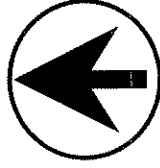


Date : 1/17/01

Count Number : TMC0102

Location : CSAH 78 @ CSAH 11



North

CSAH 78

24178

#2

11871	D	4729
4742	E	
2400	F	

12307

Robinson Dr.

15542

#1

7374

8168	C	5602
1864	B	
702	A	

CSAH 11

2614	G	4596
1696	H	
286	J	

#3

4483

9079

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

949	M	5259
4091	L	
219	K	

CSAH 78

#4

5730

10989

Anoka County Highway Department
Traffic Volume and Turning
Movement Study

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

Weather: cloudy and cold
 Counter TDC-8
 Counted by: Josie/ Sean

File Name : TMC0102
 Site Code : 01020102
 Start Date : 01/17/2001
 Page No : 1

Groups Printed- Unshifted

Start Time	CSAH 78 Southbound					Robinson Dr. Westbound					CSAH 78 Northbound					CSAH 11 Eastbound					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		
06:00	20	72	45	7	144	2	4	20	1	27	1	30	0	2	33	57	10	4	3	74	278
06:15	23	122	65	3	213	0	12	29	2	43	0	42	0	0	42	56	9	12	3	80	378
06:30	21	110	54	7	192	2	19	47	2	70	5	47	0	3	55	100	22	15	4	141	458
06:45	34	100	84	12	230	1	14	31	0	46	7	30	0	0	37	136	39	19	5	199	512
Total	98	404	248	29	779	5	49	127	5	186	13	149	0	5	167	349	80	50	15	494	1626
07:00	30	94	139	12	275	3	74	33	6	116	33	67	0	3	103	120	42	22	10	194	688
07:15	38	115	119	6	278	3	79	73	4	159	26	73	0	5	104	102	37	25	13	177	718
07:30	49	154	99	6	308	5	27	47	1	80	11	62	2	5	80	96	37	15	6	154	622
07:45	48	140	84	11	283	8	40	55	4	107	13	94	3	11	121	129	47	20	16	212	723
Total	165	503	441	35	1144	19	220	208	15	462	63	296	5	24	408	447	163	82	45	737	2751
08:00	43	136	89	14	282	3	13	44	2	62	15	87	2	12	116	121	33	11	7	172	632
08:15	48	102	71	17	238	5	26	39	2	72	10	69	3	2	84	72	21	15	6	114	508
08:30	57	100	101	18	276	6	26	54	2	88	10	53	1	6	70	85	22	12	12	131	565
08:45	56	97	107	5	265	3	20	25	0	48	10	63	1	11	85	76	19	5	5	105	503
Total	204	435	368	54	1061	17	85	162	6	270	45	272	7	31	355	354	95	43	30	522	2208
09:00	55	139	57	8	259	8	21	52	9	90	5	60	1	3	69	95	22	6	4	127	545
09:15	53	205	55	14	327	4	16	40	5	65	9	65	7	11	92	68	24	14	0	106	590
09:30	53	201	44	7	305	7	16	36	3	62	12	54	4	1	71	55	25	12	4	96	534
09:45	47	73	87	7	214	3	20	34	3	60	7	55	1	2	65	56	27	12	0	95	434
Total	208	618	243	36	1105	22	73	162	20	277	33	234	13	17	297	274	98	44	8	424	2103
10:00	41	58	64	7	170	2	18	43	4	67	12	41	3	4	60	67	21	5	3	96	393
10:15	25	52	72	8	157	2	17	42	4	65	6	46	1	1	54	84	15	4	1	104	380
10:30	38	59	77	10	184	6	19	34	3	62	15	61	3	5	84	79	28	14	5	126	456
10:45	35	54	67	11	167	8	22	28	1	59	8	46	0	6	60	75	21	13	6	115	401
Total	139	223	280	36	678	18	76	147	12	253	41	194	7	16	258	305	85	36	15	441	1630
11:00	26	45	79	11	161	4	17	35	5	61	13	58	4	4	79	101	25	11	6	143	444
11:15	41	53	70	8	172	6	24	41	2	73	17	54	2	2	75	73	24	13	4	114	434
11:30	65	57	70	11	203	4	20	38	3	65	24	77	3	6	110	110	35	15	5	165	543
11:45	42	49	79	5	175	14	32	43	2	91	14	51	2	2	69	125	35	16	7	183	518
Total	174	204	298	35	711	28	93	157	12	290	68	240	11	14	333	409	119	55	22	605	1939
12:00	30	58	82	7	177	4	36	47	2	89	19	70	6	3	98	111	26	10	3	150	514
12:15	49	60	99	11	219	4	26	46	3	79	21	72	3	7	103	91	27	11	4	133	534
12:30	31	65	90	9	195	6	31	41	1	79	16	70	4	7	97	115	33	17	9	174	545
12:45	59	58	83	11	211	5	23	45	0	73	19	63	2	7	91	108	48	20	4	180	555
Total	169	241	354	38	802	19	116	179	6	320	75	275	15	24	389	425	134	58	20	637	2148
13:00	55	51	89	9	204	5	24	48	2	79	16	64	1	3	84	93	27	10	8	138	505
13:15	40	70	83	4	197	5	18	40	2	65	8	64	6	5	83	101	34	10	6	151	496
13:30	31	58	73	6	168	5	23	54	2	84	10	58	5	1	74	96	21	15	2	134	460
13:45	34	68	95	21	218	4	23	43	0	70	17	73	3	2	95	91	23	12	5	131	514
Total	160	247	340	40	787	19	88	185	6	298	51	259	15	11	336	381	105	47	21	554	1975
14:00	61	70	86	25	242	4	25	54	3	86	14	74	7	9	104	129	33	7	8	177	609
14:15	53	72	40	13	178	7	22	52	2	83	17	83	8	2	110	176	81	21	27	305	676
14:30	42	93	98	21	254	5	52	54	7	118	13	78	7	3	101	126	43	18	10	197	670
14:45	42	92	93	15	242	6	36	47	4	93	28	109	7	15	159	147	48	10	17	222	716
Total	198	327	317	74	916	22	135	207	16	380	72	344	29	29	474	578	205	56	62	901	2671
15:00	60	85	111	6	262	10	36	61	4	111	22	78	6	2	108	135	54	15	5	209	690
15:15	78	107	136	6	327	2	33	62	3	100	27	102	7	8	144	137	35	6	3	181	752
15:30	65	101	78	8	252	8	43	71	1	123	17	119	10	2	148	141	45	12	9	207	730
15:45	48	99	107	4	258	11	51	55	4	121	23	89	5	4	121	130	60	4	7	201	701
Total	251	392	432	24	1099	31	163	249	12	455	89	388	28	16	521	543	194	37	24	798	2873
16:00	46	92	119	3	260	8	54	88	2	152	29	134	6	4	173	112	59	13	7	191	776
16:15	61	93	129	3	286	3	57	70	2	132	37	122	9	9	177	110	55	15	0	180	775
16:30	60	85	108	3	256	5	69	91	3	168	30	152	6	3	191	113	59	10	3	185	800
16:45	64	79	120	1	264	17	64	84	0	165	35	137	10	1	183	142	56	15	5	218	830
Total	231	349	476	10	1066	33	244	333	7	617	131	545	31	17	724	477	229	53	15	774	3181

Anoka County Highway Department
Traffic Engineering

Traffic Volume and Turning Movement Stud

Weather: cloudy and cold
Counter TDC-8
Counted by: Josie/ Sean

File Name : TMC0102
Site Code : 01020102
Start Date : 01/17/2001
Page No : 2

Groups Printed- Unshifted

Start Time	CSAH 78 Southbound					Robinson Dr. Westbound					CSAH 78 Northbound					CSAH 11 Eastbound					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		
17:00	47	93	134	4	278	12	65	76	1	154	34	119	10	1	164	141	56	11	1	209	805
17:15	36	84	131	3	254	9	64	85	4	162	38	131	8	3	180	127	55	17	2	201	797
17:30	56	89	135	4	284	6	47	66	0	119	37	130	14	0	181	123	41	10	3	177	761
17:45	77	104	161	4	346	7	37	60	1	105	31	125	7	1	164	112	42	18	0	172	787
Total	216	370	561	15	1162	34	213	287	6	540	140	505	39	5	689	503	194	56	6	759	3150
18:00	42	98	116	3	259	5	47	55	1	108	32	97	8	1	138	135	56	19	8	218	723
18:15	53	95	105	0	253	7	44	63	3	117	18	85	2	3	108	131	42	16	0	189	667
18:30	42	101	76	1	220	4	26	49	0	79	29	108	7	1	145	139	34	25	3	201	645
18:45	50	135	74	1	260	3	24	44	1	72	29	100	2	0	131	152	31	25	1	209	672
Total	187	429	371	5	992	19	141	211	5	376	108	390	19	5	522	557	163	85	12	817	2707
Grand Total	2400	4742	4729	431	12302	286	1696	2614	128	4724	949	4091	219	214	5473	5602	1864	702	295	8463	30962
Apprch %	19.5	38.5	38.4	3.5		6.1	35.9	55.3	2.7		17.3	74.7	4.0	3.9		66.2	22.0	8.3	3.5		
Total %	7.8	15.3	15.3	1.4	39.7	0.9	5.5	8.4	0.4	15.3	3.1	13.2	0.7	0.7	17.7	18.1	6.0	2.3	1.0	27.3	

for Street Approaches:

Northbound:

CSAH 78

Data File: C:\Program Files\JAMAR\PETRA\Data Files\TMC0102.war
 Count Type: IMC. Channel: 0. Count Date: 1/17/ 1
 Number of Lanes: 2
 Approach Speed: 40
 Total Approach Traffic: 5259

Southbound:

CSAH 78

Data File: C:\Program Files\JAMAR\PETRA\Data Files\TMC0102.war
 Count Type: IMC. Channel: 0. Count Date: 1/17/ 1
 Number of Lanes: 2
 Approach Speed: 40
 Total Approach Traffic: 11871

Minor Street Approaches:

Eastbound:

CSAH 11

Data File: C:\Program Files\JAMAR\PETRA\Data Files\TMC0102.war
 Count Type: IMC. Channel: 0. Count Date: 1/17/ 1
 Number of Lanes: 2
 Approach Speed: 35
 Total Approach Traffic: 8168

Westbound:

Robinson Dr.

Data File: C:\Program Files\JAMAR\PETRA\Data Files\TMC0102.war
 Count Type: IMC. Channel: 0. Count Date: 1/17/ 1
 Number of Lanes: 2
 Approach Speed: 35
 Total Approach Traffic: 4596

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

Hour	Main Begin	Side			Warrant 1		Warrant 2		Warrant 8	
		Vol.	Dir.	Rank	Meets?	Criteria	Meets?	Criteria	Meets?	Criteria
0	0	0	W	14		200		100		160
1	0	0	W	15		200		100		160
2	0	0	W	16		200		100		160
3	0	0	W	17		200		100		160
4	0	0	W	18		200		100		160
5	0	0	W	19		200		100		160
6	912	479	E	11	--BOTH--	200	--BOTH--	100	--BOTH--	160
7	1493	692	E	6	--BOTH--	200	--BOTH--	100	--BOTH--	160
8	1331	492	E	10	--BOTH--	200	--BOTH--	100	--BOTH--	160
9	1349	416	E	13	--BOTH--	200	--BOTH--	100	--BOTH--	160
10	884	426	E	12	--BOTH--	200	SIDE	100	--BOTH--	160
11	995	583	E	8	--BOTH--	200	--BOTH--	100	--BOTH--	160
12	1129	617	E	7	--BOTH--	200	--BOTH--	100	--BOTH--	160
13	1072	533	E	9	--BOTH--	200	--BOTH--	100	--BOTH--	160
14	1287	839	E	1	--BOTH--	200	--BOTH--	100	--BOTH--	160
15	1580	774	E	3	--BOTH--	200	--BOTH--	100	--BOTH--	160
16	1763	759	E	4	--BOTH--	200	--BOTH--	100	--BOTH--	160
17	1831	753	E	5	--BOTH--	200	--BOTH--	100	--BOTH--	160
18	1504	805	E	2	--BOTH--	200	--BOTH--	100	--BOTH--	160
19	0	0	W	20		200		100		160
20	0	0	W	21		200		100		160
21	0	0	W	22		200		100		160
22	0	0	W	23		200		100		160
23	0	0	W	24		200		100		160

Warrant Summary:
Urban values apply.

Warrant 1 - Minimum Vehicular Volumes

SATISFIED for 13 hours. Criteria--Main St.: 600; Side St.: See Volume Summary.

Warrant 2 - Interruption of Continuous Traffic

SATISFIED for 12 hours. Criteria--Main St.: 900; Side St.: See Volume Summary.

Warrant 3 - Minimum Pedestrian Volumes

NOT SATISFIED. 8th-High Hour--Pedestrians: 0. Criteria--Pedestrians: 150; Vehicles: 1000.

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

SATISFIED. Peak hour total entering volume: 3132. Approaches on both streets satisfy one of the following criteria:

NSEW- Approaches which are part of the principal through traffic roadway network.

- Approaches which connect areas of principal traffic generation.
- Approaches which include rural or suburban highways outside, entering or traversing a city.
- Approaches which have surface street freeway or expressway ramp terminals.
- Approaches which appear as a major route in an official transportation plan.

Warrant 8 - Combination of Warrants

SATISFIED for 13 hours. Criteria--Main: 720; Side: See Volume Summary.

Warrant 9 - Four Hour Volumes

SATISFIED for 13 hours.

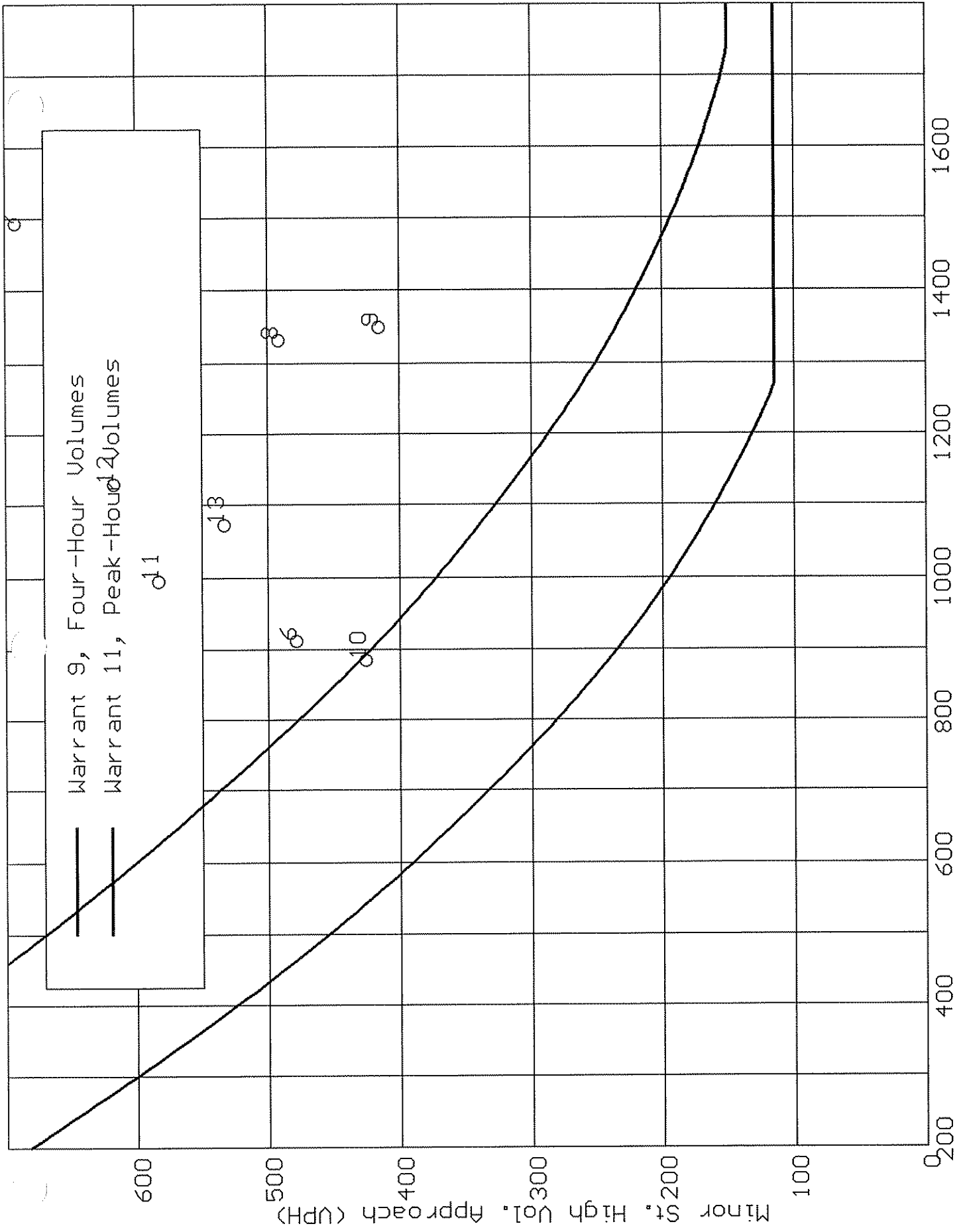
Warrant 10 - Peak Hour Delay

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 13 hours.



Major St. Total of Both Approaches (UPH)

Multiway Stop Warrant Analysis
TMC 0102 CSAH 78 (Hanson Blvd.) @ Robinson Dr./CSAH 11 (Northdale Blvd.)
Speed Limit of Major Roadway..... 40

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	Hours Stop Warrant Met
6 AM - 7 AM	1626	186	494	680	1
7 AM - 8 AM	2751	462	737	1199	1
8 AM - 9 AM	2208	270	522	792	1
9 AM - 10 AM	2103	277	424	701	1
10 AM - 11 AM	1630	253	441	694	1
11 AM - 12 PM	1939	290	605	895	1
12 PM - 13 PM	2148	320	637	957	1
1 PM - 2 PM	1975	298	554	852	1
2 PM - 3 PM	2671	380	901	1281	1
3 PM - 4 PM	2873	455	798	1253	1
4 PM - 5 PM	3181	617	774	1391	1
5 PM - 6 PM	3150	540	759	1299	1
6 PM - 7 PM	2707	376	817	1193	1

TOTAL HOURS MET: 13

MULTIWAY STOP WARRANT IS MET



NORTH

COUNT LOCATION:

CSAH 78 (Hanson Blvd.) @
CSAH 11 (Northdale Blvd.)

DATE:

1/17/01

APP. #1= EB Robinson Dr.

APP. #2 = SB CSAH 78

APP. #3= WB CSAH 11

APP. #4= NB CSAH 78

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						5		8
6:15-6:30						3		5
6:30-6:45						7		8
6:45-7:00						2		15
HOURLY TOTAL						HOURLY TOTAL		53
7:00-7:15						3		28
7:15-7:30				1	1	8		16
7:30-7:45						8		10
7:45-8:00						6		36
HOURLY TOTAL					1	HOURLY TOTAL		115
8:00-8:15						11		25
8:15-8:30						11		16
8:30-8:45						12		26
8:45-9:00						12		9
HOURLY TOTAL						HOURLY TOTAL		122
9:00-9:15						9		15
9:15-9:30						13		17
9:30-9:45						10		3
9:45-10:00						10		2
HOURLY TOTAL						HOURLY TOTAL		79
10:00-10:15						14		4
10:15-10:30						9		5
10:30-10:45						17		6
10:45-11:00						18		6
HOURLY TOTAL						HOURLY TOTAL		79
11:00-11:15						20		4
11:15-11:30						8		8
11:30-11:45						17		8
11:45-12:00						11		5
HOURLY TOTAL						HOURLY TOTAL		81
12:00-12:15						5		10
12:15-12:30						12		13
12:30-12:45						18		8
12:45-1:00						11		13
HOURLY TOTAL						HOURLY TOTAL		90
1:00-1:15						12		10
1:15-1:30						9		8
1:30-1:45		1			1	6		5
1:45-2:00						10		18
HOURLY TOTAL					1	HOURLY TOTAL		78



NORTH

COUNT LOCATION:

CSAH 78 (Hanson Blvd.) @
CSAH 11 (Northdale Blvd.)

DATE:

1/17/01

APP. #1= EB Robinson Dr.
 APP. #2 = SB CSAH 78
 APP. #3= WB CSAH 11
 APP. #4= NB CSAH 78

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
2:00-2:15PM			1		1	15		30
2:15-2:30			1			10		34
2:30-2:45	1	1			2	17		24
2:45-3:00	1					12		39
HOURLY TOTAL					3	HOURLY TOTAL		181
3:00-3:15						12		5
3:15-3:30			3			9		11
3:30-3:45						10		10
3:45-4:00			1	2	3	6		13
HOURLY TOTAL					3	HOURLY TOTAL		76
4:00-4:15	1				1	6		10
4:15-4:30	1	1			2	4		10
4:30-4:45						6		6
4:45-5:00						4		3
HOURLY TOTAL					3	HOURLY TOTAL		49
5:00-5:15						2		5
5:15-5:30			1		1	5		7
5:30-5:45		1			1	2		5
5:45-6:00						3		3
HOURLY TOTAL					2	HOURLY TOTAL		32
6:00-6:15						7		6
6:15-6:30						5		1
6:30-6:45						2		9
6:45-7:00						2		1
HOURLY TOTAL						HOURLY TOTAL		33
7:00-7:15								
7:15-7:30								
7:30-7:45								
7:45-8:00								
HOURLY TOTAL						HOURLY TOTAL		
8:00-8:15								
8:15-8:30								
8:30-8:45								
8:45-9:00								
HOURLY TOTAL						HOURLY TOTAL		
9:00-9:15								
9:15-9:30								
9:30-9:45								
9:45-10:00								
HOURLY TOTAL						HOURLY TOTAL		