

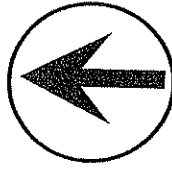
Date : 05/17/10

Count Number : TMC1011

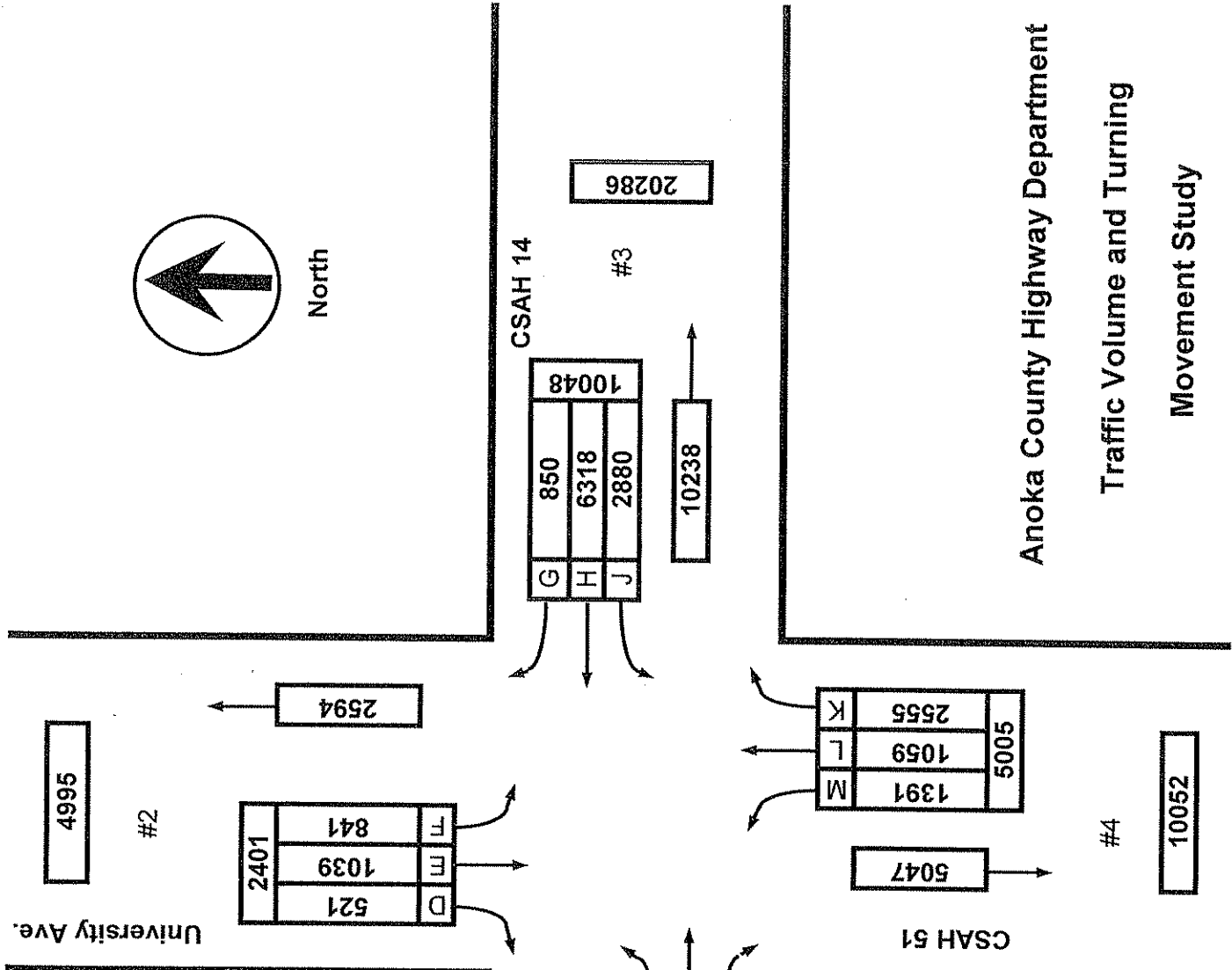
Location : CSAH 14 (Main St.)

@ CSAH 51 (University Ave.)

Collection Period : 6:00AM - 10:00PM



North



Anoka County Highway Department
Traffic Volume and Turning
Movement Study

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

Date : 05/18/10

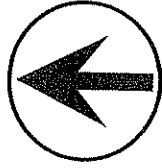
Count Number : TMC1011

Location : CSAH 14 (Main St.)

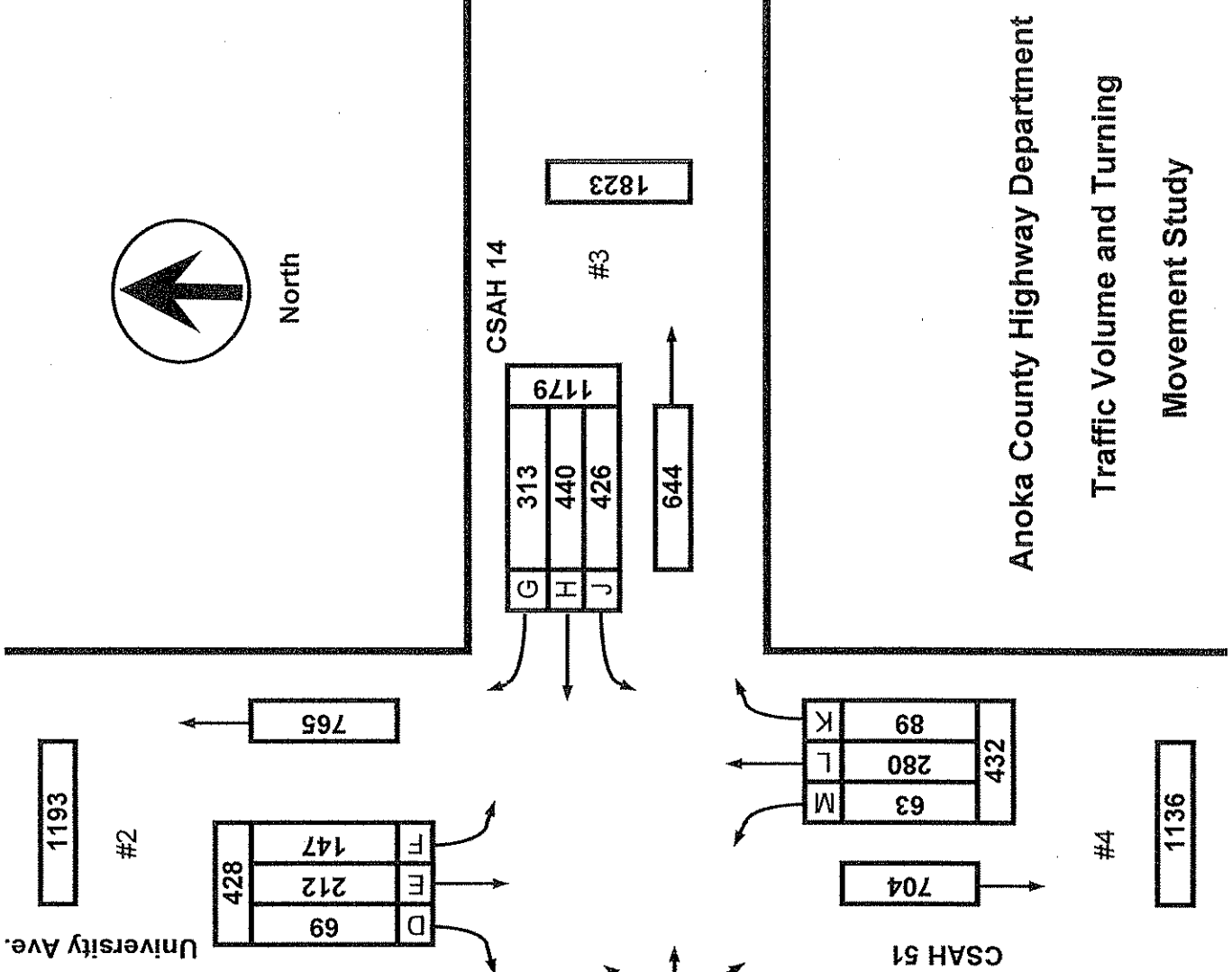
@ CSAH 51 (University Ave.)

Collection Period : AM PEAK

Hour : 7:00-8:00 AM



North



Anoka County Highway Department
Traffic Volume and Turning
Movement Study

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

Date : 05/17/10

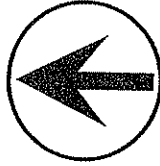
Count Number : TMC1011

Location : CSAH 14 (Main St.)

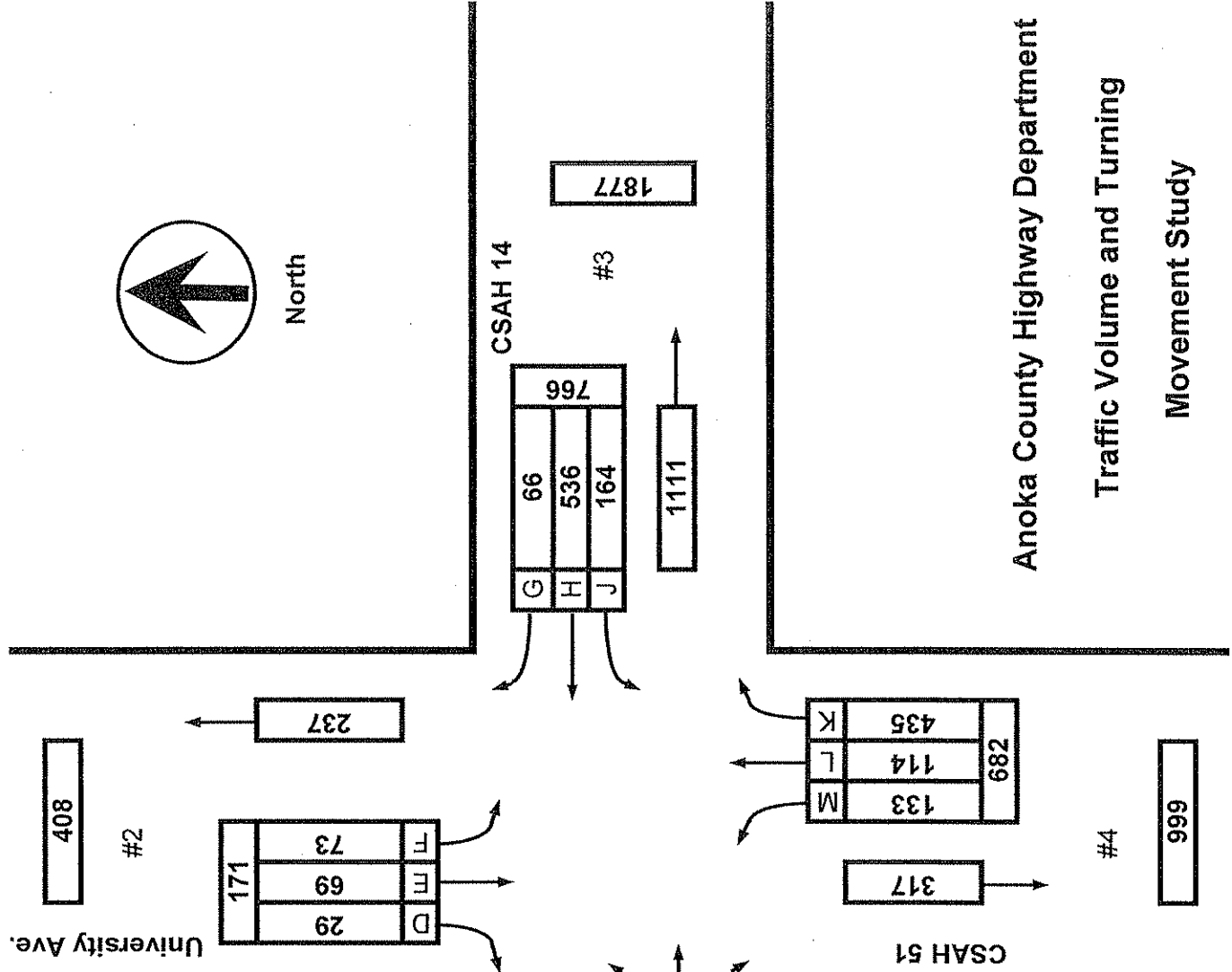
@ CSAH 51 (University Ave.)

Collection Period : PM PEAK

Hour : 4:30-5:30 PM



North



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

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Anoka County Highway Department

Traffic Engineering Section Traffic Volume and Turning Movement Study

Weather: Warm and Sunny
Counter: DB-400
Counted by: Andy/Brett

File Name : TMC1011
Site Code : 10110202
Start Date : 5/17/2010
Page No : 2

Groups Printed- Unshifted

Start Time	University Ave. Southbound					CSAH 14 Westbound					CSAH 51 Northbound					CSAH 14 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			
18:00	37	18	10	0	65	62	112	8	1	182	32	25	66	1	123	14	138	13	4	165	6	535	541
18:15	24	25	14	3	63	49	130	14	4	193	24	27	81	1	132	10	116	19	0	145	8	533	541
18:30	20	13	16	1	49	45	109	17	2	171	29	10	50	0	89	14	113	24	4	151	7	460	467
18:45	15	10	11	1	36	46	106	7	3	159	36	19	50	0	105	3	109	20	2	132	6	432	438
Total	96	66	51	5	213	202	457	46	10	705	121	81	247	2	449	41	476	76	10	593	27	1960	1987
19:00	5	8	5	0	18	43	94	8	0	145	19	22	31	1	72	5	123	21	1	149	2	384	386
19:15	6	7	1	0	14	53	104	7	3	164	11	7	46	0	64	3	102	16	1	121	4	363	367
19:30	3	12	1	0	16	29	86	4	0	119	13	10	34	0	57	3	82	31	2	116	2	308	310
19:45	3	7	1	0	11	37	105	2	3	144	29	8	46	0	83	2	92	17	0	111	3	349	352
Total	17	34	8	0	59	162	389	21	6	572	72	47	157	1	276	13	399	85	4	497	11	1404	1415
20:00	21	25	13	1	59	37	58	4	1	99	25	7	47	0	79	4	96	15	0	115	2	352	354
20:15	12	10	3	0	25	33	58	5	0	96	8	10	36	0	54	6	103	11	1	120	1	295	296
20:30	5	10	5	1	20	24	57	5	0	86	21	12	35	0	68	5	97	15	1	117	2	291	293
20:45	6	7	0	0	13	40	60	7	1	107	9	8	19	1	36	1	84	17	0	102	2	258	260
Total	44	52	21	2	117	134	233	21	2	388	63	37	137	1	237	16	380	58	2	454	7	1196	1203
21:00	7	6	4	1	17	35	74	6	1	115	12	7	32	0	51	4	86	24	1	114	3	297	300
21:15	10	1	3	0	14	27	53	6	0	86	8	7	26	0	41	3	101	13	2	117	2	258	260
21:30	2	2	0	0	4	20	55	0	0	75	6	6	21	0	33	2	71	9	1	82	1	194	195
21:45	1	2	0	0	3	20	49	3	1	72	6	4	11	0	21	0	68	11	0	79	1	175	176
Total	20	11	7	1	38	102	231	15	2	348	32	24	90	0	146	9	326	57	4	392	7	924	931
Grand Total	841	1039	521	110	2401	2880	6318	850	339	10048	1391	1059	2555	142	5005	685	6842	1128	371	8655	962	26109	27071
Apprch %	35	43.3	21.7			28.7	62.9	8.5			27.8	21.2	51			7.9	79.1	13					
Total %	3.2	4	2		9.2	11	24.2	3.3		38.5	5.3	4.1	9.8		19.2	2.6	26.2	4.3		33.1	3.6	96.4	

Start Time	University Ave. Southbound				App. Total	CSAH 14 Westbound				App. Total	CSAH 51 Northbound				App. Total	CSAH 14 Eastbound				Int. Total
	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total	
Peak Hour Analysis From 06:00 to 11:45 - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 07:00																				
07:00	17	38	9	64	124	102	53	279	12	66	12	90	52	84	15	151	584			
07:15	57	72	23	152	115	79	100	294	13	110	19	142	60	95	22	177	765			
07:30	61	77	19	157	80	109	135	324	17	99	27	143	55	110	17	182	806			
07:45	12	25	18	55	107	150	25	282	21	5	31	57	5	119	12	136	530			
Total Volume	147	212	69	428	426	440	313	1179	63	280	89	432	172	408	66	646	2685			
% App. Total	34.3	49.5	16.1		36.1	37.3	26.5		14.6	64.8	20.6		26.6	63.2	10.2					
PHF	.602	.688	.750	.682	.859	.733	.580	.910	.750	.636	.718	.755	.717	.857	.750	.887	.833			

Peak Hour Analysis From 12:00 to 21:45 - Peak 1 of 1																				
Peak Hour for Entire Intersection Begins at 16:30																				
16:30	14	13	8	35	40	134	15	189	27	22	98	147	11	137	23	171	542			
16:45	20	15	12	47	58	134	20	212	36	31	99	166	15	160	17	192	617			
17:00	27	21	7	55	32	127	13	172	39	37	113	189	14	150	24	188	604			
17:15	12	20	2	34	34	141	18	193	31	24	125	180	17	156	20	193	600			
Total Volume	73	69	29	171	164	536	66	766	133	114	435	682	57	603	84	744	2363			
% App. Total	42.7	40.4	17		21.4	70	8.6		19.5	16.7	63.8		7.7	81	11.3					
PHF	.676	.821	.604	.777	.707	.950	.825	.903	.853	.770	.870	.902	.838	.942	.875	.964	.957			

**ANOKA COUNTY HIGHWAY
PC-WARRANTS
TRAFFIC SIGNAL WARRANT ANALYSIS**

Study Name :
Study Date : 05/26/10
Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Eastbound: CSAH 14
Number of Lanes: 2
Approach Speed: 55
Total Approach Volume: 8,655

Westbound: CSAH 14
Number of Lanes: 2
Approach Speed: 50
Total Approach Volume: 10,048

Minor Street Approaches

Northbound: CSAH 51
Number of Lanes: 2

Total Approach Volume: 5,005

Southbound: University Ave.
Number of Lanes: 2

Total Approach Volume: 2,401

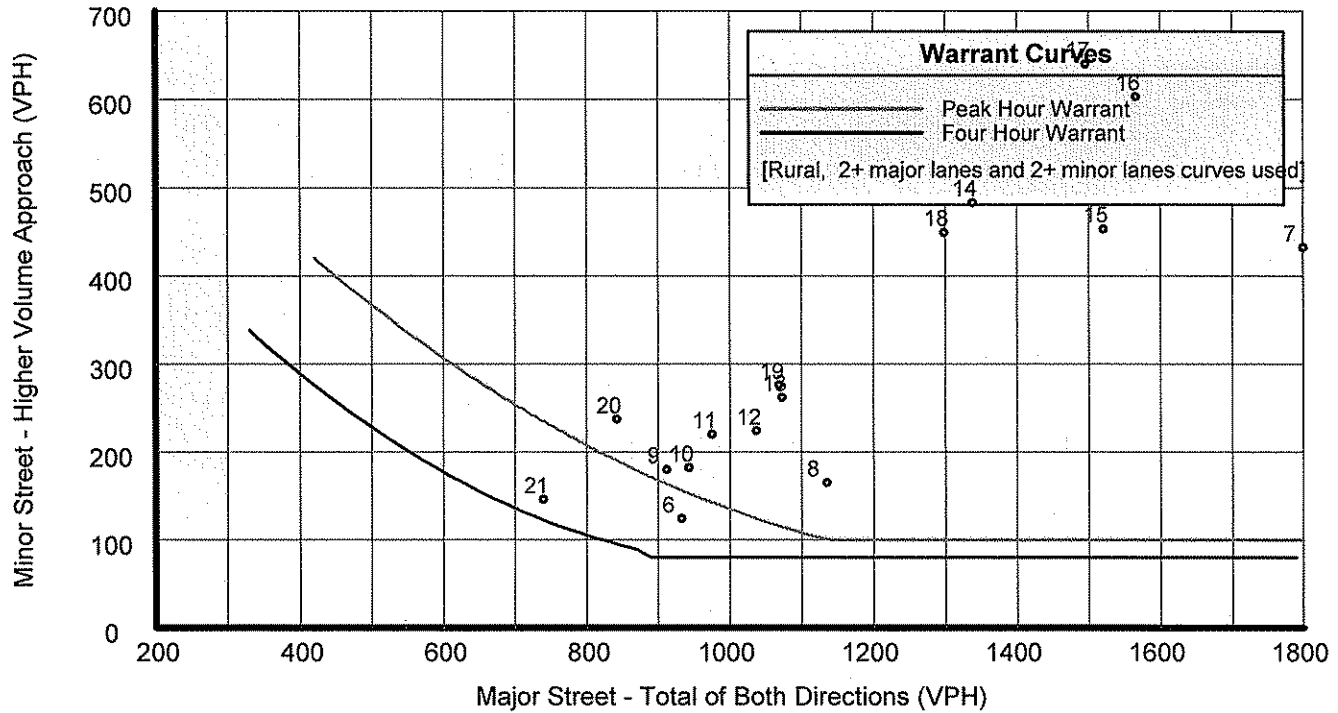
Warrant Summary (Rural values apply.)

Warrant 1 - Eight Hour Vehicular Volumes	Satisfied
Warrant 1A - Minimum Vehicular Volume Satisfied	
Required volumes reached for 15 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic Satisfied	
Required volumes reached for 16 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants Satisfied	
Required volumes reached for 16 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (16) volumes exceed minimum \geq minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour Delay Satisfied	
Number of hours (59) volumes exceed minimum \geq required (1). Delay data not evaluated.	
Warrant 3B - Peak Hour Volumes Satisfied	
Volumes exceed minimums for at least one hour.	
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 PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name :
Study Date : 05/26/10
Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor Vol	Dir	War-1A			War-1B			War-1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
01:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
02:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
03:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
04:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
05:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
06:00	933	124	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
07:00	1,825	432	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
08:00	1,135	165	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
09:00	912	180	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
10:00	943	182	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
11:00	975	220	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
12:00	1,037	224	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
13:00	1,073	262	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
14:00	1,338	483	SB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
15:00	1,521	453	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
16:00	1,566	603	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
17:00	1,496	640	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
18:00	1,298	449	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
19:00	1,069	276	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
20:00	842	237	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
21:00	740	146	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
22:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
23:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---

**ANOKA COUNTY HIGHWAY
PC-WARRANTS
TRAFFIC SIGNAL WARRANT ANALYSIS**

Study Name :
Study Date : 05/26/10
Page No. : 1

Multi-Way Stop Warrant Report

Major Street Approaches

Eastbound: CSAH 14
Total Approach Volume: 8,655
Approach Speed: 55

Westbound: CSAH 14
Total Approach Volume: 10,048
Approach Speed: 50

Minor Street Approaches

Northbound: CSAH 51
Total Approach Volume: 5,005

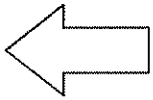
Southbound: University Ave.
Total Approach Volume: 2,401

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
- Criteria C - Minimum Volumes and Delays** Satisfied
Delay data not evaluated
Required volumes reached for 16 hours, 8 are needed
- Criteria D - 80% of Volumes, Delays, and Crashes** Not Evaluated
Delay data not evaluated
Number of crashes (-1) is less than the minimum required (4).
Required volumes reached for 0 hours, 8 are needed

Analysis of 8 Hour Volume Warrants:

Time	Major Total	Minor Total	Crit C			Crit D		
			Major	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
06:00 - 07:00	933	203	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
07:00 - 08:00	1,825	860	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
08:00 - 09:00	1,135	230	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
09:00 - 10:00	912	258	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
10:00 - 11:00	943	258	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
11:00 - 12:00	975	311	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
12:00 - 13:00	1,037	349	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
13:00 - 14:00	1,073	341	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
14:00 - 15:00	1,338	895	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
15:00 - 16:00	1,521	612	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
16:00 - 17:00	1,566	763	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
17:00 - 18:00	1,496	791	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
18:00 - 19:00	1,298	662	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
19:00 - 20:00	1,069	335	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
20:00 - 21:00	842	354	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
21:00 - 22:00	740	184	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
05:30 - 06:30	344	70	210-Yes	140-No	Major	240-Yes	160-No	Major
05:45 - 06:45	600	139	210-Yes	140-No	Major	240-Yes	160-No	Major
00:00 - 01:00	0	0	210-No	140-No	No	240-No	160-No	No
00:15 - 01:15	0	0	210-No	140-No	No	240-No	160-No	No
00:30 - 01:30	0	0	210-No	140-No	No	240-No	160-No	No
00:45 - 01:45	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
01:15 - 02:15	0	0	210-No	140-No	No	240-No	160-No	No



COUNT LOCATION:

CSAH 14 (Main St.)

DATE:

5/17/2010

@ CSAH 51 (University Ave.)

NORTH

APP. #1 = University Ave.

APP. #2 = CSAH 14

APP. #3 = CSAH 51

APP. #4 = CSAH 14

APP. #2

APP. #1

APP. #3

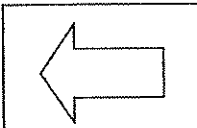
APP. #4

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						3		28
2:15-2:30		5	1			11		28
2:30-2:45		40				9		47
2:45-3:00		20				16		15
HOURLY TOTAL					66	HOURLY TOTAL		157
3:00-3:15		5				12		14
3:15-3:30						8		11
3:30-3:45		3				12		7
3:45-4:00		2	6			9	1	7
HOURLY TOTAL					16	HOURLY TOTAL		81
4:00-4:15	1	2	4	3		6		12
4:15-4:30				1		9		13
4:30-4:45				3		2		4
4:45-5:00		6				4		2
HOURLY TOTAL					20	HOURLY TOTAL		52
5:00-5:15		6		2		7		2
5:15-5:30						5		6
5:30-5:45	5		1			2		
5:45-6:00						6		1
HOURLY TOTAL					14	HOURLY TOTAL		29
6:00-6:15		4	4			4		2
6:15-6:30	1	3		3		1		7
6:30-6:45						4		3
6:45-7:00						5		1
HOURLY TOTAL					15	HOURLY TOTAL		27
7:00-7:15						2		
7:15-7:30						4		
7:30-7:45						2	1	
7:45-8:00						3		
HOURLY TOTAL						HOURLY TOTAL		1
8:00-8:15						1		
8:15-8:30						1		
8:30-8:45						2		
8:45-9:00						1		1
HOURLY TOTAL						HOURLY TOTAL		6
9:00-9:15						2		
9:15-9:30						2		
9:30-9:45						2		
9:45-10:00								1
HOURLY TOTAL						HOURLY TOTAL		7
TOTAL					180	TOTAL		971

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COUNT LOCATION:

CSAH 14 (Main St.)

DATE:

5/18/2010

@ CSAH 51 (University Ave.)

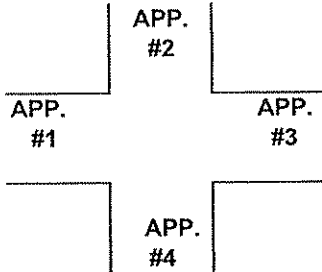
NORTH

APP. #1 = University Ave.

APP. #2 = CSAH 14

APP. #3 = CSAH 51

APP. #4 = CSAH 14



- 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				2	2	2		1
6:15-6:30						7		1
6:30-6:45		1		1	2	5		7
6:45-7:00				2	2	2		10
HOURLY TOTAL					6	HOURLY TOTAL		35
7:00-7:15				5	5	15		21
7:15-7:30	1				1	6		68
7:30-7:45		2		6	8	10		15
7:45-8:00	2		3	3	8	11		9
HOURLY TOTAL					22	HOURLY TOTAL		155
8:00-8:15						11		10
8:15-8:30						17		13
8:30-8:45						10		7
8:45-9:00						20		3
HOURLY TOTAL						HOURLY TOTAL		91
9:00-9:15						10		12
9:15-9:30		2			2	9		14
9:30-9:45			2		2	9		2
9:45-10:00						7		
HOURLY TOTAL					4	HOURLY TOTAL		63
10:00-10:15						12	1	3
10:15-10:30		4		2	6	15		2
10:30-10:45						13		6
10:45-11:00						19		1
HOURLY TOTAL					6	HOURLY TOTAL		72
11:00-11:15						14		3
11:15-11:30		2			2	16	1	7
11:30-11:45		1			1	23		1
11:45-12:00						10		
HOURLY TOTAL					3	HOURLY TOTAL		75
12:00-12:15		3			3	13		
12:15-12:30						15		2
12:30-12:45			1	1	2	19		2
12:45-1:00						15		3
HOURLY TOTAL					5	HOURLY TOTAL		69
1:00-1:15		1			1	12		2
1:15-1:30		1			1	13	1	
1:30-1:45						8		3
1:45-2:00				1	1	7	1	4
HOURLY TOTAL					3	HOURLY TOTAL		51
TOTAL					49	TOTAL		611

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