



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH 47 @ CO. RD. 28/AMBASSADOR BLVD IN ST FRANCIS

COUNTY: ANOKA

REF. POINT: 35+578

DATE: 9/5/2000

OPERATOR: M.A.R.

Speed	Approach Description	Lanes
55	Major App1: TH 47 SOUTH BOUND	2
50	Major App3: TH 47 NORTH BOUND	2
55	Minor App2: CO RD 28 EAST BOUND	2
45	Minor App4: AMBASSADOR BLVD. WEST BOUND	2

0.70 FACTOR USED? YES

POPULATION < 10,000? YES

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	8	3	11	/	14	3	/	/	/
1:00 - 2:00	12	1	13	/	9	1	/	/	/
2:00 - 3:00	9	3	12	/	4	3	/	/	/
3:00 - 4:00	27	3	30	/	11	3	/	/	/
4:00 - 5:00	92	19	111	/	22	19	/	/	/
5:00 - 6:00	343	51	394	/	91	51	/X	/	/
6:00 - 7:00	459	96	555	X/	189	96	X/X	/X	X/
7:00 - 8:00	424	116	540	X/	212	116	X/X	/X	X/
8:00 - 9:00	224	60	284	/	142	60	X/X	/	/
9:00 - 10:00	173	70	243	/	155	70	X/X	/X	/
10:00 - 11:00	135	57	192	/	116	57	/X	/	/
11:00 - 12:00	135	59	194	/	118	59	/X	/	/
12:00 - 13:00	145	50	195	/	95	50	/X	/	/
13:00 - 14:00	163	60	223	/	136	60	/X	/	/
14:00 - 15:00	163	71	234	/	150	71	X/X	/X	/
15:00 - 16:00	166	79	245	/	220	79	X/X	/X	/
16:00 - 17:00	175	82	257	/	262	82	X/X	/X	/
17:00 - 18:00	160	79	239	/	269	79	X/X	/X	/
18:00 - 19:00	160	58	218	/	190	58	X/X	/	/
19:00 - 20:00	117	66	183	/	161	66	X/X	/	/
20:00 - 21:00	100	40	140	/	94	40	/X	/	/
21:00 - 22:00	77	26	103	/	64	26	/	/	/
22:00 - 23:00	41	14	55	/	46	14	/	/	/
23:00 - 24:00	14	3	17	/	17	3	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	2	8	Not satisfied
Warrant 2	0	8	Not satisfied
Warrant 6	2	8	Not satisfied
Warrant 8	2	8	Not satisfied
Warrant 9	1	4	Not satisfied
Warrant 11	0	1	Not satisfied

LOCATION: TH 47 @ CO. RD. 28/AMBASSADOR BLVD IN ST FRANCIS

COUNTY: ANOKA

REF. POINT: 35+578

DATE: 9/5/2000

OPERATOR: M.A.R.

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

Speed	Approach Description	Lanes
55	Major App1: TH 47 SOUTH BOUND	2
50	Major App3: TH 47 NORTH BOUND	2
55	Minor App2: CO RD 28 EAST BOUND	2
45	Minor App4: AMBASSADOR BLVD. WEST BOUND	2

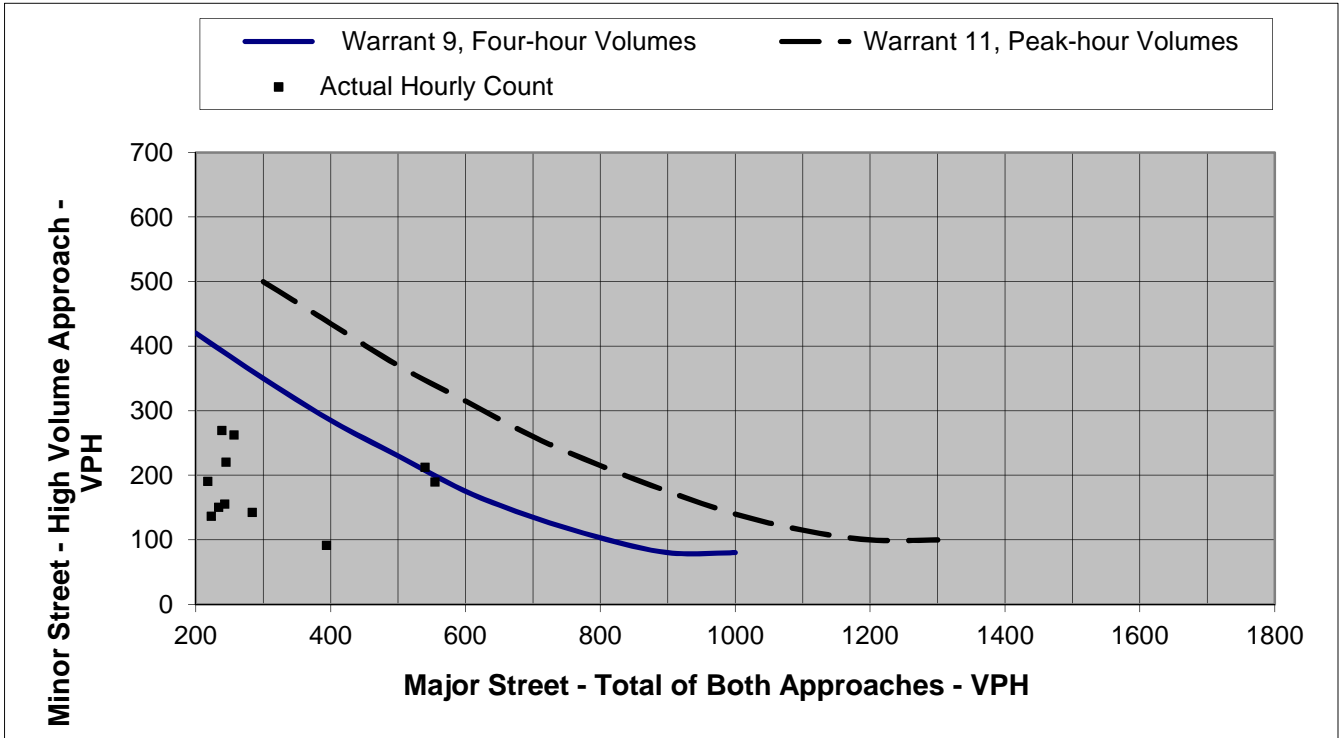


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	420		11	14
300	350	500	13	9
400	285	435	12	4
500	230	370	30	11
600	175	315	111	22
700	135	260	394	91
800	103	215	555	189
900	80	175	540	212
1000	80	140	284	142
1100		115	243	155
1200		100	192	116
1300		100	194	118
1400			195	95
1500			223	136
1600			234	150
1700			245	220
1800			257	262
			239	269
			218	190
			183	161
			140	94
			103	64
			55	46
			17	17

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 47 @ CO. RD. 28/AMBASSADOR BLVD IN ST FRANCIS

COUNTY: ANOKA

REF. POINT: 35+578

DATE: 9/5/2000

OPERATOR: M.A.R.

Speed	Approach Description	Lanes
55	Major App1: TH 47 SOUTH BOUND	2
50	Major App3: TH 47 NORTH BOUND	2
55	Minor App2: CO RD 28 EAST BOUND	2
45	Minor App4: AMBASSADOR BLVD. WEST BOUND	2

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	8	3	14	3	28	17	/
1:00 - 2:00	12	1	9	1	23	10	/
2:00 - 3:00	9	3	4	3	19	7	/
3:00 - 4:00	27	3	11	3	44	14	/
4:00 - 5:00	92	19	22	19	152	41	/
5:00 - 6:00	343	51	91	51	536	142	X/X
6:00 - 7:00	459	96	189	96	840	285	X/X
7:00 - 8:00	424	116	212	116	868	328	X/X
8:00 - 9:00	224	60	142	60	486	202	X/X
9:00 - 10:00	173	70	155	70	468	225	X/X
10:00 - 11:00	135	57	116	57	365	173	X/X
11:00 - 12:00	135	59	118	59	371	177	X/X
12:00 - 13:00	145	50	95	50	340	145	/X
13:00 - 14:00	163	60	136	60	419	196	X/X
14:00 - 15:00	163	71	150	71	455	221	X/X
15:00 - 16:00	166	79	220	79	544	299	X/X
16:00 - 17:00	175	82	262	82	601	344	X/X
17:00 - 18:00	160	79	269	79	587	348	X/X
18:00 - 19:00	160	58	190	58	466	248	X/X
19:00 - 20:00	117	66	161	66	410	227	X/X
20:00 - 21:00	100	40	94	40	274	134	/
21:00 - 22:00	77	26	64	26	193	90	/
22:00 - 23:00	41	14	46	14	115	60	/
23:00 - 24:00	14	3	17	3	37	20	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **14** 8 **Satisfied**

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



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: TH 47 SOUTH BOUND

COUNTY: ANOKA

REF. PT.: 35+578

SITE CODE: 24947028

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 5, 2000**

DATE HOUR \ DAY	4 MON.	5 TUE.	6 WED.	7 THU.	8 FRI.	9 SAT.	10 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			6	11				8	
1:00 - 2:00			11	13				12	
2:00 - 3:00			9	10				9	
3:00 - 4:00			26	29				27	
4:00 - 5:00			94	90				92	
5:00 - 6:00			333	354				343	
6:00 - 7:00			478	441				459	
7:00 - 8:00			433	416				424	
8:00 - 9:00			239	209				224	
9:00 - 10:00			172	174				173	
10:00 - 11:00			129	141				135	
11:00 - 12:00			112	159				135	
12:00 - 13:00			159	132				145	
13:00 - 14:00		172	155					163	
14:00 - 15:00		169	158					163	
15:00 - 16:00		157	175					166	
16:00 - 17:00		181	170					175	
17:00 - 18:00		150	171					160	
18:00 - 19:00		146	174					160	
19:00 - 20:00		111	123					117	
20:00 - 21:00		97	103					100	
21:00 - 22:00		79	75					77	
22:00 - 23:00		34	48					41	
23:00 - 24:00		14	15					14	
<b>TOTAL</b>		1310	3568	2179				3522	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\47229005



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: CO RD 28 EAST BOUND

COUNTY: ANOKA

REF. PT.: 35+578

SITE CODE: 24947028

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 5, 2000**

DATE HOUR \ DAY	4 MON.	5 TUE.	6 WED.	7 THU.	8 FRI.	9 SAT.	10 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			15	14				14	
1:00 - 2:00			7	12				9	
2:00 - 3:00			3	5				4	
3:00 - 4:00			11	12				11	
4:00 - 5:00			28	17				22	
5:00 - 6:00			85	98				91	
6:00 - 7:00			202	177				189	
7:00 - 8:00			198	226				212	
8:00 - 9:00			141	144				142	
9:00 - 10:00			162	148				155	
10:00 - 11:00			124	108				116	
11:00 - 12:00			108	128				118	
12:00 - 13:00		59	131					95	
13:00 - 14:00		107	166					136	
14:00 - 15:00		119	181					150	
15:00 - 16:00		215	226					220	
16:00 - 17:00		271	254					262	
17:00 - 18:00		266	272					269	
18:00 - 19:00		184	197					190	
19:00 - 20:00		175	147					161	
20:00 - 21:00		52	137					94	
21:00 - 22:00		38	90					64	
22:00 - 23:00		41	52					46	
23:00 - 24:00		17	18					17	
<b>TOTAL</b>		1544	2955	1089				2787	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\47229007





# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: TH 47 NORTH BOUND

COUNTY: ANOKA

REF. PT.: 35+578

SITE CODE: 24947028

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 5, 2000**

DATE HOUR \ DAY	4 MON.	5 TUE.	6 WED.	7 THU.	8 FRI.	9 SAT.	10 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			3	4				3	
1:00 - 2:00			1	1				1	
2:00 - 3:00			3	3				3	
3:00 - 4:00			4	3				3	
4:00 - 5:00			22	17				19	
5:00 - 6:00			46	56				51	
6:00 - 7:00			103	90				96	
7:00 - 8:00			112	120				116	
8:00 - 9:00			52	69				60	
9:00 - 10:00			68	73				70	
10:00 - 11:00			55	60				57	
11:00 - 12:00			58	60				59	
12:00 - 13:00			47	54				50	
13:00 - 14:00		59	62					60	
14:00 - 15:00		76	66					71	
15:00 - 16:00		85	73					79	
16:00 - 17:00		88	77					82	
17:00 - 18:00		94	65					79	
18:00 - 19:00		53	64					58	
19:00 - 20:00		64	68					66	
20:00 - 21:00		40	40					40	
21:00 - 22:00		19	33					26	
22:00 - 23:00		14	14					14	
23:00 - 24:00		1	5					3	
<b>TOTAL</b>		<b>593</b>	<b>1141</b>	<b>610</b>				<b>1166</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\47229001



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: AMBASSADOR BLVD. WEST BOUND

COUNTY: ANOKA

REF. PT.: 35+578

SITE CODE: 24947028

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 5, 2000**

DATE HOUR \ DAY	4 MON.	5 TUE.	6 WED.	7 THU.	8 FRI.	9 SAT.	10 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			3	4				3	
1:00 - 2:00			1	1				1	
2:00 - 3:00			3	3				3	
3:00 - 4:00			4	3				3	
4:00 - 5:00			22	17				19	
5:00 - 6:00			46	56				51	
6:00 - 7:00			103	90				96	
7:00 - 8:00			112	120				116	
8:00 - 9:00			52	69				60	
9:00 - 10:00			68	73				70	
10:00 - 11:00			55	60				57	
11:00 - 12:00			58	60				59	
12:00 - 13:00			47	54				50	
13:00 - 14:00		59	62					60	
14:00 - 15:00		76	66					71	
15:00 - 16:00		85	73					79	
16:00 - 17:00		88	77					82	
17:00 - 18:00		94	65					79	
18:00 - 19:00		53	64					58	
19:00 - 20:00		64	68					66	
20:00 - 21:00		40	40					40	
21:00 - 22:00		19	33					26	
22:00 - 23:00		14	14					14	
23:00 - 24:00		1	5					3	
<b>TOTAL</b>		593	1141	610				1166	

24 HOURS FACTOR:

FACTORED ADT:

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

CORRECTED AADT: \_\_\_\_\_

DATA FILE --> a:\47229003