



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### SIGNAL WARRANTS ANALYSIS

LOCATION: 610@EAST RIVER RD SOUTH RAMP

COUNTY: ANOKA

REF. POINT: 1+00.239

DATE: 9/11/2000

OPERATOR: M.A.R.

Speed	Approach Description	Lanes
55	Major App1: EAST RIVER RD SOUTH BOUND	3
55	Major App3: EAST RIVER RD NORTH BOUND	2
55	Minor App2: TH 610 OFF RAMP	3
0	Minor App4:	0

0.70 FACTOR USED? YES

POPULATION < 10,000? Y

EXISTING SIGNAL ? Y

HOUR	420/630			140/70		0/0		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	19	59	78	/	65	0	/	/	/
1:00 - 2:00	20	53	73	/	59	0	/	/	/
2:00 - 3:00	10	0	10	/	38	0	/	/	/
3:00 - 4:00	16	30	46	/	32	0	/	/	/
4:00 - 5:00	54	17	71	/	35	0	/	/	/
5:00 - 6:00	320	19	339	/	147	0	X/X	/	/
6:00 - 7:00	1121	65	1186	X/X	348	0	X/X	/	X/X
7:00 - 8:00	1366	214	1580	X/X	441	0	X/X	/	X/X
8:00 - 9:00	484	361	845	X/X	377	0	X/X	/	X/X
9:00 - 10:00	252	321	573	X/	281	0	X/X	/	X/
10:00 - 11:00	180	295	475	X/	251	0	X/X	/	X/
11:00 - 12:00	164	272	436	X/	293	0	X/X	/	X/
12:00 - 13:00	249	296	545	X/	337	0	X/X	/	X/
13:00 - 14:00	234	369	603	X/	375	0	X/X	/	X/
14:00 - 15:00	292	401	693	X/X	540	0	X/X	/	X/X
15:00 - 16:00	266	548	814	X/X	706	0	X/X	/	X/X
16:00 - 17:00	291	850	1141	X/X	839	0	X/X	/	X/X
17:00 - 18:00	291	1488	1779	X/X	818	0	X/X	/	X/X
18:00 - 19:00	236	1567	1803	X/X	637	0	X/X	/	X/X
19:00 - 20:00	192	747	939	X/X	440	0	X/X	/	X/X
20:00 - 21:00	165	432	597	X/	360	0	X/X	/	X/
21:00 - 22:00	148	348	496	X/	329	0	X/X	/	X/
22:00 - 23:00	92	263	355	/	202	0	X/X	/	/
23:00 - 24:00	41	152	193	/	138	0	/X	/	/

	Met (Hr)	Required (Hr)	
Warrant 1	16	8	Satisfied
Warrant 2	9	8	Satisfied
Warrant 6	18	8	Satisfied, check accident record
Warrant 8	13	8	Satisfied
Warrant 9	16	4	Satisfied
Warrant 11	11	1	Satisfied

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COUNTY: ANOKA

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DATE: 9/11/2000

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55	Major App1: EAST RIVER RD SOUTH BOUND	3
55	Major App3: EAST RIVER RD NORTH BOUND	2
55	Minor App2: TH 610 OFF RAMP	3
0	Minor App4: 0	0

0.70 FACTOR USED? YES  
 POPULATION < 10,000? Y  
 EXISTING SIGNAL ? Y

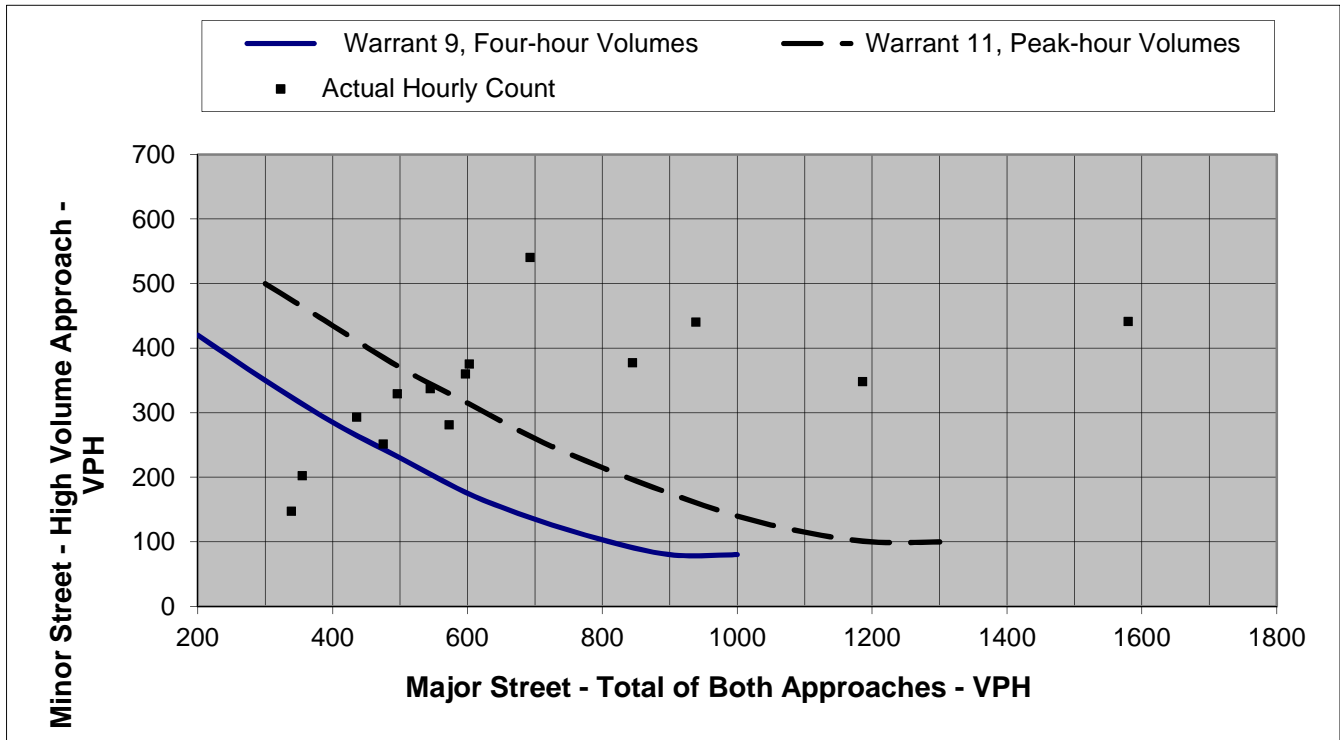


Figure 1. Four Hour and Peak Hour Warrant Analysis

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		78	65
300	350	500	73	59
400	285	435	10	38
500	230	370	46	32
600	175	315	71	35
700	135	260	339	147
800	103	215	1186	348
900	80	175	1580	441
1000	80	140	845	377
1100		115	573	281
1200		100	475	251
1300		100	436	293
1400			545	337
1500			603	375
1600			693	540
1700			814	706
1800			1141	839
			1779	818
			1803	637
			939	440
			597	360
			496	329
			355	202
			193	138

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: 610@EAST RIVER RD SOUTH RAMP

COUNTY: ANOKA

REF. POINT: 1+00.239

DATE: 9/11/2000

OPERATOR: M.A.R.

Speed	Approach Description	Lanes
55	Major App1: EAST RIVER RD SOUTH BOUND	3
55	Major App3: EAST RIVER RD NORTH BOUND	2
55	Minor App2: TH 610 OFF RAMP	3
0	Minor App4: 0	0

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	19	59	65	0	143	65	/
1:00 - 2:00	20	53	59	0	132	59	/
2:00 - 3:00	10	0	38	0	48	38	/
3:00 - 4:00	16	30	32	0	78	32	/
4:00 - 5:00	54	17	35	0	106	35	/
5:00 - 6:00	320	19	147	0	486	147	X/X
6:00 - 7:00	1121	65	348	0	1534	348	X/X
7:00 - 8:00	1366	214	441	0	2021	441	X/X
8:00 - 9:00	484	361	377	0	1222	377	X/X
9:00 - 10:00	252	321	281	0	854	281	X/X
10:00 - 11:00	180	295	251	0	726	251	X/X
11:00 - 12:00	164	272	293	0	729	293	X/X
12:00 - 13:00	249	296	337	0	882	337	X/X
13:00 - 14:00	234	369	375	0	978	375	X/X
14:00 - 15:00	292	401	540	0	1233	540	X/X
15:00 - 16:00	266	548	706	0	1520	706	X/X
16:00 - 17:00	291	850	839	0	1980	839	X/X
17:00 - 18:00	291	1488	818	0	2597	818	X/X
18:00 - 19:00	236	1567	637	0	2440	637	X/X
19:00 - 20:00	192	747	440	0	1379	440	X/X
20:00 - 21:00	165	432	360	0	957	360	X/X
21:00 - 22:00	148	348	329	0	825	329	X/X
22:00 - 23:00	92	263	202	0	557	202	X/X
23:00 - 24:00	41	152	138	0	331	138	/

Met (Hr) Required (Hr)

Allway Stop Warrant: **18** 8 **Satisfied**

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

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# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: EAST RIVER RD SOUTH BOUND

COUNTY: ANOKA

REF. PT.: 1+00.239

SITE CODE: 23661001

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 11, 2000**

DATE HOUR \ DAY	11 MON.	12 TUE.	13 WED.	14 THU.	15 FRI.	16 SAT.	17 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		21	18					19	
1:00 - 2:00		15	26					20	
2:00 - 3:00		9	12					10	
3:00 - 4:00		16	17					16	
4:00 - 5:00		55	53					54	
5:00 - 6:00		305	335					320	
6:00 - 7:00		1125	1117					1121	
7:00 - 8:00		1405	1327					1366	
8:00 - 9:00		416	552					484	
9:00 - 10:00		225	279					252	
10:00 - 11:00		188	173					180	
11:00 - 12:00	219	225	48					164	
12:00 - 13:00	235	263						249	
13:00 - 14:00	237	231						234	
14:00 - 15:00	315	269						292	
15:00 - 16:00	273	259						266	
16:00 - 17:00	305	278						291	
17:00 - 18:00	296	287						291	
18:00 - 19:00	248	224						236	
19:00 - 20:00	164	221						192	
20:00 - 21:00	146	185						165	
21:00 - 22:00	148	148						148	
22:00 - 23:00	80	104						92	
23:00 - 24:00	41	41						41	
<b>TOTAL</b>	<b>2707</b>	<b>6515</b>	<b>3957</b>					<b>6503</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\23661015



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: TH 610 OFF RAMP

COUNTY: ANOKA

REF. PT.: 1+00.239

SITE CODE: 23661001

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 11, 2000**

DATE HOUR \ DAY	11 MON.	12 TUE.	13 WED.	14 THU.	15 FRI.	16 SAT.	17 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		52	79					65	
1:00 - 2:00		60	58					59	
2:00 - 3:00		35	42					38	
3:00 - 4:00		41	23					32	
4:00 - 5:00		33	37					35	
5:00 - 6:00		142	152					147	
6:00 - 7:00		346	350					348	
7:00 - 8:00		449	434					441	
8:00 - 9:00		378	376					377	
9:00 - 10:00		270	292					281	
10:00 - 11:00	238	264						251	
11:00 - 12:00	294	293						293	
12:00 - 13:00	336	338						337	
13:00 - 14:00	359	391						375	
14:00 - 15:00	527	554						540	
15:00 - 16:00	690	722						706	
16:00 - 17:00	854	825						839	
17:00 - 18:00	838	798						818	
18:00 - 19:00	619	655						637	
19:00 - 20:00	397	483						440	
20:00 - 21:00	330	390						360	
21:00 - 22:00	317	342						329	
22:00 - 23:00	171	234						202	
23:00 - 24:00	143	133						138	
<b>TOTAL</b>	<b>6113</b>	<b>8228</b>	<b>1843</b>					<b>8088</b>	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\23661013





# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #: EAST RIVER RD NORTH BOUND

COUNTY: ANOKA

REF. PT.: 1+00.239

SITE CODE: 23661001

OPERATOR: M.A.R.

FOR COUNTS BEGINNING: **September 11, 2000**

DATE HOUR \ DAY	11 MON.	12 TUE.	13 WED.	14 THU.	15 FRI.	16 SAT.	17 SUN.	AVE. WK.DAY	AVE. WKEND
0:00 - 1:00		48	70					59	
1:00 - 2:00		50	56					53	
2:00 - 3:00									
3:00 - 4:00		30	30					30	
4:00 - 5:00		14	21					17	
5:00 - 6:00		17	22					19	
6:00 - 7:00		62	69					65	
7:00 - 8:00		219	209					214	
8:00 - 9:00		355	367					361	
9:00 - 10:00		308	334					321	
10:00 - 11:00		294	296					295	
11:00 - 12:00		256	288					272	
12:00 - 13:00	285	308						296	
13:00 - 14:00	363	376						369	
14:00 - 15:00	413	390						401	
15:00 - 16:00	550	546						548	
16:00 - 17:00	849	852						850	
17:00 - 18:00	1497	1479						1488	
18:00 - 19:00	1542	1593						1567	
19:00 - 20:00	722	772						747	
20:00 - 21:00	420	445						432	
21:00 - 22:00	327	370						348	
22:00 - 23:00	245	282						263	
23:00 - 24:00	142	163						152	
TOTAL	7355	9229	1762					9167	

24 HOURS FACTOR:

FACTORED ADT:

REMARKS:

CORRECTED AADT:

DATA FILE --> a:\23661021



# MINNESOTA DEPARTMENT OF TRANSPORTATION

## METRO DIVISION - TRAFFIC ENGINEERING

### TRAFFIC COUNT DATA

ROUTE #:

COUNTY:

REF. PT.:

SITE CODE:

OPERATOR:

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 -->