	770	1388	212	0	2370	212	X/X
16:00 - 17:00	861	1373	211	0	2445	211	X/X
17:00 - 18:00	811	1127	182	0	2120	182	X/X
18:00 - 19:00	615	984	147	0	1746	147	X/X
19:00 - 20:00	496	754	103	0	1353	103	X/
20:00 - 21:00	431	674	88	0	1193	88	X/
21:00 - 22:00	351	640	77	0	1068	77	X/
22:00 - 23:00	159	388	67	0	614	67	X/
23:00 - 24:00	98	234	51	0	383	51	X/

Allway Stop Warrant: Met (Hr) 6 Required (Hr) 8 Not satisfied

REMARKS: \_\_\_\_\_