



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-244 & CSAH-12

COUNTY: WASHINGTON

REF. POINT: 003.863

DATE: 9/9/1997

OPERATOR: RE

Speed	Approach Description	Lanes
45	Major App1: TH-244/WILDWOOD RD. NB, S OF CSAH-12	2
45	Major App3: TH-244/WILDWOOD RD. SB, N OF CSAH-12	1
0	Minor App2: N/A	0
30	Minor App4: CSAH-12/STILLWATER RD. WB, E OF TH-244	1

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

HOUR	420/630				0/0		105/52		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	35	6	41	/	0	14	/	/	/
1:00 - 2:00	31	4	35	/	0	14	/	/	/
2:00 - 3:00	15	2	17	/	0	4	/	/	/
3:00 - 4:00	9	8	17	/	0	4	/	/	/
4:00 - 5:00	7	18	25	/	0	8	/	/	/
5:00 - 6:00	30	66	96	/	0	34	/	/	/
6:00 - 7:00	134	228	362	/	0	124	/	X/X	/
7:00 - 8:00	349	313	662	X/X	0	264	/	X/X	X/X
8:00 - 9:00	292	251	543	X/	0	204	/	X/X	X/
9:00 - 10:00	316	213	529	X/	0	197	/	X/X	X/
10:00 - 11:00	301	172	473	X/	0	174	/	X/X	X/
11:00 - 12:00	375	193	568	X/	0	186	/	X/X	X/
12:00 - 13:00	421	182	603	X/	0	221	/	X/X	X/
13:00 - 14:00	380	164	544	X/	0	172	/	X/X	X/
14:00 - 15:00	499	219	718	X/X	0	251	/	X/X	X/X
15:00 - 16:00	587	224	811	X/X	0	249	/	X/X	X/X
16:00 - 17:00	785	258	1043	X/X	0	246	/	X/X	X/X
17:00 - 18:00	849	282	1131	X/X	0	296	/	X/X	X/X
18:00 - 19:00	723	262	985	X/X	0	277	/	X/X	X/X
19:00 - 20:00	542	201	743	X/X	0	267	/	X/X	X/X
20:00 - 21:00	400	151	551	X/	0	199	/	X/X	X/
21:00 - 22:00	305	93	398	/	0	134	/	X/X	/
22:00 - 23:00	169	48	217	/	0	78	/	/X	/
23:00 - 24:00	77	13	90	/	0	30	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	14	8	Satisfied
Warrant 2	7	8	Not satisfied
Warrant 6	16	8	Satisfied, check accident record
Warrant 8	13	8	Satisfied
Warrant 9	13	4	Satisfied
Warrant 11	7	1	Satisfied

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OPERATOR: RE

0.70 FACTOR USED? YES

POPULATION < 10,000? NO

EXISTING SIGNAL ? NO

Speed	Approach Description	Lanes
45	Major App1: TH-244/WILDWOOD RD. NB, S OF CSAH-12	2
45	Major App3: TH-244/WILDWOOD RD. SB, N OF CSAH-12	1
0	Minor App2: N/A	0
30	Minor App4: CSAH-12/STILLWATER RD. WB, E OF TH-244	1

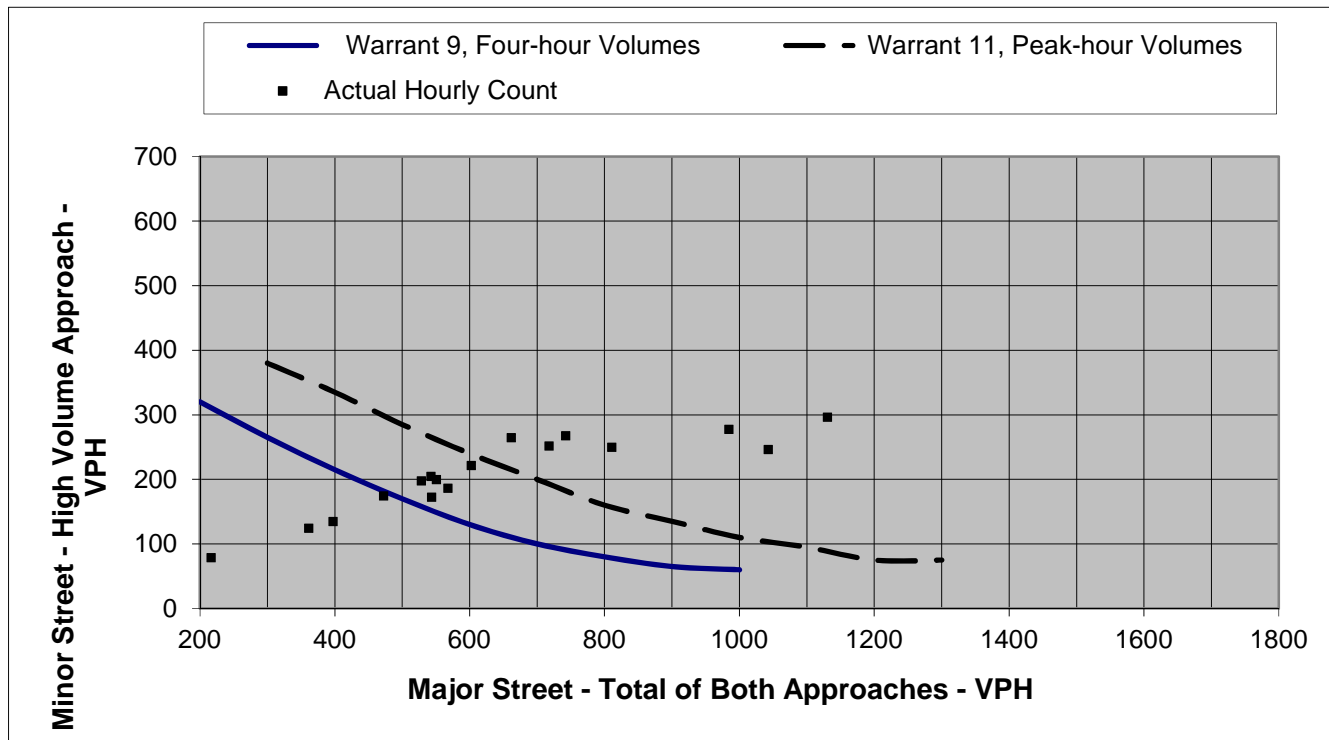


Figure 1. Four Hour and Peak Hour Warrant Analysis

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	320		41	14
300	265	380	35	14
400	215	335	17	4
500	170	285	17	4
600	130	240	25	8
700	100	200	96	34
800	80	160	362	124
900	65	135	662	264
1000	60	110	543	204
1100		95	529	197
1200		75	473	174
1300		75	568	186
1400			603	221
1500			544	172
1600			718	251
1700			811	249
1800			1043	246
			1131	296
			985	277
			743	267
			551	199
			398	134
			217	78
			90	30

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-244 & CSAH-12

COUNTY: WASHINGTON

REF. POINT: 003.863

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
45	Major App1: TH-244/WILDWOOD RD. NB, S OF CSAH-12	2
45	Major App3: TH-244/WILDWOOD RD. SB, N OF CSAH-12	1
0	Minor App2: N/A	0
30	Minor App4: CSAH-12/STILLWATER RD. WB, E OF TH-244	1

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	35	6	0	14	55	14	/
1:00 - 2:00	31	4	0	14	49	14	/
2:00 - 3:00	15	2	0	4	21	4	/
3:00 - 4:00	9	8	0	4	21	4	/
4:00 - 5:00	7	18	0	8	33	8	/
5:00 - 6:00	30	66	0	34	130	34	/
6:00 - 7:00	134	228	0	124	486	124	X/
7:00 - 8:00	349	313	0	264	926	264	X/X
8:00 - 9:00	292	251	0	204	747	204	X/X
9:00 - 10:00	316	213	0	197	726	197	X/X
10:00 - 11:00	301	172	0	174	647	174	X/X
11:00 - 12:00	375	193	0	186	754	186	X/X
12:00 - 13:00	421	182	0	221	824	221	X/X
13:00 - 14:00	380	164	0	172	716	172	X/X
14:00 - 15:00	499	219	0	251	969	251	X/X
15:00 - 16:00	587	224	0	249	1060	249	X/X
16:00 - 17:00	785	258	0	246	1289	246	X/X
17:00 - 18:00	849	282	0	296	1427	296	X/X
18:00 - 19:00	723	262	0	277	1262	277	X/X
19:00 - 20:00	542	201	0	267	1010	267	X/X
20:00 - 21:00	400	151	0	199	750	199	X/X
21:00 - 22:00	305	93	0	134	532	134	X/
22:00 - 23:00	169	48	0	78	295	78	/
23:00 - 24:00	77	13	0	30	120	30	/

Met (Hr) Required (Hr)

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

REMARKS: _____



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-244/WILDWOOD RD. NB, S OF CSAH-12

COUNTY: WASHINGTON

REF. PT.: 003.863

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 9, 1997**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			34	36				35	
1:00 - 2:00			26	37				31	
2:00 - 3:00			13	18				15	
3:00 - 4:00			2	17				9	
4:00 - 5:00			9	6				7	
5:00 - 6:00			29	32				30	
6:00 - 7:00			123	146				134	
7:00 - 8:00			380	319				349	
8:00 - 9:00			277	307				292	
9:00 - 10:00			314	319				316	
10:00 - 11:00			293	310				301	
11:00 - 12:00		378	391	356				375	
12:00 - 13:00		383	470	411				421	
13:00 - 14:00		397	363					380	
14:00 - 15:00		506	493					499	
15:00 - 16:00		584	590					587	
16:00 - 17:00		791	780					785	
17:00 - 18:00		859	840					849	
18:00 - 19:00		707	740					723	
19:00 - 20:00		489	596					542	
20:00 - 21:00		401	399					400	
21:00 - 22:00		287	324					305	
22:00 - 23:00		179	159					169	
23:00 - 24:00		74	80					77	
TOTAL		6035	7725	2314				7631	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\244&CR12.DA1



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: N/A
 COUNTY: WASHINGTON
 REF. PT.: 003.863

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING:

DATE HOUR DAY	MON.	TUE.	WED.	THU.	FRI.	SAT.	SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00									
1:00 - 2:00									
2:00 - 3:00									
3:00 - 4:00									
4:00 - 5:00									
5:00 - 6:00									
6:00 - 7:00									
7:00 - 8:00									
8:00 - 9:00									
9:00 - 10:00									
10:00 - 11:00									
11:00 - 12:00									
12:00 - 13:00									
13:00 - 14:00									
14:00 - 15:00									
15:00 - 16:00									
16:00 - 17:00									
17:00 - 18:00									
18:00 - 19:00									
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									

TOTAL

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\244&CR12.DA2



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-244/WILDWOOD RD. SB, N OF CSAH-12

COUNTY: WASHINGTON

REF. PT.: 003.863

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 9, 1997**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			3	10				6	
1:00 - 2:00			0	8				4	
2:00 - 3:00			2	3				2	
3:00 - 4:00			11	6				8	
4:00 - 5:00			14	22				18	
5:00 - 6:00			66	66				66	
6:00 - 7:00			225	232				228	
7:00 - 8:00			320	307				313	
8:00 - 9:00			250	252				251	
9:00 - 10:00			217	210				213	
10:00 - 11:00			177	168				172	
11:00 - 12:00		205	202	172				193	
12:00 - 13:00		164	192	191				182	
13:00 - 14:00		165	164					164	
14:00 - 15:00		226	213					219	
15:00 - 16:00		212	236					224	
16:00 - 17:00		255	261					258	
17:00 - 18:00		265	300					282	
18:00 - 19:00		253	271					262	
19:00 - 20:00		179	223					201	
20:00 - 21:00		145	157					151	
21:00 - 22:00		94	92					93	
22:00 - 23:00		43	54					48	
23:00 - 24:00		10	17					13	
TOTAL		2216	3667	1647				3571	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\244&CR12.DA3



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: CSAH-12/STILLWATER RD. WB, E OF TH-244

COUNTY: WASHINGTON

REF. PT.: 003.863

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **September 9, 1997**

DATE HOUR \ DAY	8 MON.	9 TUE.	10 WED.	11 THU.	12 FRI.	13 SAT.	14 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			13	16				14	
1:00 - 2:00			10	18				14	
2:00 - 3:00			4	5				4	
3:00 - 4:00			2	7				4	
4:00 - 5:00			9	7				8	
5:00 - 6:00			35	34				34	
6:00 - 7:00			127	121				124	
7:00 - 8:00			248	281				264	
8:00 - 9:00			220	188				204	
9:00 - 10:00			186	209				197	
10:00 - 11:00			187	162				174	
11:00 - 12:00		204	194	162				186	
12:00 - 13:00		227	214	222				221	
13:00 - 14:00		175	169					172	
14:00 - 15:00		248	255					251	
15:00 - 16:00		245	253					249	
16:00 - 17:00		237	256					246	
17:00 - 18:00		293	299					296	
18:00 - 19:00		274	280					277	
19:00 - 20:00		268	267					267	
20:00 - 21:00		208	191					199	
21:00 - 22:00		124	145					134	
22:00 - 23:00		75	82					78	
23:00 - 24:00		19	41					30	
TOTAL		2597	3687	1432				3647	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\244&CR12.DA4