



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: TH-120 & CO.RD.C /17TH AVE.

COUNTY: WASHINGTON

REF. POINT: 003.927

DATE: 9/30/1996

OPERATOR: RE

Speed	Approach Description	Lanes
35	Major App1: TH-120 NB, S OF 17TH AVE/CO.RD.C (N ST PAUL	2
35	Major App3: TH-120 SB, N OF 17TH AVE/CO.RD.C	1
30	Minor App2: 17TH AVE. EB, W OF TH-120 /CENTURY AVE.	1
30	Minor App4: 17TH AVE. WB, E OF TH-120 /CENTURY AVE.	1

0.70 FACTOR USED? NO

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	600/900			150/75		150/75		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	28	27	55	/	5	1	/	/	/
1:00 - 2:00	27	14	41	/	3	0	/	/	/
2:00 - 3:00	8	10	18	/	1	1	/	/	/
3:00 - 4:00	14	10	24	/	0	1	/	/	/
4:00 - 5:00	24	16	40	/	6	1	/	/	/
5:00 - 6:00	82	74	156	/	24	3	/	/	/
6:00 - 7:00	288	331	619	X/	75	10	/X	/	/
7:00 - 8:00	546	510	1056	X/X	144	17	/X	/	/X
8:00 - 9:00	506	366	872	X/	145	23	/X	/	/
9:00 - 10:00	405	299	704	X/	135	29	/X	/	/
10:00 - 11:00	354	320	674	X/	139	25	/X	/	/
11:00 - 12:00	411	363	774	X/	161	26	X/X	/	X/
12:00 - 13:00	410	419	829	X/	167	24	X/X	/	X/
13:00 - 14:00	410	426	836	X/	130	31	/X	/	/
14:00 - 15:00	448	451	899	X/	143	25	/X	/	/
15:00 - 16:00	577	450	1027	X/X	201	24	X/X	/	X/X
16:00 - 17:00	591	460	1051	X/X	176	34	X/X	/	X/X
17:00 - 18:00	658	450	1108	X/X	148	30	/X	/	/X
18:00 - 19:00	454	380	834	X/	141	30	/X	/	/
19:00 - 20:00	325	304	629	X/	134	27	/X	/	/
20:00 - 21:00	240	252	492	/	83	25	/X	/	/
21:00 - 22:00	217	228	445	/	56	13	/	/	/
22:00 - 23:00	115	100	215	/	30	7	/	/	/
23:00 - 24:00	46	43	89	/	13	6	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	4	8	Not satisfied
Warrant 2	4	8	Not satisfied
Warrant 6	13	8	Satisfied, check accident record
Warrant 8	10	8	Satisfied
Warrant 9	4	4	Satisfied
Warrant 11	0	1	Not satisfied

LOCATION: TH-120 & CO.RD.C /17TH AVE.

COUNTY: WASHINGTON

REF. POINT: 003.927

DATE: 9/30/1996

OPERATOR: RE

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

Speed	Approach Description	Lanes
35	Major App1: TH-120 NB, S OF 17TH AVE/CO.RD.C (N ST PAUL	2
35	Major App3: TH-120 SB, N OF 17TH AVE/CO.RD.C	1
30	Minor App2: 17TH AVE. EB, W OF TH-120 /CENTURY AVE.	1
30	Minor App4: 17TH AVE. WB, E OF TH-120 /CENTURY AVE.	1

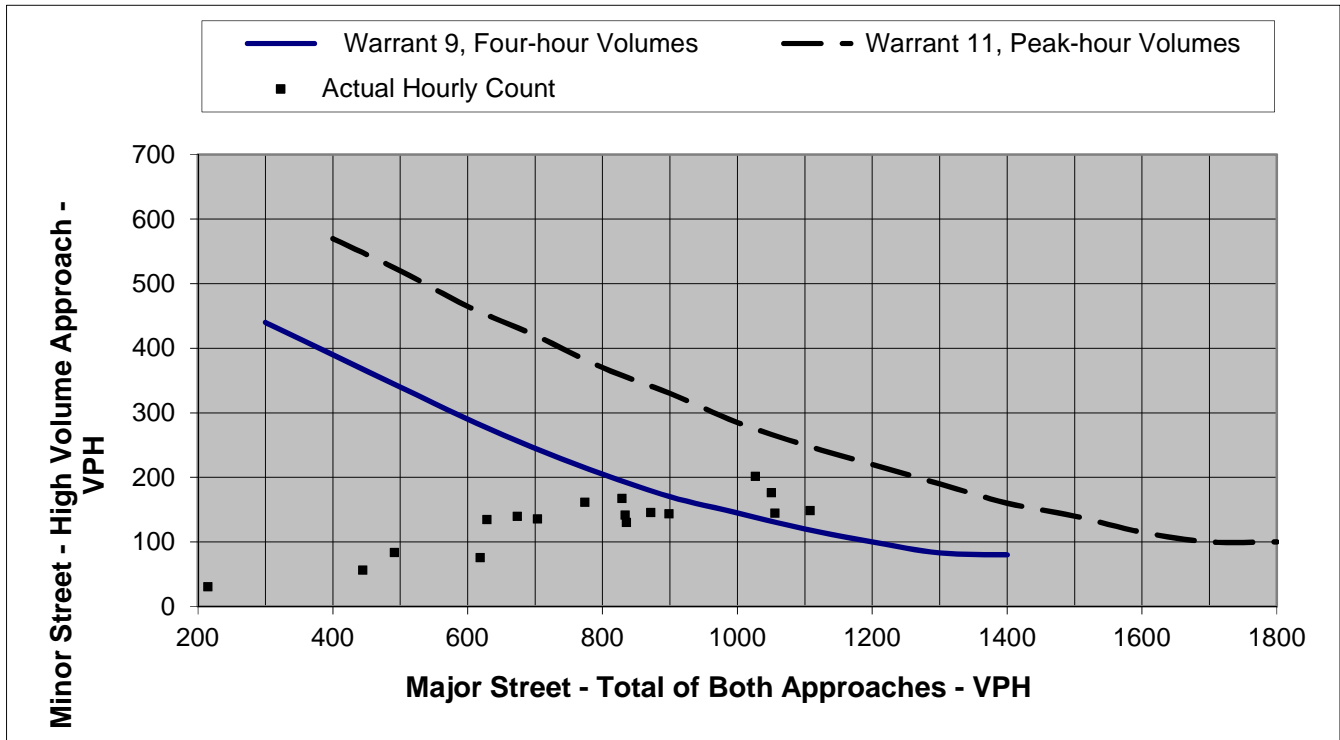


Figure 1. Four Hour and Peak Hour Warrant Analysis

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			55	5
300	440		41	3
400	390	570	18	1
500	340	520	24	1
600	290	465	40	6
700	245	420	156	24
800	205	370	619	75
900	170	330	1056	144
1000	145	285	872	145
1100	120	250	704	135
1200	100	220	674	139
1300	83	190	774	161
1400	80	160	829	167
1500		140	836	130
1600		115	899	143
1700		100	1027	201
1800		100	1051	176
			1108	148
			834	141
			629	134
			492	83
			445	56
			215	30
			89	13

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-120 & CO.RD.C /17TH AVE.

COUNTY: WASHINGTON

REF. POINT: 003.927

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
35	Major App1: TH-120 NB, S OF 17TH AVE/CO.RD.C (N ST PAL	2
35	Major App3: TH-120 SB, N OF 17TH AVE/CO.RD.C	1
30	Minor App2: 17TH AVE. EB, W OF TH-120 /CENTURY AVE.	1
30	Minor App4: 17TH AVE. WB, E OF TH-120 /CENTURY AVE.	1

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	28	27	5	1	61	6	/
1:00 - 2:00	27	14	3	0	44	3	/
2:00 - 3:00	8	10	1	1	20	2	/
3:00 - 4:00	14	10	0	1	25	1	/
4:00 - 5:00	24	16	6	1	47	7	/
5:00 - 6:00	82	74	24	3	183	27	/
6:00 - 7:00	288	331	75	10	704	85	X/
7:00 - 8:00	546	510	144	17	1217	161	X/
8:00 - 9:00	506	366	145	23	1040	168	X/
9:00 - 10:00	405	299	135	29	868	164	X/
10:00 - 11:00	354	320	139	25	838	164	X/
11:00 - 12:00	411	363	161	26	961	187	X/
12:00 - 13:00	410	419	167	24	1020	191	X/
13:00 - 14:00	410	426	130	31	997	161	X/
14:00 - 15:00	448	451	143	25	1067	168	X/
15:00 - 16:00	577	450	201	24	1252	225	X/X
16:00 - 17:00	591	460	176	34	1261	210	X/X
17:00 - 18:00	658	450	148	30	1286	178	X/
18:00 - 19:00	454	380	141	30	1005	171	X/
19:00 - 20:00	325	304	134	27	790	161	X/
20:00 - 21:00	240	252	83	25	600	108	X/
21:00 - 22:00	217	228	56	13	514	69	X/
22:00 - 23:00	115	100	30	7	252	37	/
23:00 - 24:00	46	43	13	6	108	19	/

Met (Hr) Required (Hr)

Allway Stop Warrant: 2 8 Not satisfied

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



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: TH-120 NB, S OF 17TH AVE/CO.RD.C (N ST PAUL)

COUNTY: WASHINGTON

REF. PT.: 003.927

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 30, 1996**

DATE HOUR \ DAY	30 MON.	1 TUE.	2 WED.	3 THU.	4 FRI.	5 SAT.	6 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		21	35					28	
1:00 - 2:00		26	29					27	
2:00 - 3:00		5	12					8	
3:00 - 4:00		13	15					14	
4:00 - 5:00		28	21					24	
5:00 - 6:00		83	82					82	
6:00 - 7:00		291	285					288	
7:00 - 8:00		501	592					546	
8:00 - 9:00		513	499					506	
9:00 - 10:00		436	374					405	
10:00 - 11:00		381	327					354	
11:00 - 12:00	410	405	419					411	
12:00 - 13:00	376	445						410	
13:00 - 14:00	386	434						410	
14:00 - 15:00	436	461						448	
15:00 - 16:00	576	579						577	
16:00 - 17:00	630	552						591	
17:00 - 18:00	688	629						658	
18:00 - 19:00	451	458						454	
19:00 - 20:00	318	333						325	
20:00 - 21:00	228	253						240	
21:00 - 22:00	204	231						217	
22:00 - 23:00	107	123						115	
23:00 - 24:00	51	41						46	
<b>TOTAL</b>	<b>4861</b>	<b>7242</b>	<b>2690</b>					<b>7184</b>	

24 HOURS FACTOR:

FACTORED ADT:

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

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

DATA FILE --> A:\120&17TH.da1



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: 17TH AVE. EB, W OF TH-120 /CENTURY AVE.

COUNTY: WASHINGTON

REF. PT.: 003.927

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 30, 1996**

DATE HOUR \ DAY	30 MON.	1 TUE.	2 WED.	3 THU.	4 FRI.	5 SAT.	6 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		5	6					5	
1:00 - 2:00		3	4					3	
2:00 - 3:00		2	1					1	
3:00 - 4:00		1	0					0	
4:00 - 5:00		8	4					6	
5:00 - 6:00		24	25					24	
6:00 - 7:00		76	75					75	
7:00 - 8:00		137	151					144	
8:00 - 9:00		148	142					145	
9:00 - 10:00		132	139					135	
10:00 - 11:00		120	159					139	
11:00 - 12:00		154	169					161	
12:00 - 13:00	158	176						167	
13:00 - 14:00	120	140						130	
14:00 - 15:00	134	153						143	
15:00 - 16:00	201	201						201	
16:00 - 17:00	181	171						176	
17:00 - 18:00	167	130						148	
18:00 - 19:00	141	142						141	
19:00 - 20:00	140	128						134	
20:00 - 21:00	78	89						83	
21:00 - 22:00	56	57						56	
22:00 - 23:00	29	31						30	
23:00 - 24:00	11	15						13	
<b>TOTAL</b>	<b>1416</b>	<b>2243</b>	<b>875</b>					<b>2260</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\120&17TH.da2





# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: TH-120 SB, N OF 17TH AVE/CO.RD.C

COUNTY: WASHINGTON

REF. PT.: 003.927

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 30, 1996**

DATE HOUR \ DAY	30 MON.	1 TUE.	2 WED.	3 THU.	4 FRI.	5 SAT.	6 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		22	32					27	
1:00 - 2:00		15	13					14	
2:00 - 3:00		7	13					10	
3:00 - 4:00		9	11					10	
4:00 - 5:00		16	17					16	
5:00 - 6:00		75	73					74	
6:00 - 7:00		332	331					331	
7:00 - 8:00		497	523					510	
8:00 - 9:00		352	380					366	
9:00 - 10:00		297	302					299	
10:00 - 11:00		307	334					320	
11:00 - 12:00		354	372					363	
12:00 - 13:00	421	418						419	
13:00 - 14:00	442	411						426	
14:00 - 15:00	463	439						451	
15:00 - 16:00	441	460						450	
16:00 - 17:00	451	470						460	
17:00 - 18:00	452	449						450	
18:00 - 19:00	361	400						380	
19:00 - 20:00	300	309						304	
20:00 - 21:00	261	243						252	
21:00 - 22:00	237	219						228	
22:00 - 23:00	90	110						100	
23:00 - 24:00	41	45						43	
<b>TOTAL</b>	<b>3960</b>	<b>6256</b>	<b>2401</b>					<b>6303</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\120&17TH.da3



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: 17TH AVE. WB, E OF TH-120 /CENTURY AVE.

COUNTY: WASHINGTON

REF. PT.: 003.927

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 30, 1996**

DATE HOUR \ DAY	30 MON.	1 TUE.	2 WED.	3 THU.	4 FRI.	5 SAT.	6 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		1	2					1	
1:00 - 2:00		1	0					0	
2:00 - 3:00		0	2					1	
3:00 - 4:00		1	1					1	
4:00 - 5:00		2	1					1	
5:00 - 6:00		4	2					3	
6:00 - 7:00		11	9					10	
7:00 - 8:00		9	26					17	
8:00 - 9:00		19	27					23	
9:00 - 10:00		39	20					29	
10:00 - 11:00		22	29					25	
11:00 - 12:00		20	32					26	
12:00 - 13:00	18	31						24	
13:00 - 14:00	31	31						31	
14:00 - 15:00	19	31						25	
15:00 - 16:00	21	28						24	
16:00 - 17:00	37	31						34	
17:00 - 18:00	30	30						30	
18:00 - 19:00	24	37						30	
19:00 - 20:00	26	28						27	
20:00 - 21:00	21	30						25	
21:00 - 22:00	17	10						13	
22:00 - 23:00	7	7						7	
23:00 - 24:00	9	4						6	
<b>TOTAL</b>	<b>260</b>	<b>427</b>	<b>151</b>					<b>413</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\120&17TH.da4