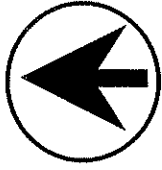


Date : 6/3/02

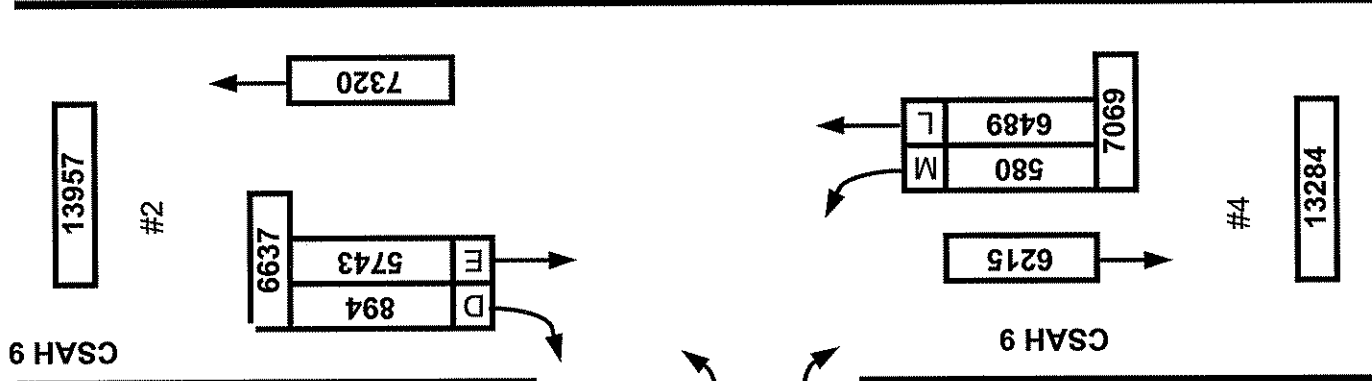
Count Number : TMC0205

Location : CSAH 9 (Round Lake Blvd.)

@ CSAH 20 (157TH AVE.)



North



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

Anoka County Highway Department
Traffic Engineering
Traffic Volume and Turning Movement Stud

File Name : TMC 0205
Site Code : 00020502
Start Date : 06/03/2002
Page No : 1

Weather: Rainy, Cloudy
Counter TDC-8
Counted by: Melissa/Jessica

Groups Printed- 1 - Unshifted

Start Time	CSAH 9 Southbound					Westbound					CSAH 9 Northbound					CSAH 20 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			
	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				
06:00	0	154	12	3	166	0	0	0	0	0	2	23	0	2	25	12	0	11	0	23	5	214	219
06:15	0	202	13	4	215	0	0	0	0	0	3	27	0	0	30	15	0	9	3	24	7	269	276
06:30	0	214	28	6	242	0	0	0	0	0	2	32	0	2	34	10	0	4	2	14	10	290	300
06:45	0	169	20	6	189	0	0	0	0	0	2	39	0	3	41	9	0	10	1	19	10	249	259
Total	0	739	73	19	812	0	0	0	0	0	9	121	0	7	130	46	0	34	6	80	32	1022	1054
07:00	0	176	20	4	196	0	0	0	0	0	3	41	0	5	44	9	0	17	3	26	12	266	278
07:15	0	167	17	3	184	0	0	0	0	0	2	41	0	4	43	19	0	10	1	29	8	256	264
07:30	0	178	24	8	202	0	0	0	0	0	1	41	0	2	42	9	0	14	3	23	13	267	280
07:45	0	175	31	7	206	0	0	0	0	0	6	60	0	5	66	17	0	9	1	26	13	298	311
Total	0	696	92	22	788	0	0	0	0	0	12	183	0	16	195	54	0	50	8	104	46	1087	1133
08:00	0	107	27	8	134	0	0	0	0	0	7	44	0	7	51	12	0	13	3	25	18	210	228
08:15	0	136	15	5	151	0	0	0	0	0	3	36	0	4	39	9	0	8	0	17	9	207	216
08:30	0	83	23	3	106	0	0	0	0	0	4	45	0	4	49	5	0	8	0	13	7	168	175
08:45	0	114	14	12	128	0	0	0	0	0	4	40	0	6	44	11	0	7	4	18	22	190	212
Total	0	440	79	28	519	0	0	0	0	0	18	165	0	21	183	37	0	36	7	73	56	775	831
09:00	0	90	12	4	102	0	0	0	0	0	1	39	0	2	40	19	0	6	3	25	9	167	176
09:15	0	77	8	2	85	0	0	0	0	0	6	41	0	5	47	11	0	3	3	14	10	146	156
09:30	0	84	5	4	89	0	0	0	0	0	4	36	0	2	40	7	0	5	1	12	7	141	148
09:45	0	82	7	2	89	0	0	0	0	0	4	45	0	6	49	8	0	6	0	14	8	152	160
Total	0	333	32	12	365	0	0	0	0	0	15	161	0	15	176	45	0	20	7	65	34	606	640
10:00	0	71	9	0	80	0	0	0	0	0	5	40	0	7	45	8	0	4	0	12	7	137	144
10:15	0	72	15	0	87	0	0	0	0	0	4	63	0	6	67	12	0	8	2	20	8	174	182
10:30	0	90	12	8	102	0	0	0	0	0	5	62	0	7	67	9	0	6	1	15	16	184	200
10:45	0	82	12	7	94	0	0	0	0	0	10	52	0	2	62	14	0	6	4	20	13	176	189
Total	0	315	48	15	363	0	0	0	0	0	24	217	0	22	241	43	0	24	7	67	44	671	715
11:00	0	81	17	8	98	0	0	0	0	0	5	66	0	7	71	12	0	7	0	19	15	188	203
11:15	0	64	6	5	70	0	0	0	0	0	5	63	0	7	68	8	0	4	1	12	13	150	163
11:30	0	84	15	7	99	0	0	0	0	0	10	78	0	5	88	8	0	6	2	14	14	201	215
11:45	0	75	10	2	85	0	0	0	0	0	4	90	0	7	94	10	0	7	1	17	10	196	206
Total	0	304	48	22	352	0	0	0	0	0	24	297	0	26	321	38	0	24	4	62	52	735	787
12:00	0	75	6	7	81	0	0	0	0	0	7	95	0	6	102	8	0	8	2	16	15	199	214
12:15	0	57	9	4	66	0	0	0	0	0	8	96	0	7	104	18	0	4	1	22	12	192	204
12:30	0	68	4	5	72	0	0	0	0	0	7	76	0	4	83	8	0	4	1	12	10	167	177
12:45	0	75	5	5	80	0	0	0	0	0	13	83	0	5	96	12	0	5	1	17	11	193	204
Total	0	275	24	21	299	0	0	0	0	0	35	350	0	22	385	46	0	21	5	67	48	751	799
13:00	0	66	7	8	73	0	0	0	0	0	11	92	0	8	103	6	0	9	0	15	16	191	207
13:15	0	65	8	8	73	0	0	0	0	0	3	90	0	3	93	12	0	7	1	19	12	185	197
13:30	0	62	5	2	67	0	0	0	0	0	8	85	0	4	93	15	0	5	0	20	6	180	186
13:45	0	78	5	5	83	0	0	0	0	0	7	91	0	3	98	15	0	3	1	18	9	199	208
Total	0	271	25	23	296	0	0	0	0	0	29	358	0	18	387	48	0	24	2	72	43	755	798
14:00	0	69	12	4	81	0	0	0	0	0	5	94	0	9	99	14	0	6	0	20	13	200	213
14:15	0	81	11	5	92	0	0	0	0	0	8	111	0	9	119	18	0	7	4	25	18	236	254
14:30	0	83	23	5	106	0	0	0	0	0	8	117	0	6	125	16	0	6	2	22	13	253	266
14:45	0	90	21	9	111	0	0	0	0	0	14	143	0	7	157	13	0	6	2	19	18	287	305
Total	0	323	67	23	390	0	0	0	0	0	35	465	0	31	500	61	0	25	8	86	62	976	1038
15:00	0	80	21	7	101	0	0	0	0	0	11	143	0	10	154	9	0	8	2	17	19	272	291
15:15	0	88	21	5	109	0	0	0	0	0	13	169	0	4	182	29	0	7	0	36	9	327	336
15:30	0	81	18	5	99	0	0	0	0	0	18	190	0	3	208	14	0	7	1	21	9	328	337
15:45	0	90	14	8	104	0	0	0	0	0	13	219	0	5	232	28	0	12	3	40	16	376	392
Total	0	339	74	25	413	0	0	0	0	0	55	721	0	22	776	80	0	34	6	114	53	1303	1356
16:00	0	75	25	10	100	0	0	0	0	0	13	179	0	3	192	13	0	8	2	21	15	313	328
16:15	0	81	20	3	101	0	0	0	0	0	16	229	0	4	245	18	0	12	2	30	9	376	385
16:30	0	87	15	6	102	0	0	0	0	0	18	179	0	4	197	22	0	9	4	31	14	330	344
16:45	0	84	30	2	114	0	0	0	0	0	21	228	0	2	249	20	0	9	1	29	5	392	397
Total	0	327	90	21	417	0	0	0	0	0	68	815	0	13	883	73	0	38	9	111	43	1411	1454

Major Street Approaches:

Northbound:

CSAH 9

Data File: C:\Program Files\PC-Warrants\TMC 0205.war
 Count Type: IMC. Channel: 0. Count Date: 6/ 3/ 2
 Number of Lanes: 2
 Approach Speed: 55
 Total Approach Traffic: 7069

Southbound:

CSAH 9

Data File: C:\Program Files\PC-Warrants\TMC 0205.war
 Count Type: IMC. Channel: 0. Count Date: 6/ 3/ 2
 Number of Lanes: 2
 Approach Speed: 55
 Total Approach Traffic: 6637

Minor Street Approaches:

Eastbound:

Data File: C:\Program Files\PC-Warrants\TMC 0205.war
 Count Type: IMC. Channel: 0. Count Date: 6/ 3/ 2
 Number of Lanes: 1
 Approach Speed: 0
 Total Approach Traffic: 1303

Westbound:

CSAH 20

Data File: C:\Program Files\PC-Warrants\TMC 0205.war
 Count Type: IMC. Channel: 0. Count Date: 6/ 3/ 2
 Number of Lanes: 1
 Approach Speed: 50
 Total Approach Traffic: 0

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 E	17	105	52	84
1	0	0 E	18	105	52	84
2	0	0 E	19	105	52	84
3	0	0 E	20	105	52	84
4	0	0 E	21	105	52	84
5	0	0 E	22	105	52	84
6	942	80 E	8	MAIN 105	--BOTH-- 52	MAIN 84
7	983	104 E	4	MAIN 105	--BOTH-- 52	--BOTH-- 84
8	702	73 E	9	MAIN 105	--BOTH-- 52	MAIN 84
9	541	65 E	13	MAIN 105	SIDE 52	MAIN 84
10	604	67 E	11	MAIN 105	SIDE 52	MAIN 84
11	673	62 E	14	MAIN 105	--BOTH-- 52	MAIN 84
12	684	67 E	12	MAIN 105	--BOTH-- 52	MAIN 84
13	683	72 E	10	MAIN 105	--BOTH-- 52	MAIN 84
14	890	86 E	7	MAIN 105	--BOTH-- 52	--BOTH-- 84
15	1189	114 E	2	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
16	1300	111 E	3	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
17	1293	98 E	5	MAIN 105	--BOTH-- 52	--BOTH-- 84
18	1109	115 E	1	--BOTH-- 105	--BOTH-- 52	--BOTH-- 84
19	818	89 E	6	MAIN 105	--BOTH-- 52	--BOTH-- 84
20	712	62 E	15	MAIN 105	--BOTH-- 52	MAIN 84
21	583	38 E	16	MAIN 105	52	MAIN 84
22	0	0 E	23	105	52	84
23	0	0 E	24	105	52	84

Warrant Summary:

Rural values apply.

Warrant 1 - Minimum Vehicular Volumes

NOT SATISFIED. Required values reached for 3 hours. Criteria--Main St.: 420; Side St.: See Volume Summary.

Warrant 2 - Interruption of Continuous Traffic

SATISFIED for 13 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: 1411.

- 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

NOT SATISFIED. Required values reached for 7 hours. Criteria--Main: 504; Side: See Volume Summary.

Warrant 9 - Four Hour Volumes

SATISFIED for 8 hours.

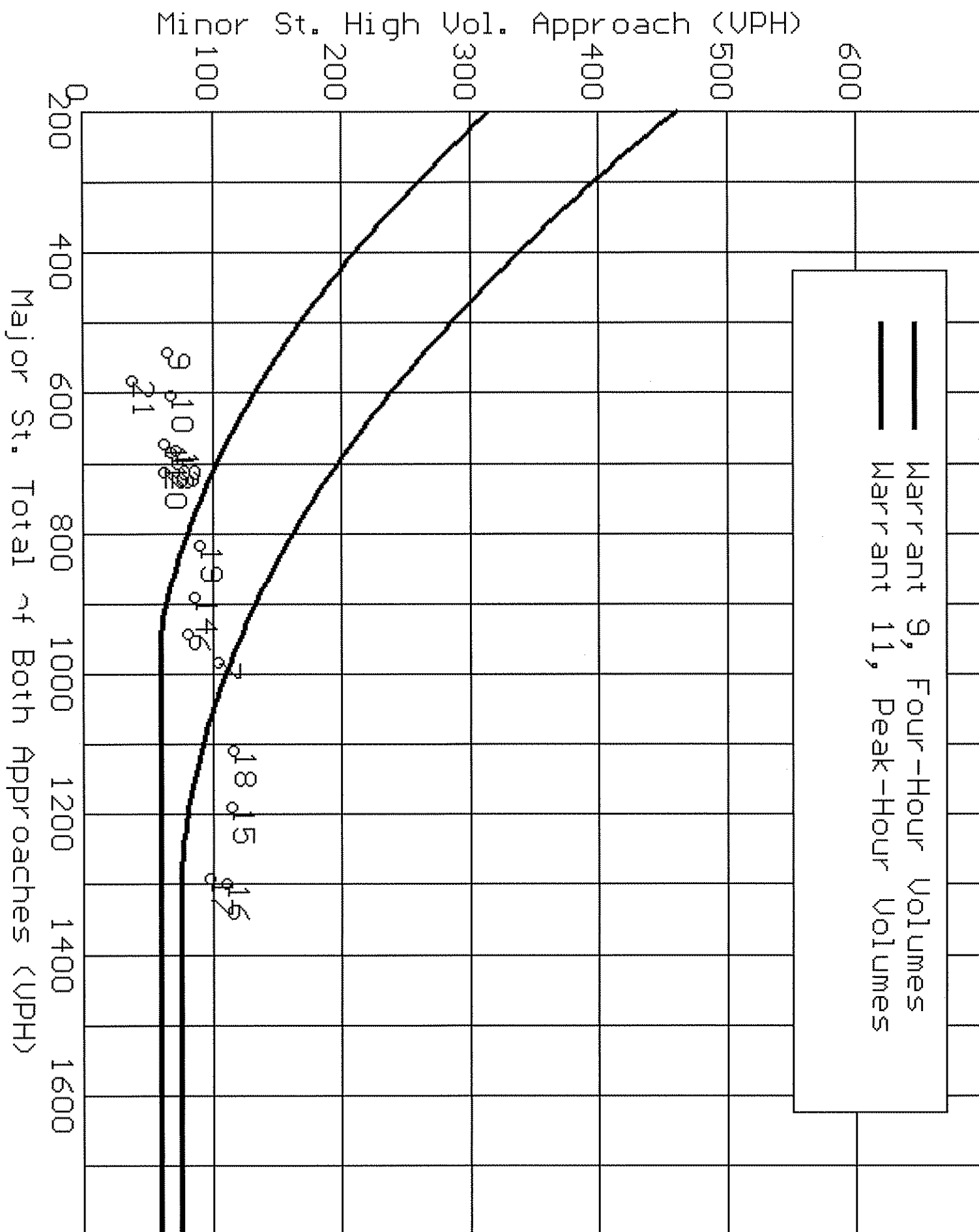
Warrant 10 - Peak Hour Delay

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

Criteria--Main St.: 800 (4 approaches), 650 (3 approaches); Side St.: 100.

Warrant 11 - Peak Hour Volume

SATISFIED for 4 hours.



Multiway Stop Warrant Analysis
TMC 0205 CSAH 9 @ CSAH 20
Speed Limit of Major Roadway..... 55

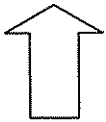
Minimum Traffic Volumes Multiway Stop Warrant Criteria:

- 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	1022	80	0	80	NO
7 AM - 8 AM	1087	104	0	104	NO
8 AM - 9 AM	755	73	0	73	NO
9 AM - 10 AM	606	65	0	65	NO
10 AM - 11 AM	671	67	0	67	NO
11 AM - 12 PM	735	62	0	62	NO
12 PM - 13 PM	751	67	0	67	NO
1 PM - 2 PM	755	72	0	72	NO
2 PM - 3 PM	976	86	0	86	NO
3 PM - 4 PM	1303	114	0	114	NO
4 PM - 5 PM	1411	111	0	111	NO
5 PM - 6 PM	1391	98	0	98	NO
6 PM - 7 PM	1224	115	0	115	NO
7 PM - 8 PM	907	89	0	89	NO
8 PM - 9 PM	774	62	0	62	NO
9 PM - 10 PM	621	38	0	38	NO

TOTAL HOURS MET: 0

MULTIWAY STOP WARRANT IS NOT MET



NORTH

APP. #1 = CSAH 20
APP. #2 = CSAH 9
APP. #3 =
APP. #4 = CSAH 9

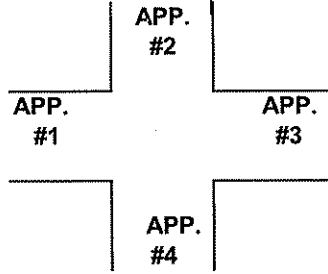
COUNT LOCATION:

CSAH 9 @

DATE:

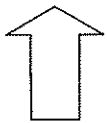
6/3/02

CSAH 20



- 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						12		1
2:15-2:30						15		2
2:30-2:45						7		6
2:45-3:00						15		3
HOURLY TOTAL						HOURLY TOTAL		61
3:00-3:15						8		11
3:15-3:30						7		3
3:30-3:45						8		
3:45-4:00						9		7
HOURLY TOTAL						HOURLY TOTAL		53
4:00-4:15						11		6
4:15-4:30						6		2
4:30-4:45						9		5
4:45-5:00						5		1
HOURLY TOTAL						HOURLY TOTAL		45
5:00-5:15						2		
5:15-5:30				1	1	5		
5:30-5:45						14		
5:45-6:00						9		
HOURLY TOTAL					1	HOURLY TOTAL		30
6:00-6:15						5		
6:15-6:30						6		
6:30-6:45						3		1
6:45-7:00						8		
HOURLY TOTAL						HOURLY TOTAL		23
7:00-7:15						2	1	
7:15-7:30						6		
7:30-7:45						1	1	
7:45-8:00								
HOURLY TOTAL						HOURLY TOTAL		11
8:00-8:15						2		
8:15-8:30						1		
8:30-8:45						1		
8:45-9:00						1		
HOURLY TOTAL						HOURLY TOTAL		5
9:00-9:15								
9:15-9:30								
9:30-9:45						1		
9:45-10:00								
HOURLY TOTAL						HOURLY TOTAL		1



NORTH

COUNT LOCATION:

CSAH 9 @

DATE:

6/3/02

CSAH 20

APP. #1 = CSAH 20

APP. #2 = CSAH 9

APP. #3 =

APP. #4 = CSAH 9

APP. #2

APP. #1

APP. #3

APP. #4

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
6:00-6:15AM						4		
6:15-6:30						6		1
6:30-6:45						10		1
6:45-7:00						7		3
HOURLY TOTAL						HOURLY TOTAL		32
7:00-7:15						6		6
7:15-7:30						6		2
7:30-7:45				1	1	10		3
7:45-8:00						7		6
HOURLY TOTAL					1	HOURLY TOTAL		46
8:00-8:15						17		1
8:15-8:30						7		2
8:30-8:45						3		4
8:45-9:00						15		6
HOURLY TOTAL						HOURLY TOTAL		55
9:00-9:15						7		2
9:15-9:30						8		2
9:30-9:45						6		1
9:45-10:00						8		
HOURLY TOTAL						HOURLY TOTAL		34
10:00-10:15		1			1	7		
10:15-10:30						7	1	
10:30-10:45						16		
10:45-11:00				1	1	13		
HOURLY TOTAL					2	HOURLY TOTAL		44
11:00-11:15						14		1
11:15-11:30						11		
11:30-11:45						11		1
11:45-12:00						10		
HOURLY TOTAL						HOURLY TOTAL		48
12:00-12:15						9	1	5
12:15-12:30						6	2	4
12:30-12:45						9		1
12:45-1:00						11		
HOURLY TOTAL						HOURLY TOTAL		48
1:00-1:15						14		2
1:15-1:30						9		3
1:30-1:45						8		
1:45-2:00						9		
HOURLY TOTAL						HOURLY TOTAL		45