



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

SIGNAL WARRANTS ANALYSIS

LOCATION: TH-97 & OLINDA TRAIL/CSAH-3

COUNTY: WASHINGTON

REF. POINT: 011.619

DATE: 7/17/1996

OPERATOR: RE

Speed	Approach Description	Lanes
50	Major App1: TH-97 EB, W OF OLINDA TRAIL N/CSAH-3	2
50	Major App3: TH-97 WB, E OF OLINDA TRAIL N/CSAH-3	2
30	Minor App2: OLINDA TRAIL N/CSAH-3 NB, S OF TH-97	1
30	Minor App4: OLINDA TRAIL N/CSAH-3 SB, N OF TH-97	1

0.70 FACTOR USED? YES

POPULATION < 10,000? YES

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	35	20	55	/	5	5	/	/	/
1:00 - 2:00	17	10	27	/	3	2	/	/	/
2:00 - 3:00	9	8	17	/	5	2	/	/	/
3:00 - 4:00	5	14	19	/	1	6	/	/	/
4:00 - 5:00	13	41	54	/	3	12	/	/	/
5:00 - 6:00	30	155	185	/	7	67	/	/X	/
6:00 - 7:00	80	237	317	/	28	126	/	X/X	/
7:00 - 8:00	155	230	385	/	52	109	/X	X/X	/
8:00 - 9:00	148	178	326	/	61	78	/X	/X	/
9:00 - 10:00	162	175	337	/	70	64	/X	/X	/
10:00 - 11:00	178	180	358	/	68	77	/X	/X	/
11:00 - 12:00	166	185	351	/	74	81	/X	/X	/
12:00 - 13:00	180	171	351	/	83	74	/X	/X	/
13:00 - 14:00	189	197	386	/	72	80	/X	/X	/
14:00 - 15:00	188	217	405	/	83	75	/X	/X	/
15:00 - 16:00	247	234	481	X/	111	94	X/X	/X	X/
16:00 - 17:00	311	256	567	X/	121	90	X/X	/X	X/
17:00 - 18:00	329	213	542	X/	106	77	X/X	/X	X/
18:00 - 19:00	276	182	458	X/	75	76	/X	/X	/
19:00 - 20:00	176	165	341	/	81	61	/X	/X	/
20:00 - 21:00	132	131	263	/	81	72	/X	/X	/
21:00 - 22:00	110	97	207	/	46	47	/	/	/
22:00 - 23:00	68	56	124	/	11	38	/	/	/
23:00 - 24:00	49	27	76	/	14	13	/	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	3	8	Not satisfied
Warrant 2	0	8	Not satisfied
Warrant 6	4	8	Not satisfied
Warrant 8	2	8	Not satisfied
Warrant 9	0	4	Not satisfied
Warrant 11	0	1	Not satisfied

LOCATION: TH-97 & OLINDA TRAIL/CSAH-3

COUNTY: WASHINGTON

REF. POINT: 011.619

DATE: 7/17/1996

OPERATOR: RE

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

Speed	Approach Description	Lanes
50	Major App1: TH-97 EB, W OF OLINDA TRAIL N/CSAH-3	2
50	Major App3: TH-97 WB, E OF OLINDA TRAIL N/CSAH-3	2
30	Minor App2: OLINDA TRAIL N/CSAH-3 NB, S OF TH-97	1
30	Minor App4: OLINDA TRAIL N/CSAH-3 SB, N OF TH-97	1

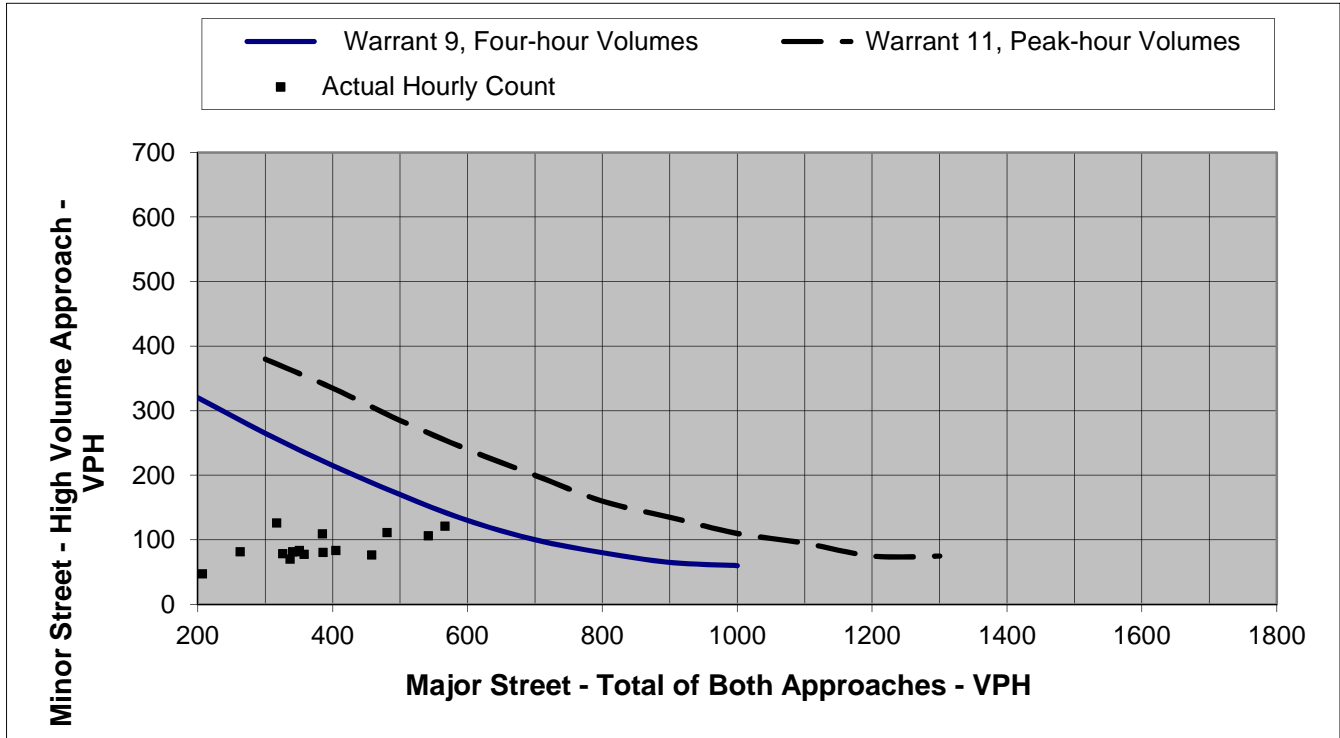


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		55	5
300	265	380	27	3
400	215	335	17	5
500	170	285	19	6
600	130	240	54	12
700	100	200	185	67
800	80	160	317	126
900	65	135	385	109
1000	60	110	326	78
1100		95	337	70
1200		75	358	77
1300		75	351	81
1400			351	83
1500			386	80
1600			405	83
1700			481	111
1800			567	121
			542	106
			458	76
			341	81
			263	81
			207	47
			124	38
			76	14

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-97 & OLINDA TRAIL/CSAH-3

COUNTY: WASHINGTON

REF. POINT: 011.619

DATE:

OPERATOR: RE

Speed	Approach Description	Lanes
50	Major App1: TH-97 EB, W OF OLINDA TRAIL N/CSAH-3	2
50	Major App3: TH-97 WB, E OF OLINDA TRAIL N/CSAH-3	2
30	Minor App2: OLINDA TRAIL N/CSAH-3 NB, S OF TH-97	1
30	Minor App4: OLINDA TRAIL N/CSAH-3 SB, N OF TH-97	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	20	5	5	65	10	/
1:00 - 2:00	17	10	3	2	32	5	/
2:00 - 3:00	9	8	5	2	24	7	/
3:00 - 4:00	5	14	1	6	26	7	/
4:00 - 5:00	13	41	3	12	69	15	/
5:00 - 6:00	30	155	7	67	259	74	/
6:00 - 7:00	80	237	28	126	471	154	X/X
7:00 - 8:00	155	230	52	109	546	161	X/X
8:00 - 9:00	148	178	61	78	465	139	X/
9:00 - 10:00	162	175	70	64	471	134	X/
10:00 - 11:00	178	180	68	77	503	145	X/X
11:00 - 12:00	166	185	74	81	506	155	X/X
12:00 - 13:00	180	171	83	74	508	157	X/X
13:00 - 14:00	189	197	72	80	538	152	X/X
14:00 - 15:00	188	217	83	75	563	158	X/X
15:00 - 16:00	247	234	111	94	686	205	X/X
16:00 - 17:00	311	256	121	90	778	211	X/X
17:00 - 18:00	329	213	106	77	725	183	X/X
18:00 - 19:00	276	182	75	76	609	151	X/X
19:00 - 20:00	176	165	81	61	483	142	X/X
20:00 - 21:00	132	131	81	72	416	153	X/X
21:00 - 22:00	110	97	46	47	300	93	/
22:00 - 23:00	68	56	11	38	173	49	/
23:00 - 24:00	49	27	14	13	103	27	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **13** 8 **Satisfied**

REMARKS: _____



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-97 EB, W OF OLINDA TRAIL N/CSAH-3

COUNTY: WASHINGTON

REF. PT.: 011.619

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 17, 1996**

DATE HOUR \ DAY	15 MON.	16 TUE.	17 WED.	18 THU.	19 FRI.	20 SAT.	21 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00				37	33			35	
1:00 - 2:00				11	24			17	
2:00 - 3:00				8	10			9	
3:00 - 4:00				8	2			5	
4:00 - 5:00				18	8			13	
5:00 - 6:00				31	30			30	
6:00 - 7:00				80	80			80	
7:00 - 8:00				162	149			155	
8:00 - 9:00				156	141			148	
9:00 - 10:00				150	175			162	
10:00 - 11:00			172	181	183			178	
11:00 - 12:00			169	148	183			166	
12:00 - 13:00			181	180				180	
13:00 - 14:00			176	203				189	
14:00 - 15:00			194	183				188	
15:00 - 16:00			264	230				247	
16:00 - 17:00			303	320				311	
17:00 - 18:00			329	329				329	
18:00 - 19:00			249	304				276	
19:00 - 20:00			172	180				176	
20:00 - 21:00			110	155				132	
21:00 - 22:00			101	120				110	
22:00 - 23:00			70	67				68	
23:00 - 24:00			54	45				49	
TOTAL			2544	3306	1018			3253	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\97&OLIND.da1



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: OLINDA TRAIL N/CSAH-3 NB, S OF TH-97

COUNTY: WASHINGTON

REF. PT.: 011.619

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 17, 1996**

DATE HOUR \ DAY	15 MON.	16 TUE.	17 WED.	18 THU.	19 FRI.	20 SAT.	21 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00				4	7			5	
1:00 - 2:00				1	6			3	
2:00 - 3:00				4	6			5	
3:00 - 4:00				3	0			1	
4:00 - 5:00				2	4			3	
5:00 - 6:00				4	11			7	
6:00 - 7:00				29	28			28	
7:00 - 8:00				54	51			52	
8:00 - 9:00				55	68			61	
9:00 - 10:00				61	80			70	
10:00 - 11:00			64	62	79			68	
11:00 - 12:00			71	67	84			74	
12:00 - 13:00			91	75				83	
13:00 - 14:00			69	76				72	
14:00 - 15:00			81	86				83	
15:00 - 16:00			104	118				111	
16:00 - 17:00			135	107				121	
17:00 - 18:00			110	102				106	
18:00 - 19:00			72	78				75	
19:00 - 20:00			90	73				81	
20:00 - 21:00			76	86				81	
21:00 - 22:00			48	45				46	
22:00 - 23:00			13	10				11	
23:00 - 24:00			10	18				14	
TOTAL			1034	1220	424			1261	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS: _____

CORRECTED AADT: _____

DATA FILE --> A:\97&OLIND.da2



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: TH-97 WB, E OF OLINDA TRAIL N/CSAH-3

COUNTY: WASHINGTON

REF. PT.: 011.619

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 17, 1996**

DATE HOUR \ DAY	15 MON.	16 TUE.	17 WED.	18 THU.	19 FRI.	20 SAT.	21 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00				16	24			20	
1:00 - 2:00				10	11			10	
2:00 - 3:00				7	9			8	
3:00 - 4:00				14	15			14	
4:00 - 5:00				40	43			41	
5:00 - 6:00				161	149			155	
6:00 - 7:00				250	224			237	
7:00 - 8:00				233	228			230	
8:00 - 9:00				171	186			178	
9:00 - 10:00				173	178			175	
10:00 - 11:00			184	184	173			180	
11:00 - 12:00			204	167	186			185	
12:00 - 13:00			184	158				171	
13:00 - 14:00			205	190				197	
14:00 - 15:00			224	211				217	
15:00 - 16:00			229	239				234	
16:00 - 17:00			264	248				256	
17:00 - 18:00			220	206				213	
18:00 - 19:00			184	180				182	
19:00 - 20:00			186	145				165	
20:00 - 21:00			134	129				131	
21:00 - 22:00			91	104				97	
22:00 - 23:00			62	51				56	
23:00 - 24:00			23	31				27	
TOTAL			2394	3318	1426			3379	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\97&OLIND.da3



MINNESOTA DEPARTMENT OF TRANSPORTATION

METRO DIVISION - TRAFFIC ENGINEERING

TRAFFIC COUNT DATA

ROUTE #: OLINDA TRAIL N/CSAH-3 SB, N OF TH-97

COUNTY: WASHINGTON

REF. PT.: 011.619

SITE CODE: APPROACH

OPERATOR: RE

FOR COUNTS BEGINNING: **July 17, 1996**

DATE HOUR \ DAY	15 MON.	16 TUE.	17 WED.	18 THU.	19 FRI.	20 SAT.	21 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00				3	8			5	
1:00 - 2:00				1	3			2	
2:00 - 3:00				2	3			2	
3:00 - 4:00				6	6			6	
4:00 - 5:00				13	12			12	
5:00 - 6:00				66	69			67	
6:00 - 7:00				129	123			126	
7:00 - 8:00				117	101			109	
8:00 - 9:00				81	76			78	
9:00 - 10:00				59	70			64	
10:00 - 11:00			75	73	85			77	
11:00 - 12:00			86	76	82			81	
12:00 - 13:00			76	73				74	
13:00 - 14:00			87	74				80	
14:00 - 15:00			87	64				75	
15:00 - 16:00			97	92				94	
16:00 - 17:00			108	73				90	
17:00 - 18:00			73	82				77	
18:00 - 19:00			89	64				76	
19:00 - 20:00			67	55				61	
20:00 - 21:00			58	87				72	
21:00 - 22:00			40	54				47	
22:00 - 23:00			18	58				38	
23:00 - 24:00			10	16				13	
TOTAL			971	1418	638			1426	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> A:\97&OLIND.da4