

Date : 04/07/09

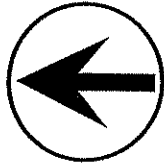
Count Number : TMC0904

Location : CSAH 51 (University Ave.)

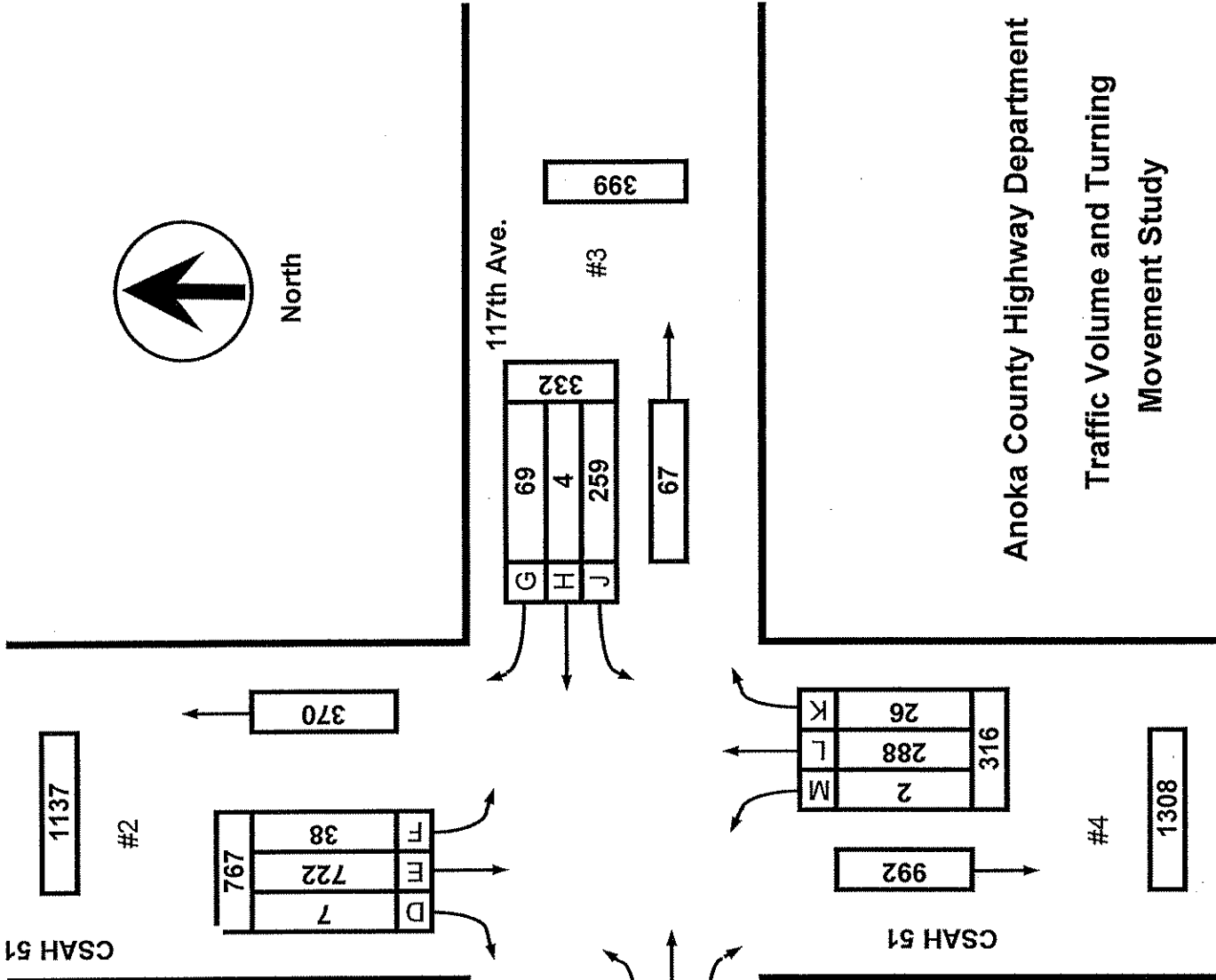
@ 117th Ave.

Collection Period : AM PEAK

Hour : 7:00 - 8:00AM



North



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

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Date : 04/07/09

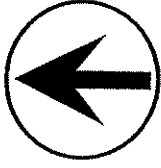
Count Number : TMC0904

Location : CSAH 51 (University Ave.)

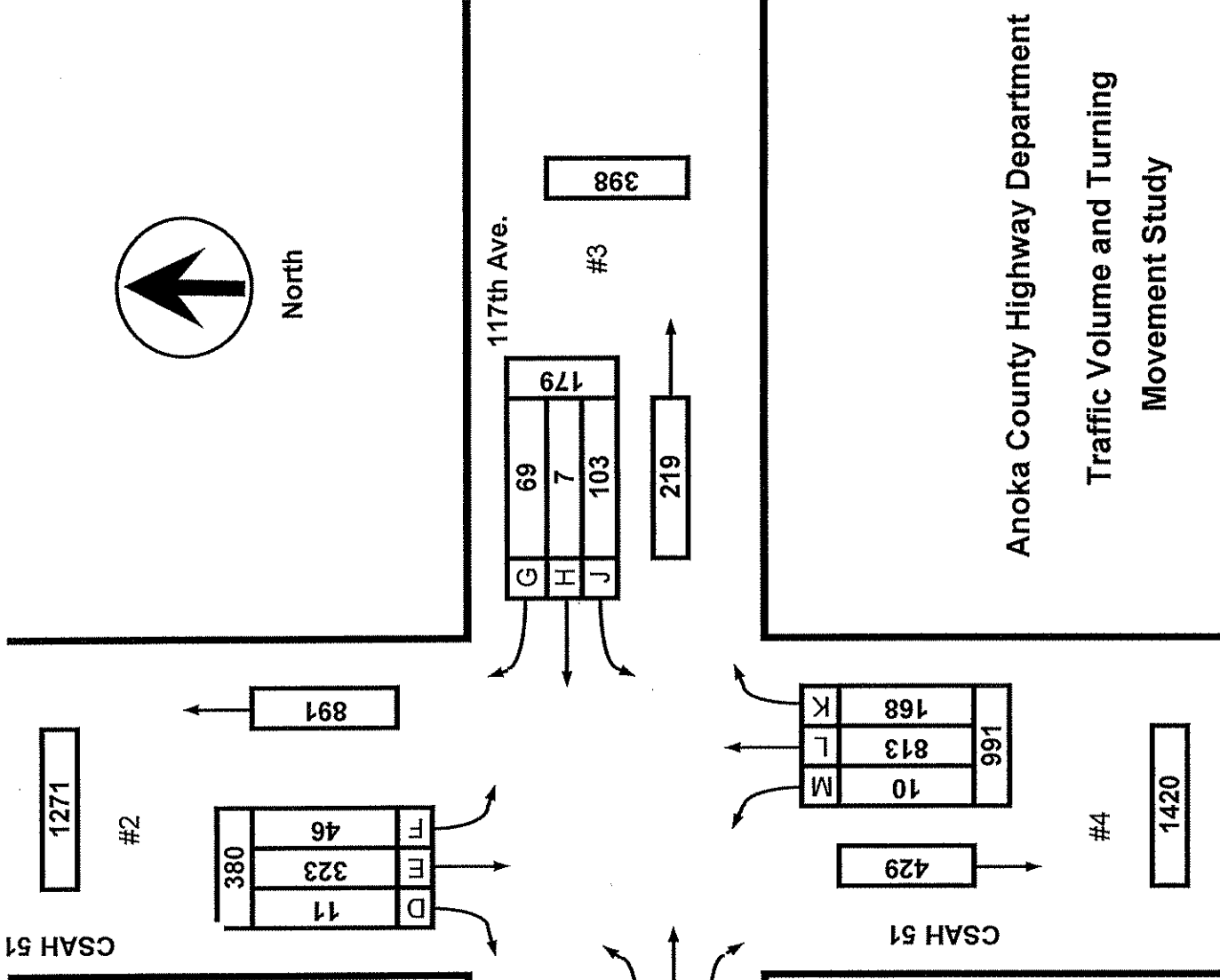
@ 117th Ave.

Collection Period : PM PEAK

Hour : 4:30 - 5:30PM



North



EXISTING/PROPOSED LANES OF APPROACH				TOTAL
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	
#1	0	0	1	1
#2	0	1	1	2
#3	0	1	1	2
#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: Sunny and Mild
 Counter: TDC-12
 Counted by: Josie/Randy

File Name : TMC0904
 Site Code : 09040202
 Start Date : 04/07/2009
 Page No : 1

Groups Printed- Unshifted

Start Time	CSAH 51 Southbound					117th Ave Westbound					CSAH 51 Northbound					117th Ave 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			
06:00	1	104	1	0	106	39	0	3	0	42	0	10	0	0	10	2	1	2	0	5	0	163	163
06:15	1	114	1	2	116	42	0	3	0	45	0	20	2	2	22	0	0	5	0	5	4	188	192
06:30	5	175	1	5	181	44	0	9	1	53	0	32	4	1	36	1	0	2	0	3	7	273	280
06:45	5	152	1	8	158	44	1	11	2	56	0	50	6	1	56	0	1	3	0	4	11	274	285
Total	12	545	4	15	561	169	1	26	3	196	0	112	12	4	124	3	2	12	0	17	22	898	920
07:00	5	196	0	3	201	72	0	15	1	87	1	80	5	7	86	0	0	4	0	4	11	378	389
07:15	8	186	2	5	196	80	1	25	0	106	1	91	10	8	102	9	0	5	0	14	13	418	431
07:30	14	169	3	6	186	64	3	25	1	92	0	80	4	12	84	3	1	1	0	5	19	367	386
07:45	11	171	2	3	184	43	0	4	2	47	0	37	7	6	44	1	2	1	1	4	12	279	291
Total	38	722	7	17	767	259	4	69	4	332	2	288	26	33	316	13	3	11	1	27	55	1442	1497

*** BREAK ***

16:00	13	60	3	2	76	22	1	18	1	41	2	155	47	5	204	0	3	0	0	3	8	324	332
16:15	8	62	0	1	70	21	2	15	1	38	4	207	40	8	251	2	0	2	0	4	10	363	373
16:30	8	78	2	2	88	27	0	21	1	48	3	189	30	5	222	4	0	0	0	4	8	362	370
16:45	10	81	6	1	97	25	2	22	0	49	2	195	48	1	245	1	1	0	0	2	2	393	395
Total	39	281	11	6	331	95	5	76	3	176	11	746	165	19	922	7	4	2	0	13	28	1442	1470
17:00	15	91	0	4	106	27	3	15	1	45	3	222	47	2	272	1	1	2	0	4	7	427	434
17:15	13	73	3	4	89	24	2	11	0	37	2	207	43	2	252	3	3	1	1	7	7	385	392
17:30	10	75	3	1	88	26	3	14	1	43	2	158	35	3	195	4	6	1	0	11	5	337	342
17:45	12	81	5	0	98	23	3	10	0	36	8	193	42	1	243	5	2	0	0	7	1	384	385
Total	50	320	11	9	381	100	11	50	2	161	15	780	167	8	962	13	12	4	1	29	20	1533	1553
Grand Total	139	1868	33	47	2040	623	21	221	12	865	28	1926	370	64	2324	36	21	29	2	86	125	5315	5440
Apprch %	6.8	91.6	1.6			7.2	2.4	25.5			1.2	82.9	15.9			41.9	24.4	33.7					
Total %	2.6	35.1	0.6		38.4	11.7	0.4	4.2		16.3	0.5	36.2	7		43.7	0.7	0.4	0.5		1.6	2.3	97.7	

Start Time	CSAH 51 Southbound				117th Ave Westbound				CSAH 51 Northbound				117th Ave 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	5	196	0	201	72	0	15	87	1	80	5	86	0	0	4	4	378
07:15	8	186	2	196	80	1	25	106	1	91	10	102	9	0	5	14	418
07:30	14	169	3	186	64	3	25	92	0	80	4	84	3	1	1	5	367
07:45	11	171	2	184	43	0	4	47	0	37	7	44	1	2	1	4	279
Total Volume	38	722	7	767	259	4	69	332	2	288	26	316	13	3	11	27	1442
% App. Total	5	94.1	0.9		78	1.2	20.8		0.6	91.1	8.2		48.1	11.1	40.7		
PHF	.679	.921	.583	.954	.809	.333	.690	.783	.500	.791	.650	.775	.361	.375	.550	.482	.862

Peak Hour Analysis From 12:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	8	78	2	88	27	0	21	48	3	189	30	222	4	0	0	4	362
16:45	10	81	6	97	25	2	22	49	2	195	48	245	1	1	0	2	393
17:00	15	91	0	106	27	3	15	45	3	222	47	272	1	1	2	4	427
17:15	13	73	3	89	24	2	11	37	2	207	43	252	3	3	1	7	385
Total Volume	46	323	11	380	103	7	69	179	10	813	168	991	9	5	3	17	1567
% App. Total	12.1	85	2.9		57.5	3.9	38.5		1	82	17		52.9	29.4	17.6		
PHF	.767	.887	.458	.896	.954	.583	.784	.913	.833	.916	.875	.911	.563	.417	.375	.607	.917

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

Signal Warrants - Summary

Major Street Approaches

Northbound: CSAH 51
 Number of Lanes: 2
 Approach Speed: 50
 Total Approach Volume: 2,324

Southbound: CSAH 51
 Number of Lanes: 2
 Approach Speed: 50
 Total Approach Volume: 2,040

Minor Street Approaches

Eastbound: 117th Ave
 Number of Lanes: 1
 Total Approach Volume: 86

Westbound: 117th Ave
 Number of Lanes: 2
 Total Approach Volume: 865

Warrant Summary (Rural values apply.)

- Warrant 1 - Eight Hour Vehicular Volumes** Not Satisfied
 - Warrant 1A - Minimum Vehicular Volume** Not Satisfied
 Required volumes reached for 4 hours, 8 are needed
 - Warrant 1B - Interruption of Continuous Traffic** Not Satisfied
 Required volumes reached for 4 hours, 8 are needed
 - Warrant 1 A&B - Combination of Warrants** Not Satisfied
 Required volumes reached for 4 hours, 8 are needed

- Warrant 2 - Four Hour Volumes** Satisfied
 Number of hours (4) volumes exceed minimum \geq minimum required (4).

- Warrant 3 - Peak Hour** 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** Satisfied
 Volumes exceed minimums for at least one hour.

- Warrant 4 - Pedestrian Volumes** Not Evaluated

- Warrant 5 - School Crossing** Not Evaluated

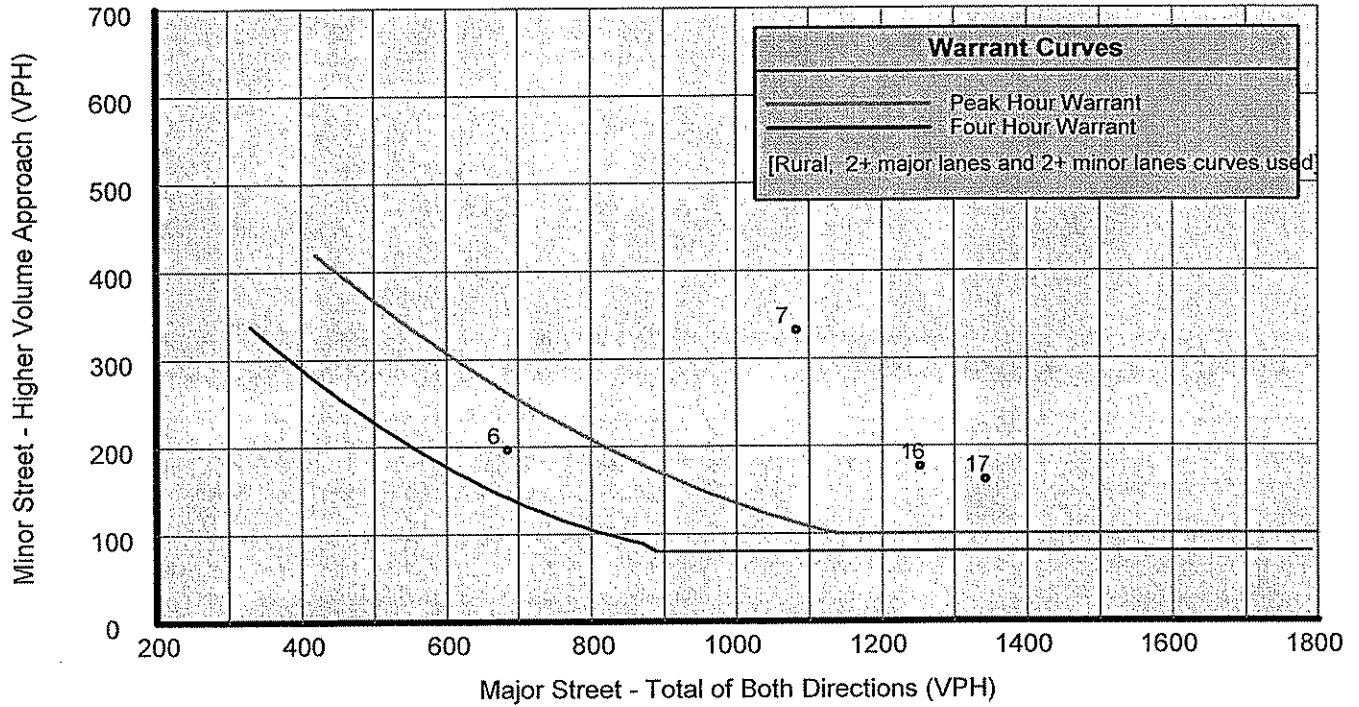
- Warrant 6 - Coordinated Signal System** Not Evaluated

- Warrant 7 - Crash Experience** Not Evaluated

- Warrant 8 - Roadway Network** Not Evaluated

ANOKA COUNTY HIGHWAY PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

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	140-No	---	630-No	70-No	---	504-No	112-No	---
01:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
02:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
03:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
04:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
05:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
06:00	685	196	WB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
07:00	1,083	332	WB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
08:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
09:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
10:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
11:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
12:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
13:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
14:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
15:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
16:00	1,253	176	WB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
17:00	1,343	161	WB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
18:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
19:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
20:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
21:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
22:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
23:00	0	0	EB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---

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

Multi-Way Stop Warrant Report

Major Street Approaches

Northbound: CSAH 51
Total Approach Volume: 2,324
Approach Speed: 50

Southbound: CSAH 51
Total Approach Volume: 2,040
Approach Speed: 50

Minor Street Approaches

Eastbound: 117th Ave
Total Approach Volume: 86

Westbound: 117th Ave
Total Approach Volume: 865

Warrant Summary

Criteria A - Interim Measure Not Evaluated
If traffic signals are justified, stop signs can be installed as an interim measure.

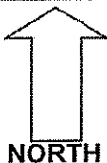
Criteria B - Crash Experience Not Evaluated

Criteria C - Minimum Volumes and Delays Not Satisfied
Delay data not evaluated
Required volumes reached for 4 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 4 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	471	153	210-Yes	140-Yes	Both	240-Yes	160-No	Major
06:45 - 07:45	1,069	368	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
16:00 - 17:00	1,253	189	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
17:00 - 18:00	1,343	190	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
05:30 - 06:30	254	97	210-Yes	140-No	Major	240-Yes	160-No	Major
07:45 - 08:45	228	51	210-Yes	140-No	Major	240-No	160-No	No
15:15 - 16:15	280	44	210-Yes	140-No	Major	240-Yes	160-No	Major
15:30 - 16:30	601	86	210-Yes	140-No	Major	240-Yes	160-No	Major
15:45 - 16:45	911	138	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
01:30 - 02:30	0	0	210-No	140-No	No	240-No	160-No	No
01:45 - 02:45	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
02:15 - 03:15	0	0	210-No	140-No	No	240-No	160-No	No
02:30 - 03:30	0	0	210-No	140-No	No	240-No	160-No	No
02:45 - 03:45	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
03:15 - 04:15	0	0	210-No	140-No	No	240-No	160-No	No
03:30 - 04:30	0	0	210-No	140-No	No	240-No	160-No	No

**COUNT LOCATION:**CSAH 51 (University Ave.) @ **DATE:**

04/07/2009

117th Ave.

NORTH

APP. #1 = 117th Ave

APP. #2 = CSAH 51

APP. #3 = 117th Ave

APP. #4 = CSAH 51

APP.
#2APP.
#1APP.
#3APP.
#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								
6:15-6:30								3
6:30-6:45								8
6:45-7:00						2		9
HOURLY TOTAL						HOURLY TOTAL		22
7:00-7:15AM						2		8
7:15-7:30						4		9
7:30-7:45	2			1	3	12		6
7:45-8:00						8		4
HOURLY TOTAL					3	HOURLY TOTAL		53
					TOTAL		TOTAL	75
					3			75

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
4:00-4:15PM						4		3
4:15-4:30						5		5
4:30-4:45	2				2	3		5
4:45-5:00						1		1
HOURLY TOTAL					2	HOURLY TOTAL		27
5:00-5:15PM	1				1	4		3
5:15-5:30	1		1		2	2		5
5:30-5:45								4
5:45-6:00						1		
HOURLY TOTAL					3	HOURLY TOTAL		19
					TOTAL		TOTAL	46
					5			46