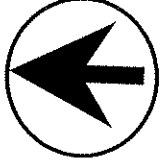


Date : 7/20/03

Count Number : TMC0336

Location : CSAH 23 (Lake Dr.) @

CSAH 21 (Freeway Dr.)



North

CSAH 23

6316

#2

3240		
80	D	
2781	E	
379	F	

3076

CSAH 21

1206

#3

628	G	
10	H	
121	J	
759		

447

CSAH 23

15	M	
2383	L	
63	K	
2461		

2934

#4

5395

105

#1

207

CSAH 21

102		
65	C	
5	B	
32	A	

	LANES OF APPROACH			TOTAL
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	
#1	0	0	1	1
#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
 Traffic Volume and Turning Movement Stud

Weather: Cloudy & Warm
 Counter TDC-8
 Counted by: Krystal/Shari

File Name : TMC0336
 Site Code : 03360101
 Start Date : 07/20/2003
 Page No : 2

Groups Printed- 1 - Unshifted

Start Time	CSAH 23 Southbound					CSAH 21 Westbound					CSAH 23 Northbound					CSAH 21 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	2	39	3	7	44	3	0	8	3	11	0	26	0	1	26	0	0	0	0	0	11	81	92
18:15	1	25	1	2	27	6	2	16	2	24	0	24	2	3	26	2	0	1	0	3	7	80	87
18:30	2	38	0	3	40	1	0	6	2	7	0	36	1	4	37	0	0	0	0	0	9	84	93
18:45	0	20	1	4	21	0	0	0	0	0	0	20	0	2	20	0	0	0	0	0	6	41	47
Total	5	122	5	16	132	10	2	30	7	42	0	106	3	10	109	2	0	1	0	3	33	286	319
19:00	0	39	2	5	41	1	1	4	1	6	0	33	0	4	33	1	0	0	1	1	11	81	92
19:15	1	26	0	5	27	1	0	6	0	7	0	21	2	1	23	2	0	0	1	2	7	59	66
19:30	5	23	1	6	29	1	0	0	0	1	0	25	0	3	25	0	0	0	0	0	9	55	64
19:45	1	23	0	3	24	1	0	1	0	2	0	14	1	2	15	1	0	0	1	1	6	42	48
Total	7	111	3	19	121	4	1	11	1	16	0	93	3	10	96	4	0	0	3	4	33	237	270
20:00	1	14	0	4	15	0	0	2	2	2	0	16	0	2	16	0	0	0	0	0	8	33	41
20:15	1	9	1	1	11	1	0	2	0	3	0	12	0	1	12	0	0	0	0	0	2	26	28
20:30	0	22	0	0	22	0	0	0	0	0	1	12	0	0	13	0	0	2	0	2	0	37	37
20:45	2	27	1	2	30	3	0	3	0	6	0	11	0	2	11	0	0	0	0	0	4	47	51
Total	4	72	2	7	78	4	0	7	2	11	1	51	0	5	52	0	0	2	0	2	14	143	157
21:00	4	23	0	7	27	1	0	3	0	4	0	14	1	1	15	0	0	0	0	0	8	46	54
21:15	0	15	0	1	15	1	0	2	1	3	1	12	0	5	13	0	0	0	0	0	7	31	38
21:30	3	24	0	2	27	0	0	2	0	2	0	14	0	0	14	0	0	0	1	0	3	43	46
21:45	4	23	1	2	28	0	0	5	1	5	0	21	2	0	23	0	0	0	0	0	3	56	59
Total	11	85	1	12	97	2	0	12	2	14	1	61	3	6	65	0	0	0	1	0	21	176	197
Grand Total	379	278	80	552	3240	121	10	628	208	759	15	238	63	358	2461	65	5	32	11	102	1129	6562	7691
Approch %	11.7	85.8	2.5			15.9	1.3	82.7			0.6	96.8	2.6			63.7	4.9	31.4					
Total %	5.8	42.4	1.2		49.4	1.8	0.2	9.6		11.6	0.2	36.3	1.0		37.5	1.0	0.1	0.5		1.6	14.7	85.3	

ANOKA COUNTY HIGHWAY DEPARTMENT

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC0336

Study Date : 07/25/03

Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: CSAH 23

Number of Lanes: 2

Approach Speed: 55

Total Approach Volume: 2,461

Southbound: CSAH 23

Number of Lanes: 2

Approach Speed: 55

Total Approach Volume: 3,240

Minor Street Approaches

Eastbound: CSAH 21

Number of Lanes: 1

Total Approach Volume: 102

Westbound: CSAH 21

Number of Lanes: 1

Total Approach Volume: 759

Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 0 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Not Satisfied
Number of hours (0) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Not Satisfied
Warrant 3A - Peak Hour Volumes	Not Satisfied
Volumes do not exceed minimums for any hour.	
Warrant 3B - Peak Hour Delay	Not Satisfied
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.	
Warrant 4 - Pedestrian Volumes	Not Evaluated
Warrant 5 - School Crossing	Not Evaluated
Warrant 6 - Coordinated Signal System	Not Evaluated
Warrant 7 - Crash Experience	Not Evaluated
Warrant 8 - Roadway Network	Not Evaluated

ANOKA COUNTY HIGHWAY DEPARTMENT

PC-WARRANTS

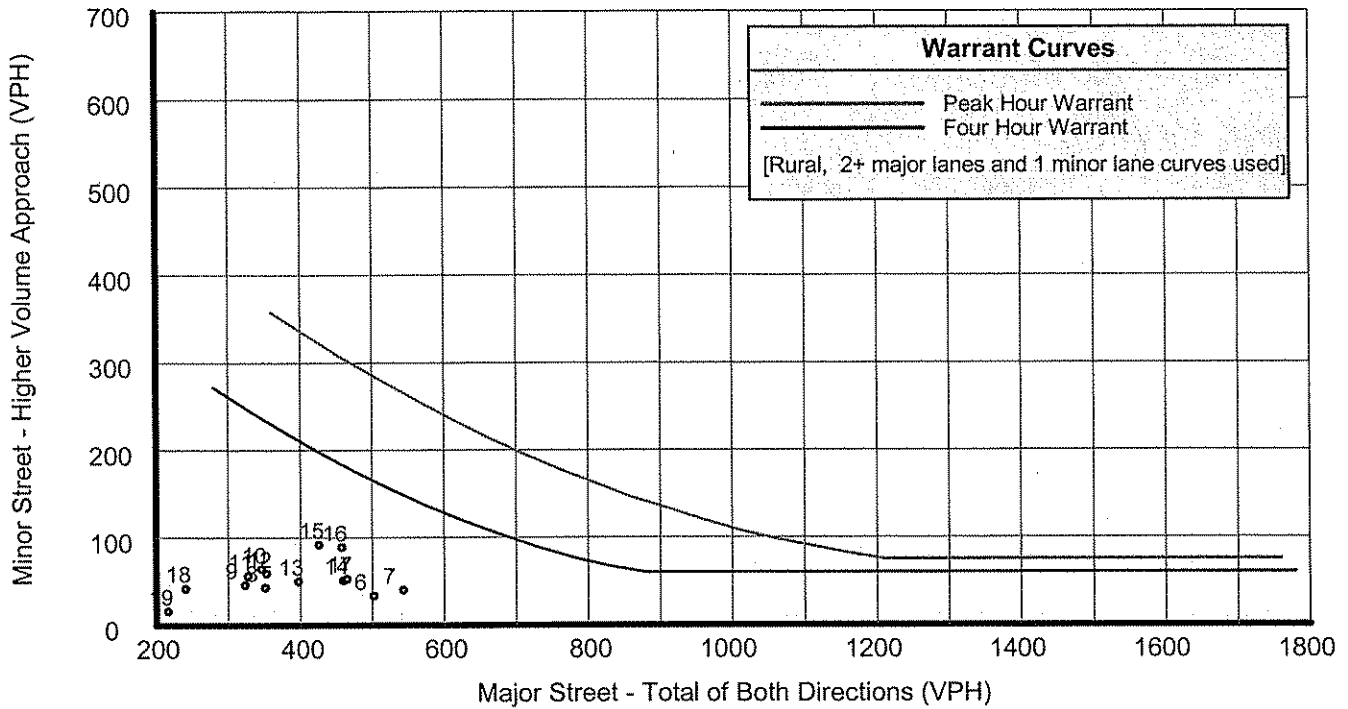
TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC0336

Study Date : 07/25/03

Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor		War-1A			War-1B			War-1A&B		
		Vol	Dir	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
01:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
02:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
03:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
04:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
05:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
06:00	502	33	WB	420-Yes	105-No	Major	630-No	52-No	---	504-No	84-No	---
07:00	543	40	WB	420-Yes	105-No	Major	630-No	52-No	---	504-Yes	84-No	Major
08:00	351	43	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
09:00	323	46	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
10:00	346	64	WB	420-No	105-No	---	630-No	52-Yes	Minor	504-No	84-No	---
11:00	327	56	WB	420-No	105-No	---	630-No	52-Yes	Minor	504-No	84-No	---
12:00	353	59	WB	420-No	105-No	---	630-No	52-Yes	Minor	504-No	84-No	---
13:00	397	50	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
14:00	460	51	WB	420-Yes	105-No	Major	630-No	52-No	---	504-No	84-No	---
15:00	426	92	WB	420-Yes	105-No	Major	630-No	52-Yes	Minor	504-No	84-Yes	Minor
16:00	458	89	WB	420-Yes	105-No	Major	630-No	52-Yes	Minor	504-No	84-Yes	Minor
17:00	465	53	WB	420-Yes	105-No	Major	630-No	52-Yes	Minor	504-No	84-No	---
18:00	241	42	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
19:00	217	16	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
20:00	130	11	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
21:00	162	14	WB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
22:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---
23:00	0	0	EB	420-No	105-No	---	630-No	52-No	---	504-No	84-No	---

ANOKA COUNTY HIGHWAY DEPARTMENT

PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC0336
Study Date : 07/25/03

Multi-Way Stop Warrant Report

Major Street Approaches

Northbound: CSAH 23

Total Approach Volume: 2,461
Approach Speed: 55

Southbound: CSAH 23

Total Approach Volume: 3,240
Approach Speed: 55

Minor Street Approaches

Eastbound: CSAH 21

Total Approach Volume: 102

Westbound: CSAH 21

Total Approach Volume: 759

Warrant Summary

Criteria A - Interim Measure Not Evaluated

If traffic signals are justified, stop signs can be installed as an interim measure.

Criteria B - Crash Experience Not Evaluated

Number of crashes (0) is less than the minimum required (5).

Criteria C - Minimum Volumes and Delays Not Satisfied

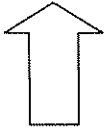
Delay data not evaluated
Required volumes reached for 0 hours, 8 are needed

Criteria D - 80% of Volumes, Delays, and Crashes Not Evaluated

Delay data not evaluated
Required volumes reached for 9 hours, 8 are needed

Analysis of 8-Hour Volume Warrants:

Time	Major Crit		Crit C			Crit D		
	Total	Minor Total	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00 - 01:00	0	0	210-No	140-No	No	240-No	160-No	No
01:00 - 02:00	0	0	210-No	140-No	No	240-No	160-No	No
02:00 - 03:00	0	0	210-No	140-No	No	240-No	160-No	No
03:00 - 04:00	0	0	210-No	140-No	No	240-No	160-No	No
04:00 - 05:00	0	0	210-No	140-No	No	240-No	160-No	No
05:00 - 06:00	0	0	210-No	140-No	No	240-No	160-No	No
06:00 - 07:00	502	39	210-Yes	140-No	Major	240-Yes	160-No	Major
07:00 - 08:00	543	47	210-Yes	140-No	Major	240-Yes	160-No	Major
08:00 - 09:00	351	45	210-Yes	140-No	Major	240-Yes	160-No	Major
09:00 - 10:00	323	46	210-Yes	140-No	Major	240-Yes	160-No	Major
10:00 - 11:00	346	71	210-Yes	140-No	Major	240-Yes	160-No	Major
11:00 - 12:00	327	58	210-Yes	140-No	Major	240-Yes	160-No	Major
12:00 - 13:00	353	60	210-Yes	140-No	Major	240-Yes	160-No	Major
13:00 - 14:00	397	57	210-Yes	140-No	Major	240-Yes	160-No	Major
14:00 - 15:00	460	68	210-Yes	140-No	Major	240-Yes	160-No	Major
15:00 - 16:00	426	116	210-Yes	140-No	Major	240-Yes	160-No	Major
16:00 - 17:00	458	104	210-Yes	140-No	Major	240-Yes	160-No	Major
17:00 - 18:00	465	58	210-Yes	140-No	Major	240-Yes	160-No	Major
18:00 - 19:00	241	45	210-Yes	140-No	Major	240-Yes	160-No	Major
19:00 - 20:00	217	20	210-Yes	140-No	Major	240-No	160-No	No
20:00 - 21:00	130	13	210-No	140-No	No	240-No	160-No	No
21:00 - 22:00	162	14	210-No	140-No	No	240-No	160-No	No
22:00 - 23:00	0	0	210-No	140-No	No	240-No	160-No	No
23:00 - 00:00	0	0	210-No	140-No	No	240-No	160-No	No



NORTH

COUNT LOCATION:

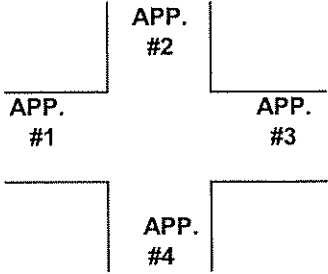
CSAH 23 (Lake Dr) @

DATE:

7/20/03

CSAH 21 (Freeway Dr.)

APP. #1 = CSAH 23
APP. #2 = CSAH 21
APP. #3 = CSAH 23
APP. #4 = CSAH 21



HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT

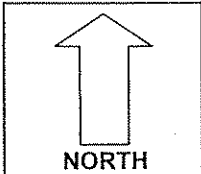
A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.

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						7		
6:15-6:30						16		
6:30-6:45						13		
6:45-7:00						32		
HOURLY TOTAL						HOURLY TOTAL		68
7:00-7:15						29	2	
7:15-7:30						15	2	1
7:30-7:45						20		1
7:45-8:00						22	1	1
HOURLY TOTAL						HOURLY TOTAL		94
8:00-8:15						23	1	1
8:15-8:30						27	1	
8:30-8:45			1		1	21	1	
8:45-9:00			2		2	20	1	
HOURLY TOTAL					3	HOURLY TOTAL		96
9:00-9:15						13	2	
9:15-9:30						19	1	
9:30-9:45						17		
9:45-10:00						15	1	
HOURLY TOTAL						HOURLY TOTAL		68
10:00-10:15						21		1
10:15-10:30						23		
10:30-10:45						16		1
10:45-11:00						22	1	
HOURLY TOTAL						HOURLY TOTAL		85
11:00-11:15						33	2	
11:15-11:30						20	2	
11:30-11:45						17	5	
11:45-12:00						19	1	1
HOURLY TOTAL						HOURLY TOTAL		100
12:00-12:15						27	1	
12:15-12:30						12		1
12:30-12:45						29		
12:45-1:00						26	1	
HOURLY TOTAL						HOURLY TOTAL		97
1:00-1:15						26	4	1
1:15-1:30						28	4	
1:30-1:45	4				4	10	2	
1:45-2:00						21		
HOURLY TOTAL					4	HOURLY TOTAL		96
					TOTAL		TOTAL	

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COUNT LOCATION:

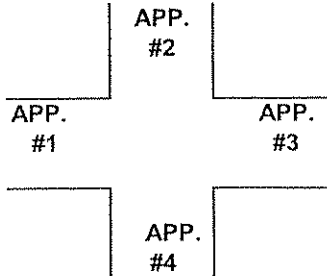
CSAH 23 (Lake Dr) @

DATE:

7/20/03

CSAH 21 (Freeway Dr.)

APP. #1 = CSAH 23
APP. #2 = CSAH 21
APP. #3 = CSAH 23
APP. #4 = CSAH 21



- 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						25	1	
2:15-2:30						26	1	
2:30-2:45						23		
2:45-3:00	1				1	20	2	
HOURLY TOTAL					1	HOURLY TOTAL		98
3:00-3:15						19		
3:15-3:30						21		
3:30-3:45	2				2	14		
3:45-4:00						8		
HOURLY TOTAL					2	HOURLY TOTAL		62
4:00-4:15						15	1	
4:15-4:30			1		1	21	1	
4:30-4:45						25	1	
4:45-5:00						23		
HOURLY TOTAL					1	HOURLY TOTAL		87
5:00-5:15						14	6	
5:15-5:30						11	2	
5:30-5:45						22	1	
5:45-6:00						4		
HOURLY TOTAL						HOURLY TOTAL		60
6:00-6:15			1		1	10		1
6:15-6:30						8		
6:30-6:45						10		
6:45-7:00						6	2	1
HOURLY TOTAL					1	HOURLY TOTAL		38
7:00-7:15						7	3	
7:15-7:30	1				1	5		
7:30-7:45						7	2	
7:45-8:00						4	2	
HOURLY TOTAL					1	HOURLY TOTAL		30
8:00-8:15						5	1	
8:15-8:30						4		
8:30-8:45								
8:45-9:00						1	3	
HOURLY TOTAL						HOURLY TOTAL		14
9:00-9:15						6	3	1
9:15-9:30						6		1
9:30-9:45						2		
9:45-10:00						2	1	
HOURLY TOTAL						HOURLY TOTAL		22
					TOTAL		TOTAL	

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