



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-61 & CO.RD.J/120TH AVE.

COUNTY: RAMSEY/WASHINGTON

REF. POINT: 150.045

DATE: 7/15/1997

OPERATOR: RE

Speed	Approach Description	Lanes
55	Major App1: TH-61 NB, S OF CO.RD.J/120TH AVE.	2
55	Major App3: TH-61 SB, N OF CO.RD.J/120TH AVE.	2
30	Minor App2: 120TH AVE. EB, W OF TH-61	1
50	Minor App4: CO.RD.J/120TH AVE. WB, E OF TH-61	1

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

HOUR	420/630				105/52		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	56	83	139	/	5	17	/	/	/
1:00 - 2:00	29	23	52	/	1	10	/	/	/
2:00 - 3:00	19	11	30	/	2	6	/	/	/
3:00 - 4:00	12	14	26	/	1	3	/	/	/
4:00 - 5:00	22	30	52	/	1	8	/	/	/
5:00 - 6:00	54	124	178	/	16	30	/	/	/
6:00 - 7:00	157	387	544	X/	45	79	/	/X	/
7:00 - 8:00	309	510	819	X/X	61	109	/X	X/X	X/X
8:00 - 9:00	297	355	652	X/X	56	86	/X	/X	/X
9:00 - 10:00	282	273	555	X/	42	69	/	/X	/
10:00 - 11:00	360	293	653	X/X	43	94	/	/X	/X
11:00 - 12:00	365	298	663	X/X	33	87	/	/X	/X
12:00 - 13:00	434	312	746	X/X	43	103	/	/X	/X
13:00 - 14:00	448	331	779	X/X	38	109	/	X/X	X/X
14:00 - 15:00	464	295	759	X/X	41	94	/	/X	/X
15:00 - 16:00	703	324	1027	X/X	39	112	/	X/X	X/X
16:00 - 17:00	853	446	1299	X/X	47	116	/	X/X	X/X
17:00 - 18:00	819	403	1222	X/X	50	133	/	X/X	X/X
18:00 - 19:00	578	323	901	X/X	63	95	/X	/X	/X
19:00 - 20:00	387	290	677	X/X	47	93	/	/X	/X
20:00 - 21:00	396	205	601	X/	53	107	/X	X/X	X/
21:00 - 22:00	330	194	524	X/	49	102	/	/X	/
22:00 - 23:00	175	123	298	/	21	50	/	/	/
23:00 - 24:00	128	54	182	/	11	20	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	6	8	Not satisfied
Warrant 2	12	8	Satisfied
Warrant 6	16	8	Satisfied, check accident record
Warrant 8	14	8	Satisfied
Warrant 9	8	4	Satisfied
Warrant 11	3	1	Satisfied

LOCATION: TH-61 & CO.RD.J/120TH AVE.

COUNTY: RAMSEY/WASHINGTON

REF. POINT: 150.045

DATE: 7/15/1997

OPERATOR: RE

Speed	Approach Description	Lanes
55	Major App1: TH-61 NB, S OF CO.RD.J/120TH AVE.	2
55	Major App3: TH-61 SB, N OF CO.RD.J/120TH AVE.	2
30	Minor App2: 120TH AVE. EB, W OF TH-61	1
50	Minor App4: CO.RD.J/120TH AVE. WB, E OF TH-61	1

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

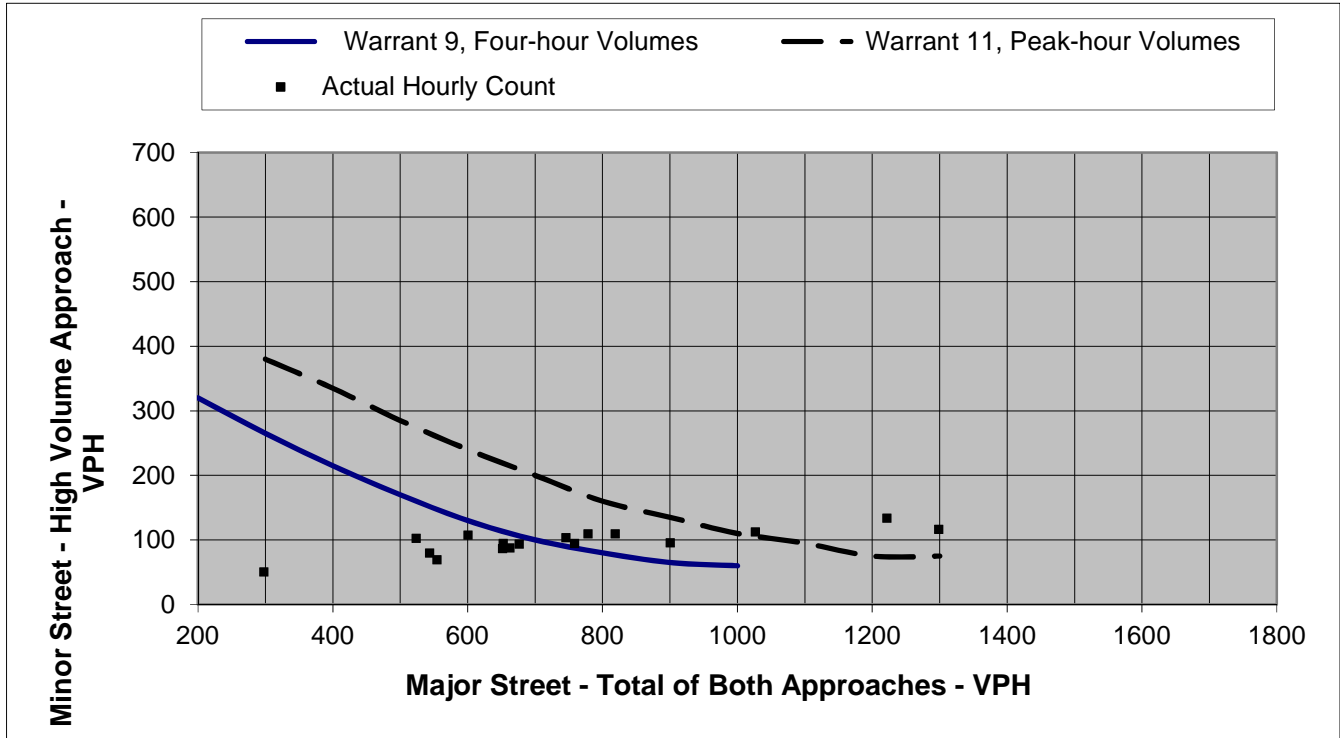


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		139	17
300	265	380	52	10
400	215	335	30	6
500	170	285	26	3
600	130	240	52	8
700	100	200	178	30
800	80	160	544	79
900	65	135	819	109
1000	60	110	652	86
1100		95	555	69
1200		75	653	94
1300		75	663	87
1400			746	103
1500			779	109
1600			759	94
1700			1027	112
1800			1299	116
			1222	133
			901	95
			677	93
			601	107
			524	102
			298	50
			182	20

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-61 & CO.RD.J/120TH AVE.

COUNTY: RAMSEY/WASHINGTON

REF. POINT: 150.045

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
55	Major App1: TH-61 NB, S OF CO.RD.J/120TH AVE.	2
55	Major App3: TH-61 SB, N OF CO.RD.J/120TH AVE.	2
30	Minor App2: 120TH AVE. EB, W OF TH-61	1
50	Minor App4: CO.RD.J/120TH AVE. WB, E OF TH-61	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	56	83	5	17	161	22	/
1:00 - 2:00	29	23	1	10	63	11	/
2:00 - 3:00	19	11	2	6	38	8	/
3:00 - 4:00	12	14	1	3	30	4	/
4:00 - 5:00	22	30	1	8	61	9	/
5:00 - 6:00	54	124	16	30	224	46	/
6:00 - 7:00	157	387	45	79	668	124	X/
7:00 - 8:00	309	510	61	109	989	170	X/X
8:00 - 9:00	297	355	56	86	794	142	X/X
9:00 - 10:00	282	273	42	69	666	111	X/
10:00 - 11:00	360	293	43	94	790	137	X/
11:00 - 12:00	365	298	33	87	783	120	X/
12:00 - 13:00	434	312	43	103	892	146	X/X
13:00 - 14:00	448	331	38	109	926	147	X/X
14:00 - 15:00	464	295	41	94	894	135	X/
15:00 - 16:00	703	324	39	112	1178	151	X/X
16:00 - 17:00	853	446	47	116	1462	163	X/X
17:00 - 18:00	819	403	50	133	1405	183	X/X
18:00 - 19:00	578	323	63	95	1059	158	X/X
19:00 - 20:00	387	290	47	93	817	140	X/X
20:00 - 21:00	396	205	53	107	761	160	X/X
21:00 - 22:00	330	194	49	102	675	151	X/X
22:00 - 23:00	175	123	21	50	369	71	X/
23:00 - 24:00	128	54	11	20	213	31	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **11** 8 **Satisfied**

REMARKS: _____



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-61 NB, S OF CO.RD.J/120TH AVE.

COUNTY: RAMSEY/WASHINGTON

REF. PT.: 150.045

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 15, 1997**

DATE HOUR \ DAY	14 MON.	15 TUE.	16 WED.	17 THU.	18 FRI.	19 SAT.	20 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			53	60				56	
1:00 - 2:00			27	31				29	
2:00 - 3:00			17	22				19	
3:00 - 4:00			10	14				12	
4:00 - 5:00			22	23				22	
5:00 - 6:00			51	58				54	
6:00 - 7:00			171	144				157	
7:00 - 8:00			311	307				309	
8:00 - 9:00			261	333				297	
9:00 - 10:00			271	294				282	
10:00 - 11:00			338	382				360	
11:00 - 12:00		329	362	406				365	
12:00 - 13:00		387	481					434	
13:00 - 14:00		436	461					448	
14:00 - 15:00		461	467					464	
15:00 - 16:00		688	719					703	
16:00 - 17:00		827	880					853	
17:00 - 18:00		766	872					819	
18:00 - 19:00		558	598					578	
19:00 - 20:00		382	392					387	
20:00 - 21:00		372	420					396	
21:00 - 22:00		321	340					330	
22:00 - 23:00		149	202					175	
23:00 - 24:00		130	127					128	
TOTAL		5806	7853	2074				7677	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\61&CORDJ.da1



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: 120TH AVE. EB, W OF TH-61

COUNTY: RAMSEY/WASHINGTON

REF. PT.: 150.045

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 15, 1997**

DATE HOUR \ DAY	14 MON.	15 TUE.	16 WED.	17 THU.	18 FRI.	19 SAT.	20 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			5	5				5	
1:00 - 2:00			2	1				1	
2:00 - 3:00			2	3				2	
3:00 - 4:00			1	2				1	
4:00 - 5:00			1	1				1	
5:00 - 6:00			15	17				16	
6:00 - 7:00			42	48				45	
7:00 - 8:00			70	52				61	
8:00 - 9:00			58	54				56	
9:00 - 10:00			37	47				42	
10:00 - 11:00		38	51	40				43	
11:00 - 12:00		34	41	26				33	
12:00 - 13:00		42	44					43	
13:00 - 14:00		34	43					38	
14:00 - 15:00		35	47					41	
15:00 - 16:00		46	33					39	
16:00 - 17:00		49	45					47	
17:00 - 18:00		48	52					50	
18:00 - 19:00		66	61					63	
19:00 - 20:00		39	56					47	
20:00 - 21:00		49	58					53	
21:00 - 22:00		40	59					49	
22:00 - 23:00		16	27					21	
23:00 - 24:00		11	11					11	
TOTAL		547	861	296				808	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\61&CORDJ.da2



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-61 SB, N OF CO.RD.J/120TH AVE.

COUNTY: RAMSEY/WASHINGTON

REF. PT.: 150.045

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 15, 1997**

DATE HOUR \ DAY	14 MON.	15 TUE.	16 WED.	17 THU.	18 FRI.	19 SAT.	20 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			75	91				83	
1:00 - 2:00			20	27				23	
2:00 - 3:00			11	11				11	
3:00 - 4:00			16	12				14	
4:00 - 5:00			31	30				30	
5:00 - 6:00			125	123				124	
6:00 - 7:00			406	368				387	
7:00 - 8:00			522	498				510	
8:00 - 9:00			354	356				355	
9:00 - 10:00			292	254				273	
10:00 - 11:00			269	318				293	
11:00 - 12:00		274	290	332				298	
12:00 - 13:00		318	307					312	
13:00 - 14:00		315	348					331	
14:00 - 15:00		307	284					295	
15:00 - 16:00		299	350					324	
16:00 - 17:00		434	459					446	
17:00 - 18:00		418	389					403	
18:00 - 19:00		310	337					323	
19:00 - 20:00		248	332					290	
20:00 - 21:00		205	205					205	
21:00 - 22:00		217	172					194	
22:00 - 23:00		128	119					123	
23:00 - 24:00		50	58					54	
TOTAL		3523	5771	2420				5701	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\61&CORDJ.da3



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: CO.RD.J/120TH AVE. WB, E OF TH-61

COUNTY: RAMSEY/WASHINGTON

REF. PT.: 150.045

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 15, 1997**

DATE HOUR \ DAY	14 MON.	15 TUE.	16 WED.	17 THU.	18 FRI.	19 SAT.	20 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00			16	19				17	
1:00 - 2:00			11	9				10	
2:00 - 3:00			5	8				6	
3:00 - 4:00			3	4				3	
4:00 - 5:00			9	8				8	
5:00 - 6:00			30	31				30	
6:00 - 7:00			81	77				79	
7:00 - 8:00			122	96				109	
8:00 - 9:00			81	91				86	
9:00 - 10:00			75	64				69	
10:00 - 11:00		84	94	105				94	
11:00 - 12:00		77	96	88				87	
12:00 - 13:00		109	97					103	
13:00 - 14:00		114	105					109	
14:00 - 15:00		85	103					94	
15:00 - 16:00		107	118					112	
16:00 - 17:00		119	114					116	
17:00 - 18:00		140	127					133	
18:00 - 19:00		101	89					95	
19:00 - 20:00		86	100					93	
20:00 - 21:00		115	99					107	
21:00 - 22:00		99	106					102	
22:00 - 23:00		52	48					50	
23:00 - 24:00		18	22					20	
TOTAL		1306	1751	600				1732	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\61&CORDJ.da4