

Date : 11/16/11

Count Number : TMC1145

Location : CSAH 83 (Armstrong Blvd.)

@ Alpine Dr.

Collection Period : 6-10 AM, 3-6 PM

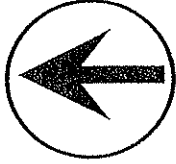
2838

#2

CSAH 83

1477		
46	D	
1400	F	
31	T	

1361



North

Alpine Dr.

#1

864

473		
46	C	
99	B	
328	A	

391

#3

434

215		
62	J	
108	H	
45	G	

219

Alpine Dr.

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

1596		
237	M	
1270	L	
89	K	

1790

CSAH 83

#4

3386

Anoka County Highway Department

Traffic Volume and Turning

Movement Study

Date: 11/16/11

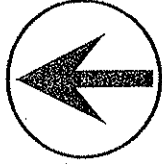
Count Number: TMC1145

Location: CSAH 83 (Armstrong Blvd.)

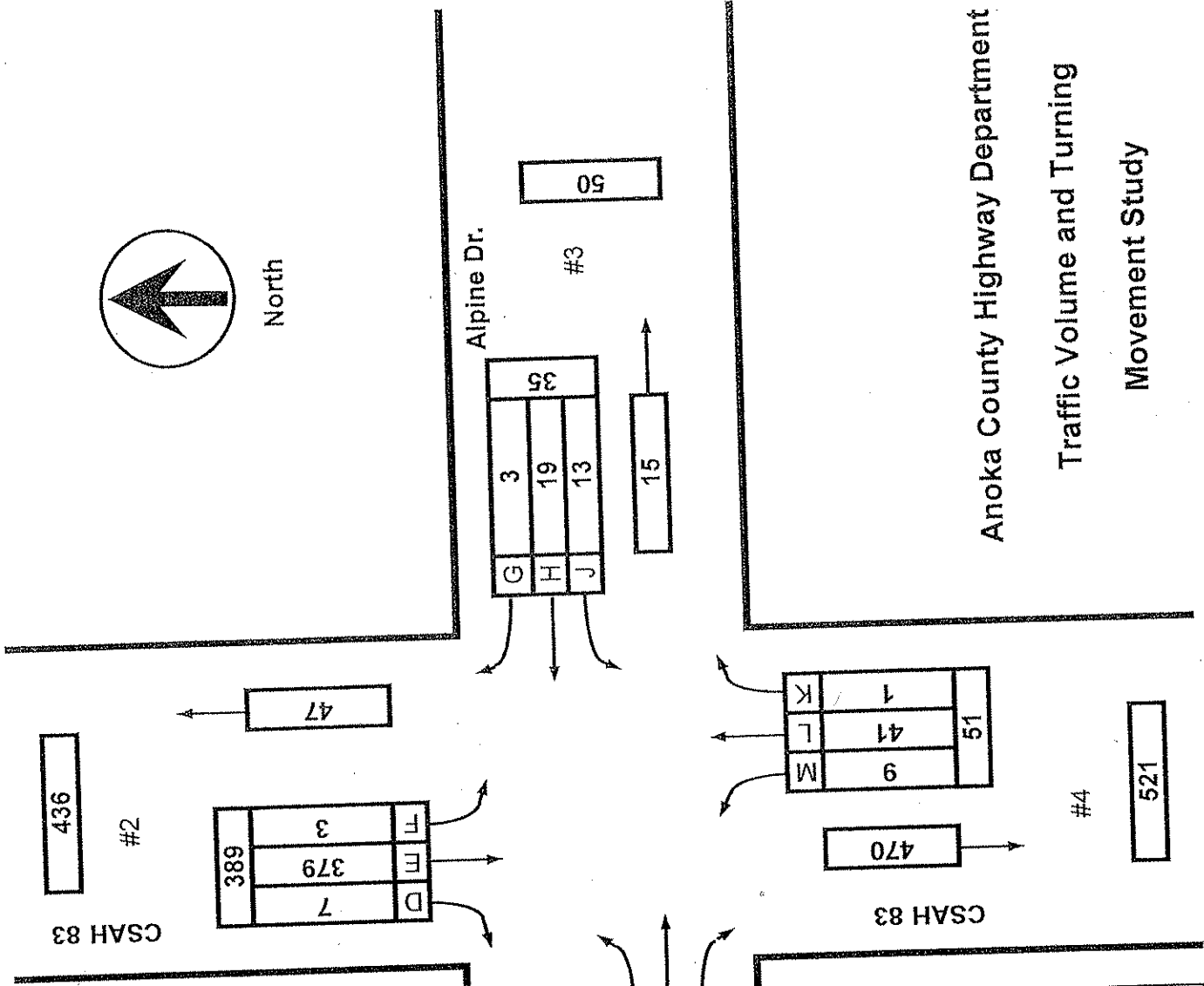
@ Alpine Dr.

Collection Period: AM PEAK

Hour: 7:00 AM-8:00 AM



North



	EXISTING 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

Date: 11/16/11

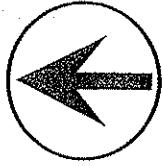
Count Number: TMC1145

Location: CSAH 83 (Armstrong Blvd.)

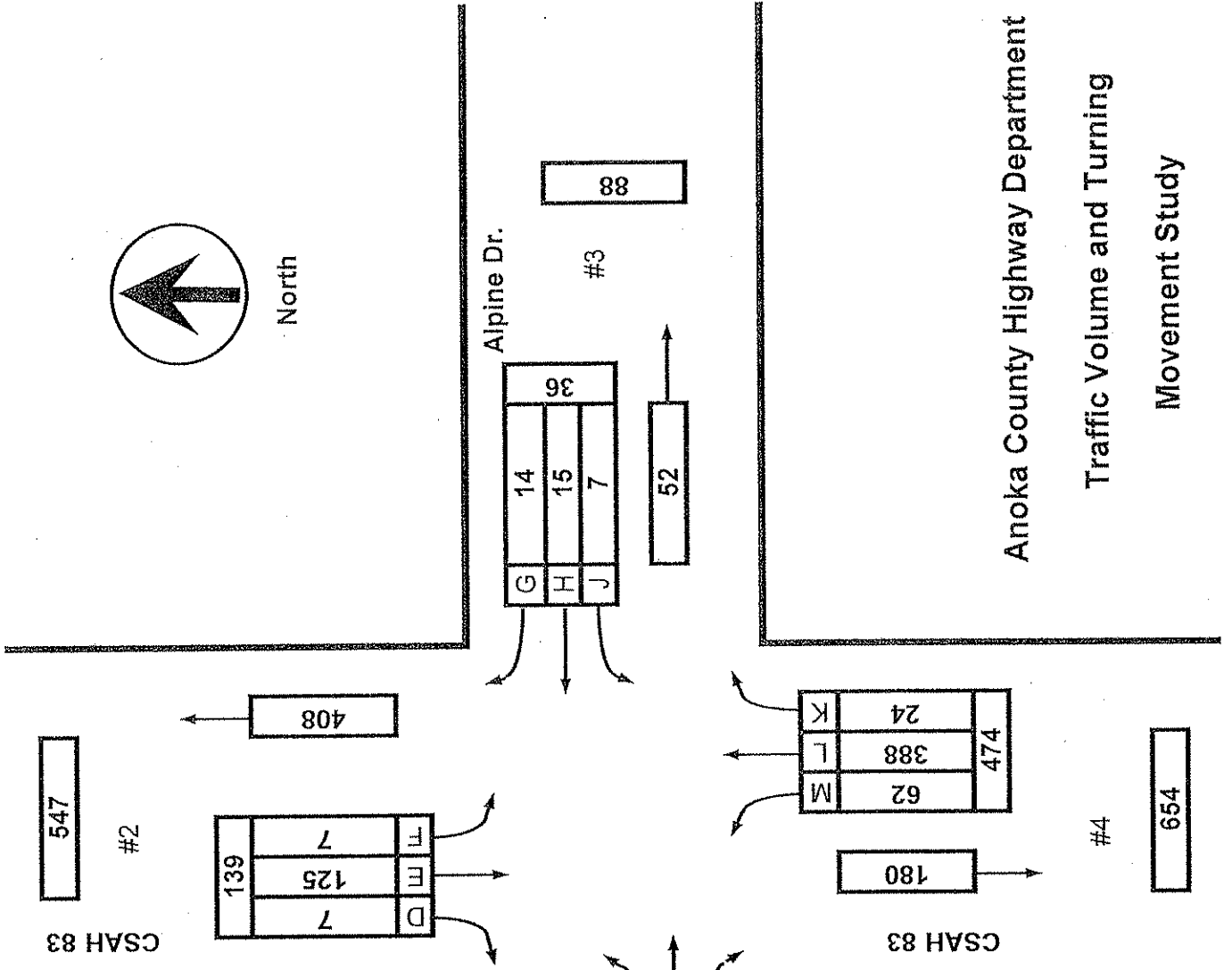
@ Alpine Dr.

Collection Period: PM PEAK

Hour: 4:00 PM-5:00 PM



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	0	0	1	1
#2	1	0	1	2
#3	0	0	1	1
#4	1	0	1	2



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

File Name : TMC1145

Site Code : 11450102

Start Date : 11/16/2011

Page No : 1

Weather: Cold and Cloudy
 Counter: DB-400
 Counted by: Randy/Andrea

Groups Printed- Unshifted

Start Time	CSAH 83 Southbound					Alpine Drive Westbound					CSAH 83 Northbound					Alpine Drive Eastbound					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total	Left	Thru	Right	Heavys	App. Total			
06:00	0	60	0	1	60	1	1	0	0	2	1	7	1	1	9	0	1	9	0	10	2	81	83
06:15	0	82	6	1	88	1	5	0	0	6	4	7	0	1	11	2	2	16	0	20	4	125	127
06:30	1	118	0	2	119	2	4	4	0	10	1	7	0	1	8	2	2	16	1	20	4	157	161
06:45	1	77	1	2	79	0	6	1	1	7	0	9	0	0	9	1	3	24	1	28	4	123	127
Total	2	337	7	6	346	4	16	5	1	25	6	30	1	3	37	5	8	65	2	78	12	486	498
07:00	0	80	3	1	83	2	6	0	0	8	2	10	0	3	12	1	1	17	1	19	5	122	127
07:15	0	114	2	2	116	3	7	1	1	11	2	6	0	0	8	1	4	19	1	24	4	159	163
07:30	1	102	2	4	105	5	2	0	0	7	2	13	0	1	15	1	2	20	0	23	5	150	155
07:45	2	83	0	2	85	3	4	2	0	9	3	12	1	2	16	0	4	22	0	26	4	136	140
Total	3	379	7	9	389	13	19	3	1	35	9	41	1	6	51	3	11	78	2	92	18	567	585
08:00	0	47	0	1	47	1	6	1	0	8	4	18	0	1	22	0	1	11	0	12	2	89	91
08:15	1	54	3	1	58	3	5	1	0	9	3	15	3	5	21	1	2	11	0	14	6	102	108
08:30	0	45	0	6	45	2	2	1	0	5	2	17	1	3	20	0	6	4	2	10	11	80	91
08:45	0	42	6	1	48	3	5	1	0	9	4	17	0	6	21	5	2	11	0	18	7	96	103
Total	1	188	9	9	198	9	18	4	0	31	13	67	4	15	84	6	11	37	2	54	26	367	393
09:00	2	40	3	3	45	0	6	3	0	9	3	22	1	4	26	0	5	11	2	16	9	96	105
09:15	1	35	0	1	36	3	5	1	1	9	4	13	1	3	18	1	2	8	0	11	5	74	79
09:30	0	32	0	0	32	5	3	0	0	8	7	21	1	1	29	0	2	7	1	9	2	78	80
09:45	1	40	3	2	44	5	1	0	0	6	4	22	1	1	27	2	2	6	0	10	3	87	90
Total	4	147	6	6	157	13	15	4	1	32	18	78	4	9	100	3	11	32	3	46	19	335	354
*** BREAK ***																							
15:00	2	15	1	0	18	1	1	1	0	3	19	69	9	8	97	2	4	3	2	9	10	127	137
15:15	2	23	1	3	26	1	2	1	0	4	12	65	6	0	83	0	4	6	2	10	5	123	128
15:30	2	32	1	0	35	2	4	3	0	9	17	77	6	5	100	3	2	13	1	18	6	162	168
15:45	1	27	2	0	30	2	3	2	0	7	14	84	7	4	105	2	6	5	1	13	5	155	160
Total	7	97	5	3	109	6	10	7	0	23	62	295	28	17	385	7	16	27	6	50	26	567	593
16:00	2	30	3	1	35	3	5	1	1	9	16	94	7	0	117	4	6	12	2	22	4	183	187
16:15	1	36	0	2	37	2	1	8	1	11	16	99	5	6	120	2	7	5	0	14	9	182	191
16:30	1	30	2	3	33	1	6	4	3	11	12	92	6	1	110	0	5	17	2	22	9	176	185
16:45	3	29	2	3	34	1	3	1	1	5	18	103	6	5	127	0	3	14	0	17	9	183	192
Total	7	125	7	9	139	7	15	14	6	36	62	388	24	12	474	6	21	48	4	75	31	724	755
17:00	1	27	1	0	29	1	5	0	0	6	12	102	9	1	123	5	7	9	4	21	5	179	184
17:15	3	40	2	1	45	1	1	5	0	7	16	85	3	1	104	4	4	17	0	25	2	181	183
17:30	2	31	1	1	34	5	4	1	0	10	17	82	3	4	102	3	4	6	0	13	5	159	164
17:45	1	29	1	0	31	3	5	2	1	10	22	102	12	1	136	4	6	9	0	19	2	196	198
Total	7	127	5	2	139	10	15	8	1	33	67	371	27	7	465	16	21	41	4	78	14	715	729
Grand Total	31	1400	46	44	1477	62	108	45	10	215	237	1270	89	69	1596	46	99	328	23	473	146	3761	3907
Apprch %	2.1	94.8	3.1			28.8	50.2	20.9			14.8	79.6	5.6			9.7	20.9	69.3					
Total %	0.8	37.2	1.2		39.3	1.6	2.9	1.2		5.7	6.3	33.8	2.4		42.4	1.2	2.6	8.7		12.6	3.7	96.3	

Start Time	CSAH 83 Southbound				Alpine Drive Westbound				CSAH 83 Northbound				Alpine Drive 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	0	80	3	83	2	6	0	8	2	10	0	12	1	1	17	19	122
07:15	0	114	2	116	3	7	1	11	2	6	0	8	1	4	19	24	159
07:30	1	102	2	105	5	2	0	7	2	13	0	15	1	2	20	23	150
07:45	2	83	0	85	3	4	2	9	3	12	1	16	0	4	22	26	136
Total Volume	3	379	7	389	13	19	3	35	9	41	1	51	3	11	78	92	567
% App. Total	0.8	97.4	1.8		37.1	54.3	8.6		17.6	80.4	2		3.3	12	84.8		
PHF	.375	.831	.583		.838	.650	.679	.375	.795	.750	.788	.250	.797	.750	.688	.886	.885

Start Time	CSAH 83 Southbound				Alpine Drive Westbound				CSAH 83 Northbound				Alpine Drive 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 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:00																	
16:00	2	30	3	35	3	5	1	9	16	94	7	117	4	6	12	22	183
16:15	1	36	0	37	2	1	8	11	16	99	5	120	2	7	5	14	182
16:30	1	30	2	33	1	6	4	11	12	92	6	110	0	5	17	22	176
16:45	3	29	2	34	1	3	1	5	18	103	6	127	0	3	14	17	183
Total Volume	7	125	7	139	7	15	14	36	62	388	24	474	6	21	48	75	724
% App. Total	5	89.9	5		19.4	41.7	38.9		13.1	81.9	5.1		8	28	64		
PHF	.583	.868	.583		.939	.583	.625	.438	.818	.861	.942	.857	.933	.375	.750	.706	.852

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

Study Name : TMC1145
Study Date : 11/17/11
Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: CSAH 83
Number of Lanes: 2
Approach Speed: 55
Total Approach Volume: 1,596

Southbound: CSAH 83
Number of Lanes: 2
Approach Speed: 55
Total Approach Volume: 1,477

Minor Street Approaches

Eastbound: Alpine Drive
Number of Lanes: 1

Total Approach Volume: 473

Westbound: Alpine Drive
Number of Lanes: 1

Total Approach Volume: 215

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 Delay Not Satisfied
Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.
 - Warrant 3B - Peak Hour Volumes Not Satisfied
Volumes do not exceed minimums for any hour.

- Warrant 4 - Pedestrian Volumes Not Evaluated

- Warrant 5 - School Crossing Not Evaluated

- Warrant 6 - Coordinated Signal System Not Evaluated

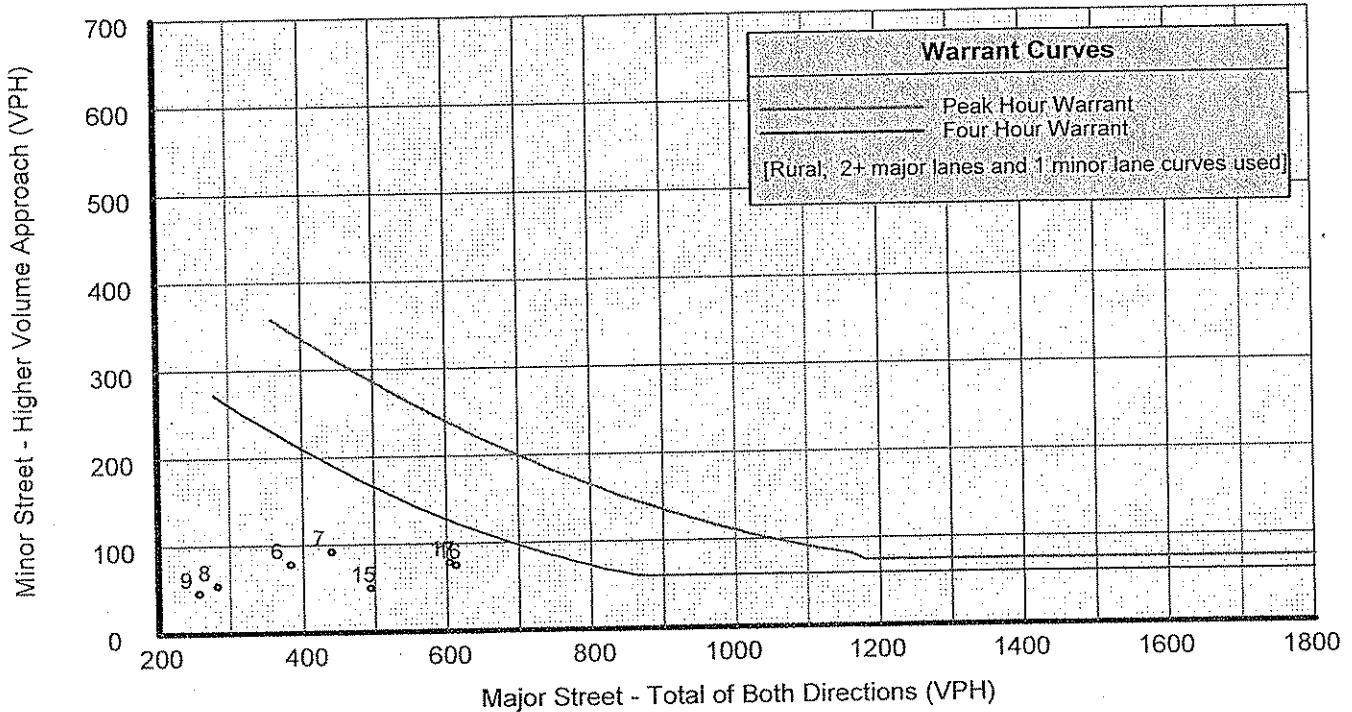
- Warrant 7 - Crash Experience Not Evaluated

- Warrant 8 - Roadway Network Not Evaluated

ANOKA COUNTY HIGHWAY PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC1145
Study Date : 11/17/11
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	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
01:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
02:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
03:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
04:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
05:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
06:00	383	78	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
07:00	440	92	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-No	84-Yes	Minor
08:00	282	54	EB	420-No	105-No	---	630-No	53-Yes	Minor	504-No	84-No	---
09:00	257	46	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
10:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
11:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
12:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
13:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
14:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
15:00	494	50	EB	420-Yes	105-No	Major	630-No	53-No	---	504-No	84-No	---
16:00	613	75	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-Yes	84-No	Major
17:00	604	78	EB	420-Yes	105-No	Major	630-No	53-Yes	Minor	504-Yes	84-No	Major
18:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
19:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
20:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
21:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
22:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---
23:00	0	0	EB	420-No	105-No	---	630-No	53-No	---	504-No	84-No	---

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

Study Name : TMC1145
Study Date : 11/17/11
Page No. : 1

Multi-Way Stop Warrant Report

Major Street Approaches

Northbound: CSAH 83
Total Approach Volume: 1,596
Approach Speed: 55

Southbound: CSAH 83
Total Approach Volume: 1,477
Approach Speed: 55

Minor Street Approaches

Eastbound: Alpine Drive
Total Approach Volume: 473

Westbound: Alpine Drive
Total Approach Volume: 215

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 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
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?
05:45 - 06:45	295	68	210-Yes	140-No	Major	240-Yes	160-No	Major
06:00 - 07:00	383	103	210-Yes	140-No	Major	240-Yes	160-No	Major
06:15 - 07:15	409	118	210-Yes	140-No	Major	240-Yes	160-No	Major
06:30 - 07:30	434	127	210-Yes	140-No	Major	240-Yes	160-No	Major
06:45 - 07:45	427	127	210-Yes	140-No	Major	240-Yes	160-No	Major
07:00 - 08:00	440	127	210-Yes	140-No	Major	240-Yes	160-No	Major
07:15 - 08:15	414	120	210-Yes	140-No	Major	240-Yes	160-No	Major
07:30 - 08:30	369	108	210-Yes	140-No	Major	240-Yes	160-No	Major
07:45 - 08:45	314	93	210-Yes	140-No	Major	240-Yes	160-No	Major
08:00 - 09:00	282	85	210-Yes	140-No	Major	240-Yes	160-No	Major
08:15 - 09:15	284	90	210-Yes	140-No	Major	240-Yes	160-No	Major
08:30 - 09:30	259	87	210-Yes	140-No	Major	240-Yes	160-No	Major
08:45 - 09:45	255	89	210-Yes	140-No	Major	240-Yes	160-No	Major
09:00 - 10:00	257	78	210-Yes	140-No	Major	240-Yes	160-No	Major
14:30 - 15:30	224	26	210-Yes	140-No	Major	240-No	160-No	No
14:45 - 15:45	359	53	210-Yes	140-No	Major	240-Yes	160-No	Major
15:00 - 16:00	494	73	210-Yes	140-No	Major	240-Yes	160-No	Major
15:15 - 16:15	531	92	210-Yes	140-No	Major	240-Yes	160-No	Major
15:30 - 16:30	579	103	210-Yes	140-No	Major	240-Yes	160-No	Major
15:45 - 16:45	587	109	210-Yes	140-No	Major	240-Yes	160-No	Major
16:00 - 17:00	613	111	210-Yes	140-No	Major	240-Yes	160-No	Major
16:15 - 17:15	613	107	210-Yes	140-No	Major	240-Yes	160-No	Major
16:30 - 17:30	605	114	210-Yes	140-No	Major	240-Yes	160-No	Major
16:45 - 17:45	598	104	210-Yes	140-No	Major	240-Yes	160-No	Major



COUNT LOCATION:

CSAH 83 (Armstrong Blvd.)

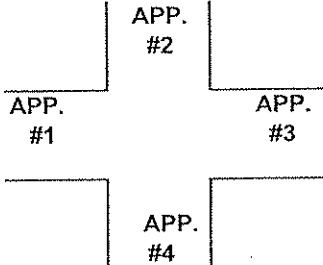
DATE:

11/16/2011

@ Alpine Drive

NORTH

APP. #1 = CSAH 83
APP. #2 = Alpine Dr.
APP. #3 = CSAH 83
APP. #4 = Alpine Dr.



- 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						1		1
6:15-6:30						1		1
6:30-6:45						1		3
6:45-7:00						1		3
HOURLY TOTAL						HOURLY TOTAL		12
7:00-7:15AM						3		2
7:15-7:30						4		
7:30-7:45						4		1
7:45-8:00						3		1
HOURLY TOTAL						HOURLY TOTAL		18
8:00-8:15						2		
8:15-8:30						4		2
8:30-8:45						6		5
8:45-9:00						5		2
HOURLY TOTAL						HOURLY TOTAL		26
9:00-9:15						7		2
9:15-9:30						5		
9:30-9:45						2		
9:45-10:00						3		
HOURLY TOTAL						HOURLY TOTAL		19
					TOTAL		TOTAL	75

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
3:00-3:15						6		4
3:15-3:30						4		1
3:30-3:45						3		3
3:45-4:00						4		1
HOURLY TOTAL						HOURLY TOTAL		26
4:00-4:15						4		
4:15-4:30						6		3
4:30-4:45				2	2	7		2
4:45-5:00						8		1
HOURLY TOTAL					2	HOURLY TOTAL		31
5:00-5:15						5		1
5:15-5:30						2		
5:30-5:45						5		
5:45-6:00						2		
HOURLY TOTAL						HOURLY TOTAL		15
					TOTAL		TOTAL	147