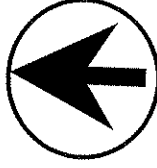


Date : 7/22/02

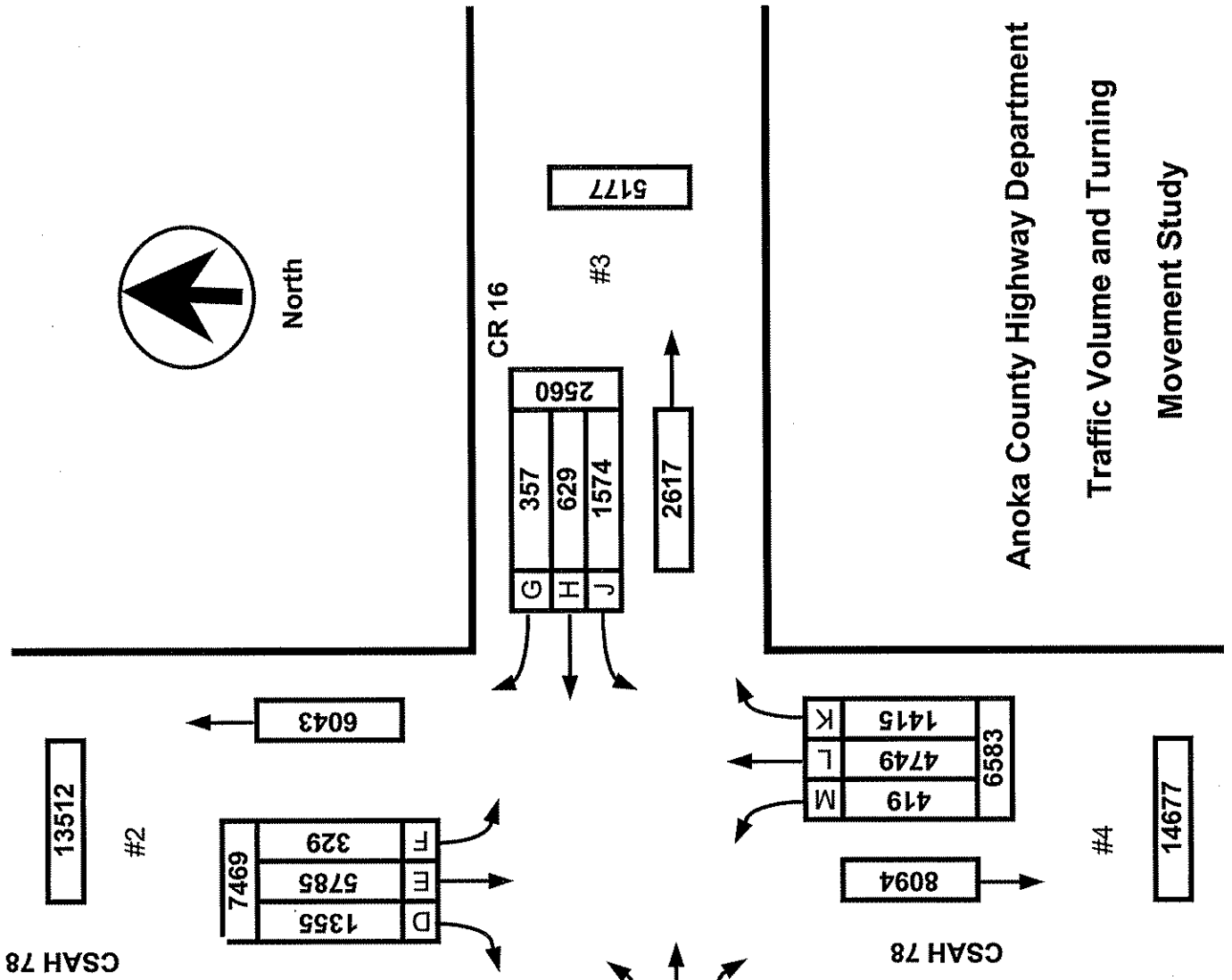
Count Number : TMC0216

Location : CSAH 78 (Hanson Blvd.) @

CR16 (Andover Blvd.)



North



	LANES OF APPROACH			TOTAL
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	
#1	1	0	1	2
#2	1	0	1	2
#3	0	0	1	1
#4	1	0	1	2

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study



Anoka County Highway Department  
Traffic Engineering

Weather: Sunny, Warm

Traffic Volume and Turning Movement Stud

File Name : TMC 0216

Counter TDC-8

Site Code : 02160102

Counted by: Melissa/Jessica

Start Date : 07/22/2002

Page No : 2

Groups Printed- 1 - 1 - Unshifted

Start Time	CSAH 78 Southbound					CR 16 Westbound					CSAH 78 Northbound					CR 16 Eastbound					Exclu Total	Inclu. Total	Int. Total
	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total			
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
18:00	6	103	18	1	127	30	19	10	1	59	7	102	31	4	140	21	18	6	0	45	6	371	377
18:15	5	70	20	4	95	26	16	17	2	59	8	148	60	4	216	13	18	4	0	35	10	405	415
18:30	1	72	18	1	91	27	11	11	4	49	6	124	36	4	166	16	17	7	0	40	9	346	355
18:45	10	69	30	5	109	34	22	7	0	63	6	115	35	2	156	19	21	5	1	45	8	373	381
Total	22	314	86	11	422	117	68	45	7	230	27	489	162	14	678	69	74	22	1	165	33	1495	1528
19:00	1	80	29	3	110	13	11	4	0	28	6	87	30	1	123	18	19	10	0	47	4	308	312
19:15	4	64	15	0	83	15	10	11	1	36	3	90	29	3	122	20	15	5	1	40	5	281	286
19:30	12	71	16	1	99	21	13	4	0	38	6	94	27	2	127	11	13	9	0	33	3	297	300
19:45	5	69	25	2	99	17	15	8	0	40	7	88	31	2	126	13	21	5	0	39	4	304	308
Total	22	284	85	6	391	66	49	27	1	142	22	359	117	8	498	62	68	29	1	159	16	1190	1206
20:00	8	54	26	0	88	21	10	4	0	35	2	72	25	1	99	19	19	7	1	45	2	267	269
20:15	6	100	32	2	138	16	9	4	0	29	8	68	30	0	106	18	26	4	0	48	2	321	323
20:30	2	75	28	0	105	23	13	5	0	41	5	70	24	0	99	20	18	3	0	41	0	286	286
20:45	4	68	24	1	96	19	12	8	0	39	4	65	19	2	88	17	22	5	0	44	3	267	270
Total	20	297	110	3	427	79	44	21	0	144	19	275	98	3	392	74	85	19	1	178	7	1141	1148
21:00	8	84	21	3	113	21	9	6	0	36	1	59	16	0	76	17	16	6	0	39	3	264	267
21:15	5	67	23	0	95	16	5	4	1	25	3	55	15	0	73	12	14	2	0	28	1	221	222
21:30	3	55	19	1	77	18	5	4	0	27	2	57	17	0	76	13	16	4	1	33	2	213	215
21:45	1	49	20	0	70	15	7	3	0	25	1	49	15	0	65	11	11	3	0	25	0	185	185
Total	17	255	83	4	355	70	26	17	1	113	7	220	63	0	290	53	57	15	1	125	6	883	889
Grand Total	329	578	135		7469	157	629	357	72	2560	419	474	141		6583	937	873	735		2545	1139	1915	2029
Approch %	4.4	77.	18.	346		61.	24.	13.			6.4	72.	21.	441		36.	34.	28.	280			7	6
Total %	1.7	30.	7.1		39.0	8.2	3.3	1.9		13.4	2.2	24.	7.4		34.4	4.9	4.6	3.8		13.3	5.6	94.4	

Major Street Approaches:

Northbound:

CSAH 78

Data File: C:\Program Files\PC-Warrants\TMC0216.war  
 Count Type: IMC. Channel: 0. Count Date: 7/22/ 2  
 Number of Lanes: 2  
 Approach Speed: 55  
 Total Approach Traffic: 6583

Southbound:

CSAH 78

Data File: C:\Program Files\PC-Warrants\TMC0216.war  
 Count Type: IMC. Channel: 0. Count Date: 7/22/ 2  
 Number of Lanes: 2  
 Approach Speed: 55  
 Total Approach Traffic: 7469

Minor Street Approaches:

Eastbound:

CR 16

Data File: C:\Program Files\PC-Warrants\TMC0216.war  
 Count Type: IMC. Channel: 0. Count Date: 7/22/ 2  
 Number of Lanes: 2  
 Approach Speed: 50  
 Total Approach Traffic: 2545

Westbound:

CR 16

Data File: C:\Program Files\PC-Warrants\TMC0216.war  
 Count Type: IMC. Channel: 0. Count Date: 7/22/ 2  
 Number of Lanes: 1  
 Approach Speed: 50  
 Total Approach Traffic: 2560

Analysis of 8-Hour Volume Warrants (Criteria refers to high volume side street for that hour):

Hour	Main	Side	Warrant 1	Warrant 2	Warrant 8	
Begin (Total)	Vol.	Dir.	Rank	Meets? Criteria	Meets? Criteria	Meets? Criteria
0	0	0 W	17	105	52	84
1	0	0 W	18	105	52	84
2	0	0 W	19	105	52	84
3	0	0 W	20	105	52	84
4	0	0 W	21	105	52	84
5	0	0 W	22	105	52	84
6	836	280 W	2	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
7	904	286 W	1	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
8	819	188 W	6	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
9	704	134 W	13	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
10	686	117 E	16	MAIN 140	--BOTH-- 70	--BOTH-- 112
11	795	120 E	15	MAIN 140	--BOTH-- 70	--BOTH-- 112
12	903	172 E	9	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
13	877	161 E	10	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
14	841	146 E	12	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
15	910	181 E	7	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
16	1115	257 E	3	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
17	1209	235 E	4	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
18	1100	230 W	5	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
19	889	159 E	11	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
20	819	178 E	8	--BOTH-- 140	--BOTH-- 70	--BOTH-- 112
21	645	125 E	14	MAIN 140	--BOTH-- 70	--BOTH-- 112
22	0	0 W	23	105	52	84
23	0	0 W	24	105	52	84

## Warrant Summary:

Rural values apply.

^ high-volume minor approach is wide enough for two lanes. Re-striping may be desirable.

## warrant 1 - Minimum Vehicular Volumes

SATISFIED for 13 hours. Criteria--Main St.: 420; Side St.: See Volume Summary.

## Warrant 2 - Interruption of Continuous Traffic

SATISFIED for 16 hours. Criteria--Main St.: 630; Side St.: See Volume Summary.

## Warrant 3 - Minimum Pedestrian Volumes

NOT SATISFIED. Ped volumes too low. Criteria--190 Peds in peak hour, 100 peds in 4th high hour.

## Warrant 4 - School Crossing

NOT APPLICABLE. Gap data has not been defined.

## Warrant 5 - Progressive Movement

NOT SATISFIED. Adjacent signals closer than 1000 feet and/or not part of coordinated system.

## Warrant 6 - Accident Experience

NOT SATISFIED. 0 correctable accidents is fewer than required 5.

Correctable Accidents: 0; Right Angle Accidents: 0; Left Turn Accidents: 0; Other Accidents: 0.

## Warrant 7 - Systems Warrant

NOT SATISFIED. At least one street has no major approaches. Peak hour total entering volume: 1655.

- Approaches which are part of the principal through traffic roadway network.
- Approaches which include rural or suburban highways outside, entering or traversing a city.
- Approaches which appear as a major route in an official transportation plan.

## Warrant 8 - Combination of Warrants

SATISFIED for 16 hours. Criteria--Main: 504; Side: See Volume Summary.

## Warrant 9 - Four Hour Volumes

SATISFIED for 14 hours.

## Warrant 10 - Peak Hour Delay

NOT APPLICABLE. Volume requirements satisfied, but side street peak hour delay not defined.

Criteria--Main St.: 800 (4 approaches), 650 (3 approaches); Side St.: 150.

## Warrant 11 - Peak Hour Volume

SATISFIED for 4 hours.

Minor St. High Vol. Approach (UPH)

0 100 200 300 400 500 600

200 400 600 800 1000 1200 1400 1600

Major St. Total of Both Approaches (UPH)

Warrant 9, Four-Hour Volumes  
Warrant 11, Peak-Hour Volumes

219  
211  
201  
191  
181  
171  
161  
151  
141  
131  
121  
111  
101  
91  
81  
71  
61  
51  
41  
31  
21  
11  
01

**Multiway Stop Warrant Analysis**  
**TMC 0216 CSAH 78 @ CR 16**  
**Speed Limit of Major Roadway..... 50**

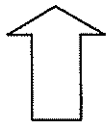
**Minimum Traffic Volumes Multiway Stop Warrant Criteria:**

- a) The total vehicular volume entering the intersection from all approaches must average at least 500 vehicles per hour (vph) for any 8 hours of an average day, AND:
- b) The combined vehicular and pedestrian volume from the minor street or highway must average at least 200 vph for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour, BUT:
- c) When the 85-percentile approach speed of the major street traffic exceeds 40 miles per hour, the minimum volume warrant is 70% of the above requirements.

Hour	Total Vehicular Traffic Entering the Intersection	Vehicular Traffic Entering on First Minor Roadway	Vehicular Traffic Entering on Second Minor Roadway	Sum of Minor Approaches	Is Stop Warrant Met?
6 AM - 7 AM	1233	280	117	397	YES
7 AM - 8 AM	1330	286	140	426	YES
8 AM - 9 AM	1166	188	159	347	YES
9 AM - 10 AM	951	134	113	247	YES
10 AM - 11 AM	905	102	117	219	YES
11 AM - 12 PM	1027	112	120	232	YES
12 PM - 13 PM	1188	113	172	285	YES
1 PM - 2 PM	1147	109	161	270	YES
2 PM - 3 PM	1103	116	146	262	YES
3 PM - 4 PM	1227	136	181	317	YES
4 PM - 5 PM	1516	144	257	401	YES
5 PM - 6 PM	1655	211	235	446	YES
6 PM - 7 PM	1495	230	165	395	YES
7 PM - 8 PM	1190	142	159	301	YES
8 PM - 9 PM	1141	144	178	322	YES
9 PM - 10 PM	883	113	125	238	YES

**TOTAL HOURS MET: 16**

**MULTIWAY STOP WARRANT IS MET**



**NORTH**

**COUNT LOCATION:**

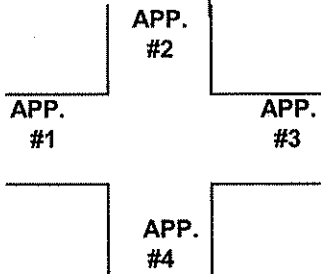
CSAH 78 (HANSON BLVD.) @

**DATE:**

7/24/02

CR 16 (ANDOVER BLVD.)

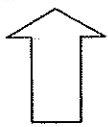
APP. #1 = CR 16
APP. #2 = CSAH 78
APP. #3 = CR 16
APP. #4 = CSAH 78



- HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT
- A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.
  - B. RV- A HEAVY VEHICLE OPERATED BY A PRIVATE MOTORIST AND INVOLVED IN THE TRANSPORT OF RECREATIONAL EQUIPMENT OR FACILITIES.
  - C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
2:00-2:15PM	1		2		3	17	1	
2:15-2:30	3			3	6	21		
2:30-2:45	5				5	26		
2:45-3:00				1	1	20	1	
<b>HOURLY TOTAL</b>					<b>15</b>	<b>HOURLY TOTAL</b>		<b>86</b>
3:00-3:15	2			1	3	23		1
3:15-3:30	2				2	26	1	
3:30-3:45						20		
3:45-4:00	1				1	29		
<b>HOURLY TOTAL</b>					<b>6</b>	<b>HOURLY TOTAL</b>		<b>100</b>
4:00-4:15	2				2	19		2
4:15-4:30						14		1
4:30-4:45			1	7	8	13		
4:45-5:00				2	2	15		
<b>HOURLY TOTAL</b>					<b>12</b>	<b>HOURLY TOTAL</b>		<b>64</b>
5:00-5:15						17		
5:15-5:30						16		
5:30-5:45						9	1	
5:45-6:00						6		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>49</b>
6:00-6:15	1				1	4		
6:15-6:30				1	1	9	1	
6:30-6:45	1			6	7	8	1	
6:45-7:00	7			1	8	8		
<b>HOURLY TOTAL</b>					<b>17</b>	<b>HOURLY TOTAL</b>		<b>31</b>
7:00-7:15				4	4	4		
7:15-7:30	6			1	7	5		
7:30-7:45	5			8	13	3		
7:45-8:00				1	1	4		
<b>HOURLY TOTAL</b>					<b>25</b>	<b>HOURLY TOTAL</b>		<b>16</b>
8:00-8:15	1				1	1		
8:15-8:30	1	2		1	4	2		
8:30-8:45								
8:45-9:00						3		
<b>HOURLY TOTAL</b>					<b>5</b>	<b>HOURLY TOTAL</b>		<b>6</b>
9:00-9:15						3		
9:15-9:30						1		
9:30-9:45						2		
9:45-10:00								
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>6</b>





COUNT LOCATION:

CSAH 78 (HANSON BLVD.) @

DATE:

7/24/02

CR 16 (ANDOVER BLVD.)

APP. #1 = CR 16
APP. #2 = CSAH 78
APP. #3 = CR 16
APP. #4 = CSAH 78

APP.  
#1

APP.  
#2

APP.  
#3

APP.  
#4

- HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT
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  - C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
6:00-6:15AM	1	1			2	9		
6:15-6:30	2				2	8		
6:30-6:45	1				1	11		1
6:45-7:00				1	1	11		1
<b>HOURLY TOTAL</b>					<b>6</b>	<b>HOURLY TOTAL</b>	<b>41</b>	
7:00-7:15						9		
7:15-7:30						23		4
7:30-7:45						24		6
7:45-8:00						24		2
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>	<b>92</b>	
8:00-8:15						21		2
8:15-8:30	1			1	2	30		1
8:30-8:45	1			1	2	18		1
8:45-9:00	2			1	3	27		20
<b>HOURLY TOTAL</b>					<b>7</b>	<b>HOURLY TOTAL</b>	<b>120</b>	
9:00-9:15	4			1	5	22		8
9:15-9:30						33		1
9:30-9:45	1			1	2	21		1
9:45-10:00				3	3	19	1	1
<b>HOURLY TOTAL</b>					<b>10</b>	<b>HOURLY TOTAL</b>	<b>107</b>	
10:00-10:15	3	1		4	8	18		
10:15-10:30	5				5	22		
10:30-10:45	3			4	7	20		4
10:45-11:00						32		9
<b>HOURLY TOTAL</b>					<b>20</b>	<b>HOURLY TOTAL</b>	<b>105</b>	
11:00-11:15	1				1	24	1	5
11:15-11:30						23		2
11:30-11:45						30		1
11:45-12:00	5				5	27		7
<b>HOURLY TOTAL</b>					<b>6</b>	<b>HOURLY TOTAL</b>	<b>120</b>	
12:00-12:15	1				1	14		18
12:15-12:30	2				2	16		2
12:30-12:45	1			1	2	16	1	3
12:45-1:00						15		
<b>HOURLY TOTAL</b>					<b>5</b>	<b>HOURLY TOTAL</b>	<b>85</b>	
1:00-1:15						24		
1:15-1:30						20		
1:30-1:45						19		
1:45-2:00						23		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>	<b>86</b>	