

Date : 03/07/14

Count Number : TMC1402

Location : CSAH 23 (Lake Dr.)

@ CSAH 23 (Naples St.)

Collection Period : PEAK HOURS

6-9 AM, 4-7 PM

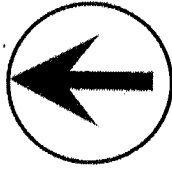
Naples St.

2245

#2

1245	294	387	564
D	F	T	

1000



North

CSAH 23 (Lake Dr.)

199	2063	407
G	H	J

#3

5254

2585

3172

#1

5365

2193	379	1745	69
A	B	C	

I-35W Off Ramp

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

CSAH 23 (Naples St.)

545	422	546
M	L	K

863

#4

2376

Anoka County Highway Department

Traffic Volume and Turning

Movement Study

Date : 03/07/14

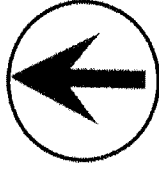
Count Number : TMC1402

Location : CSAH 23 (Lake Dr.)

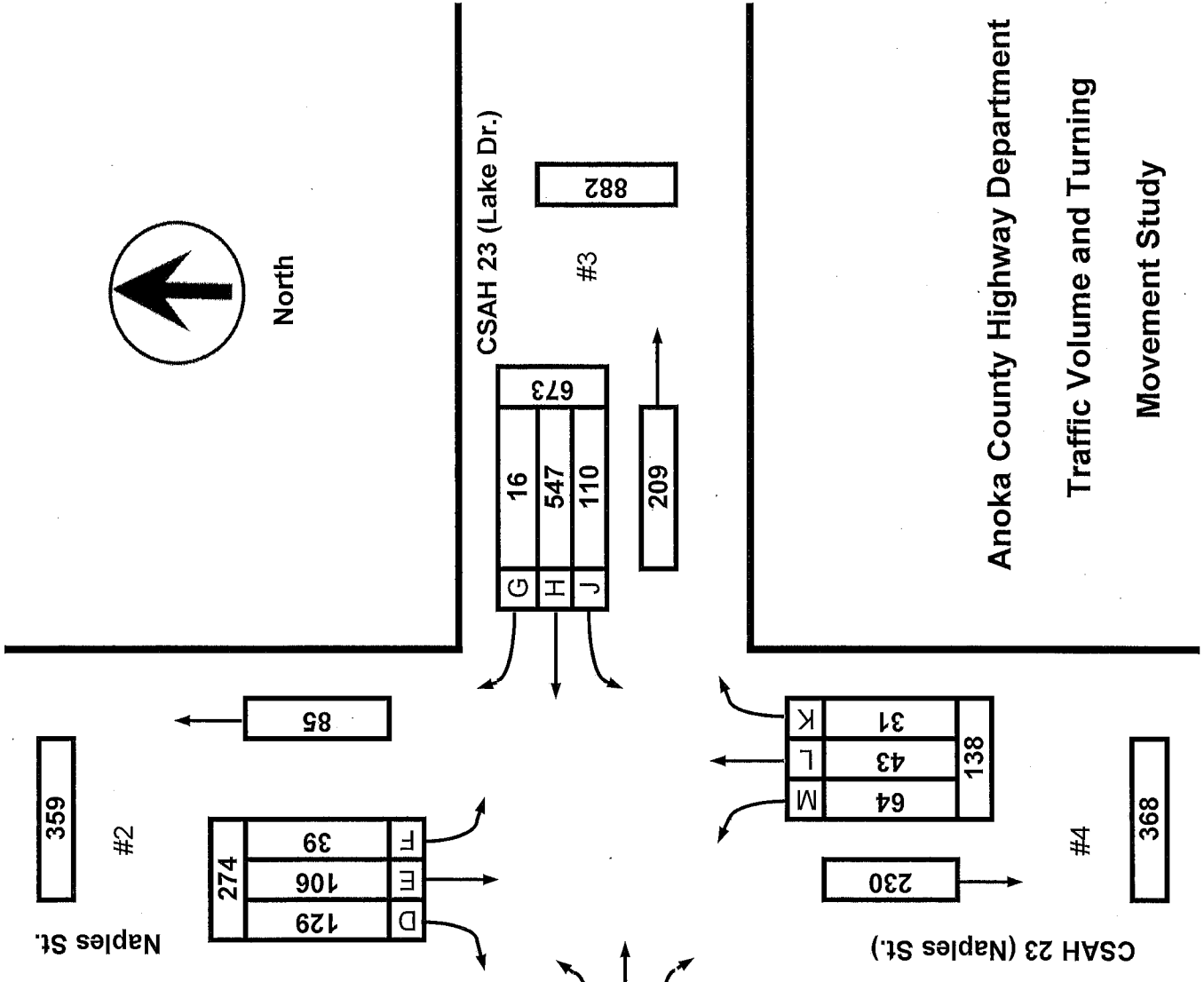
@ CSAH 23 (Naples St.)

Collection Period : AM PEAK

Hour : 7:00 - 8:00 AM



North



I-35W Off Ramp

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

Date : 03/06/14

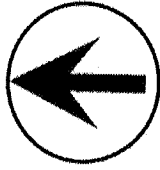
Count Number : TMC1402

Location : CSAH 23 (Lake Dr.)

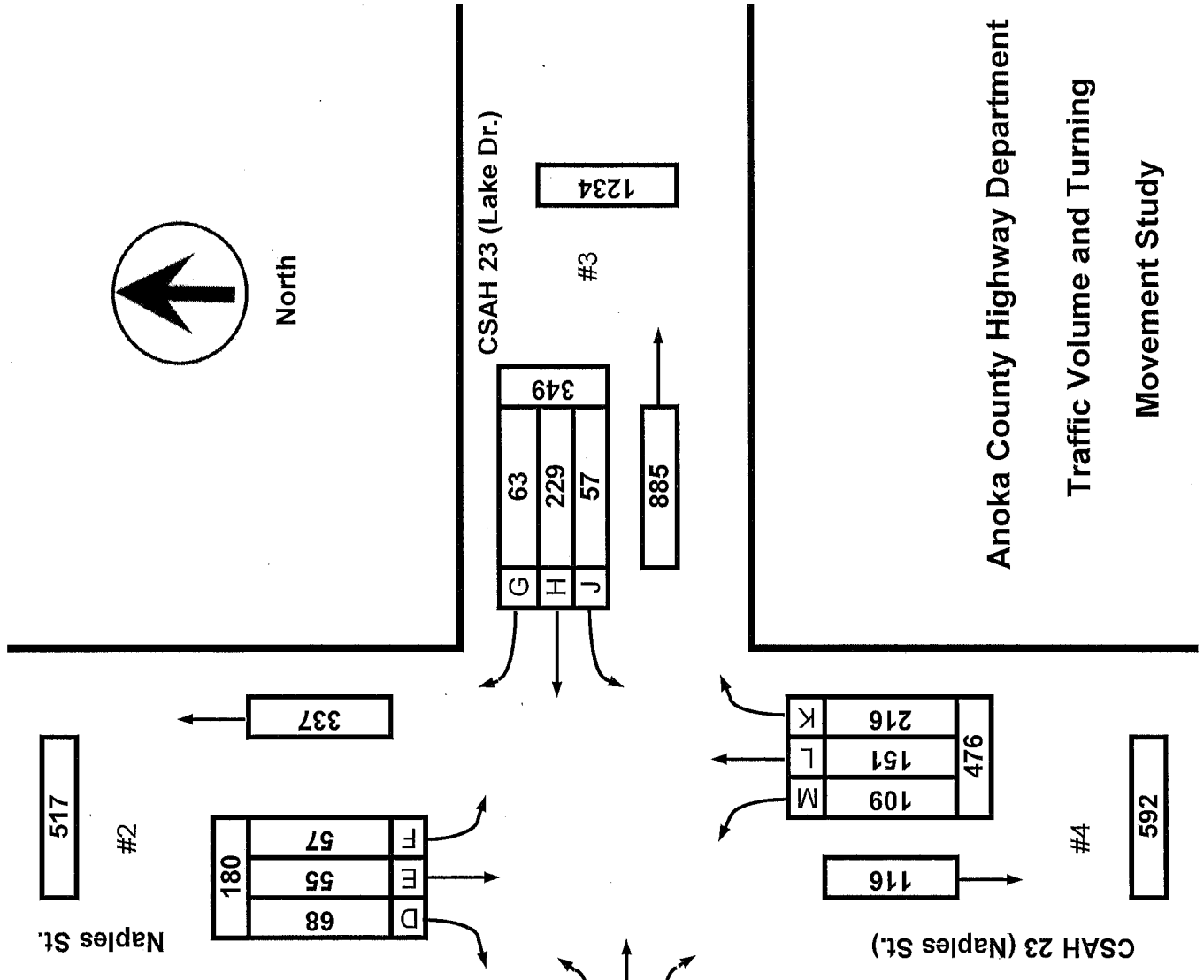
@ CSAH 23 (Naples St.)

Collection Period : PM PEAK

Hour : 4:30 PM - 5:30 PM



North



I-35W Off Ramp

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

File Name : TMC1402

Site Code : 14020202

Start Date : 03/06/2014

Page No : 1

Weather: Cloudy and Cold

Counter: DB-400

study conducted by: Josie/Terri

Groups Printed- Unshifted

Start Time	Naples St. Southbound					CSAH 23 (Lake Dr.) Westbound					CSAH 23 (Naples St.) Northbound					I-35W Off Ramp 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	1	16	34	0	51	13	102	0	6	115	28	2	3	3	33	5	11	3	3	19	12	218	230
06:15	9	15	52	2	76	17	118	0	0	135	23	7	3	5	33	5	14	3	1	22	8	266	274
06:30	6	24	34	0	64	31	133	2	1	166	25	6	7	4	38	2	26	8	6	36	11	304	315
06:45	11	24	39	2	74	17	126	3	3	146	27	11	5	7	43	10	24	7	2	41	14	304	318
Total	27	79	159	4	265	78	479	5	10	562	103	26	18	19	147	22	75	21	12	118	45	1092	1137
07:00	7	20	49	3	76	26	143	2	5	171	19	8	5	3	32	8	29	3	4	40	15	319	334
07:15	10	33	25	2	68	24	129	2	3	155	13	7	5	3	25	9	39	3	2	51	10	299	309
07:30	10	23	30	0	63	31	141	7	5	179	17	17	8	6	42	5	34	3	4	42	15	326	341
07:45	12	30	25	5	67	29	134	5	2	168	15	11	13	8	39	4	37	5	2	46	17	320	337
Total	39	106	129	10	274	110	547	16	15	673	64	43	31	20	138	26	139	14	12	179	57	1264	1321
08:00	12	24	31	2	67	23	102	9	4	134	18	12	15	6	45	6	29	0	1	35	13	281	294
08:15	11	11	22	6	44	27	91	8	4	126	37	15	8	11	60	8	42	3	6	53	27	283	310
08:30	11	16	20	1	47	15	103	5	2	123	25	10	9	9	44	4	34	1	1	39	13	253	266
08:45	14	18	21	4	53	15	85	6	3	106	22	7	10	7	39	11	32	3	4	46	18	244	262
Total	48	69	94	13	211	80	381	28	13	489	102	44	42	33	188	29	137	7	12	173	71	1061	1132

*** BREAK ***

16:00	9	15	16	7	40	12	67	18	1	97	25	29	49	6	103	30	101	2	2	133	16	373	389
16:15	19	9	18	3	46	9	53	20	4	82	28	29	41	3	98	29	116	2	0	147	10	373	383
16:30	12	6	20	3	38	9	60	13	2	82	30	44	57	6	131	24	141	0	3	165	14	416	430
16:45	13	13	16	2	42	16	55	18	3	89	23	27	52	5	102	35	155	2	1	192	11	425	436
Total	53	43	70	15	166	46	235	69	10	350	106	129	199	20	434	118	513	6	6	637	51	1587	1638
17:00	10	13	22	5	45	18	61	18	4	97	31	52	53	4	136	31	139	1	0	171	13	449	462
17:15	22	23	10	2	55	14	53	14	2	81	25	28	54	5	107	33	177	1	2	211	11	454	465
17:30	21	9	21	5	51	8	59	15	2	82	28	28	41	6	97	26	127	1	1	154	14	384	398
17:45	13	10	14	2	37	19	68	9	2	96	14	20	24	1	58	16	116	1	5	133	10	324	334
Total	66	55	67	14	188	59	241	56	10	356	98	128	172	16	398	106	559	4	8	669	48	1611	1659
18:00	19	13	9	3	41	10	50	11	2	71	21	16	23	0	60	26	102	5	5	133	10	305	315
18:15	12	9	13	2	34	11	42	9	3	62	19	14	26	0	59	20	86	3	5	109	10	264	274
18:30	13	10	12	3	35	3	45	3	1	51	15	12	16	7	43	22	74	5	2	101	13	230	243
18:45	17	3	11	0	31	10	43	2	1	55	17	10	19	4	46	10	60	4	3	74	8	206	214
Total	61	35	45	8	141	34	180	25	7	239	72	52	84	11	208	78	322	17	15	417	41	1005	1046
Grand Total	294	387	564	64	1245	407	2063	199	65	2669	545	422	546	119	1513	379	1745	69	65	2193	313	7620	7933
Apprch %	23.6	31.1	45.3			15.2	77.3	7.5			36	27.9	36.1			17.3	79.6	3.1					
Total %	3.9	5.1	7.4		16.3	5.3	27.1	2.6		35	7.2	5.5	7.2		19.9	5	22.9	0.9		28.8	3.9	96.1	

Start Time	Naples St. Southbound				App. Total	CSAH 23 (Lake Dr.) Westbound				App. Total	CSAH 23 (Naples St.) Northbound				App. Total	I-35W Off Ramp 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	7	20	49		76	26	143	2		171	19	8	5		32	8	29	3		40	319
07:15	10	33	25		68	24	129	2		155	13	7	5		25	9	39	3		51	299
07:30	10	23	30		63	31	141	7		179	17	17	8		42	5	34	3		42	326
07:45	12	30	25		67	29	134	5		168	15	11	13		39	4	37	5		46	320
Total Volume	39	106	129		274	110	547	16		673	64	43	31		138	26	139	14		179	1264
% App. Total	14.2	38.7	47.1			16.3	81.3	2.4			46.4	31.2	22.5			14.5	77.7	7.8			
PHF	.813	.803	.658		.901	.887	.956	.571		.940	.842	.632	.596		.821	.722	.891	.700		.877	.969

Peak Hour Analysis From 12:00 to 18:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	12	6	20		38	9	60	13		82	30	44	57		131	24	141	0		165	416
16:45	13	13	16		42	16	55	18		89	23	27	52		102	35	155	2		192	425
17:00	10	13	22		45	18	61	18		97	31	52	53		136	31	139	1		171	449
17:15	22	23	10		55	14	53	14		81	25	28	54		107	33	177	1		211	454
Total Volume	57	55	68		180	57	229	63		349	109	151	216		476	123	612	4		739	1744
% App. Total	31.7	30.6	37.8			16.3	65.6	18.1			22.9	31.7	45.4			16.6	82.8	0.5			
PHF	.648	.598	.773		.818	.792	.939	.875		.899	.879	.726	.947		.875	.879	.864	.500		.876	.960



ANOKA COUNTY HIGHWAY
PC-WARRANTS
TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : **TMC1402**
 Study Date : **03/17/14**
 Page No. : **1**

Signal Warrants - Summary

Major Street Approaches

Eastbound: I-35W Off Ramp

Number of Lanes: 2
 85% Speed > 40 MPH.
 Total Approach Volume: **2,195**

Westbound: CSAH 23 (Lake Dr.)

Number of Lanes: 2
 85% Speed > 40 MPH.
 Total Approach Volume: **2,671**

Minor Street Approaches

Northbound: CSAH 23 (Naples St.)

Number of Lanes: 2
 Total Approach Volume: **1,515**

Southbound: Naples St.

Number of Lanes: 2
 Total Approach Volume: **1,247**

Warrant Summary (Rural values apply.)

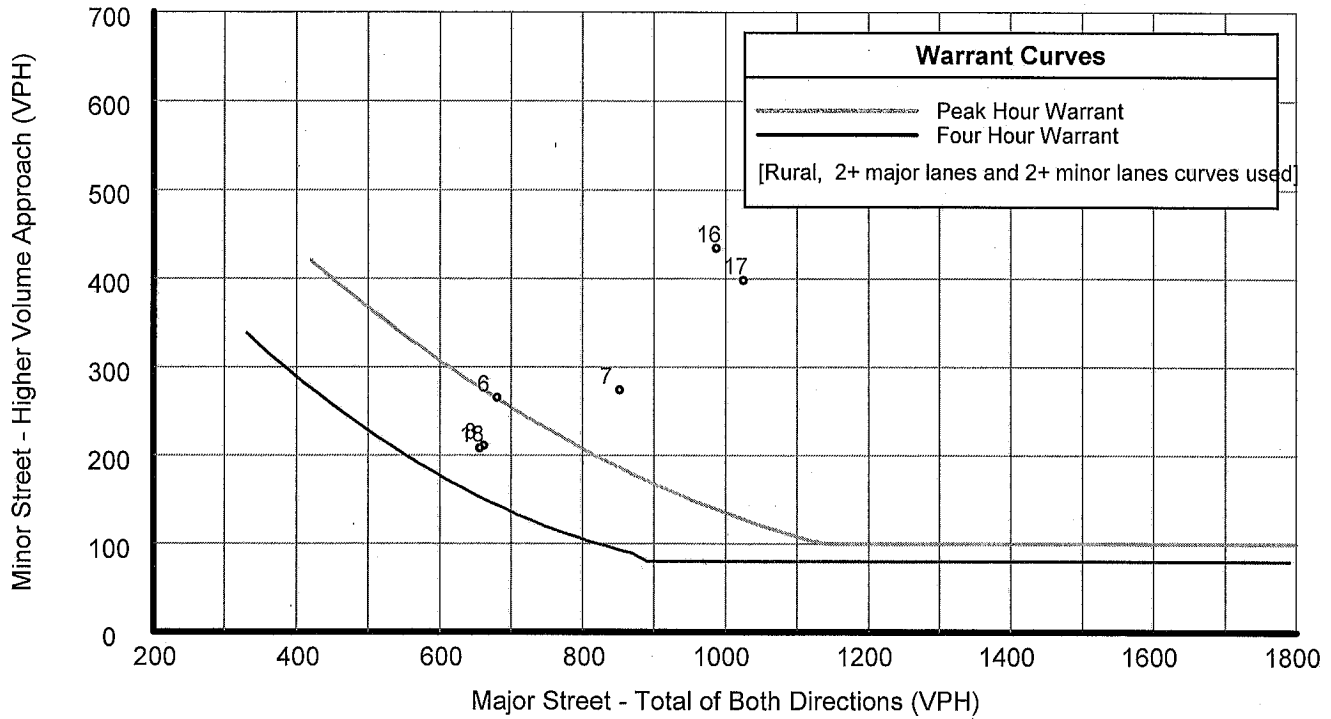
Warrant 1 - Eight Hour Vehicular Volumes	Not Satisfied
Warrant 1A - Minimum Vehicular Volume	Not Satisfied
Required volumes reached for 6 hours, 8 are needed	
Warrant 1B - Interruption of Continuous Traffic	Not Satisfied
Required volumes reached for 6 hours, 8 are needed	
Warrant 1 A&B - Combination of Warrants	Not Satisfied
Required volumes reached for 6 hours, 8 are needed	
Warrant 2 - Four Hour Volumes	Satisfied
Number of hours (6) volumes exceed minimum < minimum required (4).	
Warrant 3 - Peak Hour	Satisfied
Warrant 3A - Peak Hour Delay	Satisfied
Number of hours (14) volumes exceed minimum >= 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
Warrant 9 - Intersection Near a Grade Crossing	Not Evaluated



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

Study Name : **TMC1402**
Study Date : **03/17/14**
Page No. : **2**

Signal Warrants - Summary



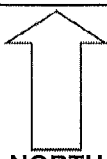
Analysis of 8-Hour Volume Warrants:

War 1A-Minimum Volume

War 1B-Interruption of Traffic

War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 420	Min 140	Hour Begin	Major Total	Minor Vol Dir	Maj 630	Min 70	Hour Begin	Major Total	Minor Vol Dir	Maj 504	Min 112
16:30	1,088	476 NB	Yes	Yes	16:45	1,077	442 NB	Yes	Yes	16:45	1,077	442 NB	Yes	Yes
17:30	840	274 NB	Yes	Yes	07:00	852	274 SB	Yes	Yes	07:00	852	274 SB	Yes	Yes
06:45	825	281 SB	Yes	Yes	17:45	756	220 NB	Yes	Yes	17:45	756	220 NB	Yes	Yes
07:45	724	225 SB	Yes	Yes	15:45	707	332 NB	Yes	Yes	15:45	707	332 NB	Yes	Yes
05:45	493	191 SB	Yes	Yes	06:00	680	265 SB	Yes	Yes	06:00	680	265 SB	Yes	Yes
15:30	461	201 NB	Yes	Yes	08:00	662	211 SB	Yes	Yes	08:00	662	211 SB	Yes	Yes
05:30	291	127 SB	No	No	05:45	493	191 SB	No	Yes	05:45	493	191 SB	No	Yes
18:30	281	89 NB	No	No	15:30	461	201 NB	No	Yes	15:30	461	201 NB	No	Yes
15:15	232	103 NB	No	No	05:30	291	127 SB	No	Yes	05:30	291	127 SB	No	Yes
08:45	153	54 SB	No	No	15:15	232	103 NB	No	Yes	15:15	232	103 NB	No	No
05:15	134	51 SB	No	No	05:15	134	51 SB	No	No	05:15	134	51 SB	No	No
18:45	129	46 NB	No	No	18:45	129	46 NB	No	No	18:45	129	46 NB	No	No
15:00	2	1 SB	No	No	15:00	2	1 SB	No	No	15:00	2	1 SB	No	No
09:30	2	0 SB	No	No	09:30	2	0 SB	No	No	09:30	2	0 SB	No	No
09:15	2	1 SB	No	No	09:15	2	1 SB	No	No	09:15	2	1 SB	No	No
09:00	2	1 SB	No	No	09:00	2	1 SB	No	No	09:00	2	1 SB	No	No
14:45	1	1 SB	No	No	14:45	1	1 SB	No	No	14:45	1	1 SB	No	No
09:45	1	0 SB	No	No	09:45	1	0 SB	No	No	09:45	1	0 SB	No	No
22:45	0	0 SB	No	No	22:45	0	0 SB	No	No	22:45	0	0 SB	No	No
22:30	0	0 SB	No	No	22:30	0	0 SB	No	No	22:30	0	0 SB	No	No
22:15	0	0 SB	No	No	22:15	0	0 SB	No	No	22:15	0	0 SB	No	No
22:00	0	0 SB	No	No	22:00	0	0 SB	No	No	22:00	0	0 SB	No	No
21:45	0	0 SB	No	No	21:45	0	0 SB	No	No	21:45	0	0 SB	No	No
21:30	0	0 SB	No	No	21:30	0	0 SB	No	No	21:30	0	0 SB	No	No



NORTH

COUNT LOCATION:

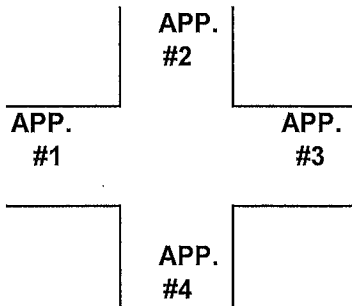
CSAH 23 (Lake Dr.)

DATE:

03/06/2014

@ CSAH 23 (Naples St.)

- APP. #1 = CSAH 23 (Lake Dr)
- APP. #2 = Naples St.
- APP. #3= CSAH 23 (Lake Dr.)
- APP. #4= CSAH 23 (Naples St.)



- 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						11		1
6:15-6:30						5		3
6:30-6:45						9		2
6:45-7:00						10		4
HOURLY TOTAL						HOURLY TOTAL		45
7:00-7:15AM						12		4
7:15-7:30						6		2
7:30-7:45						13		3
7:45-8:00						10		7
HOURLY TOTAL						HOURLY TOTAL		57
8:00-8:15AM						12		1
8:15-8:30						23		4
8:30-8:45						11		2
8:45-9:00						13		5
HOURLY TOTAL						HOURLY TOTAL		71
					TOTAL			173

TIME	PEDESTRIANS					HEAVY VEHICLES			
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS	
4:00-4:15PM						9		7	
4:15-4:30						7		5	
4:30-4:45						11		2	
4:45-5:00			1		1	8		3	
HOURLY TOTAL					1	HOURLY TOTAL		52	
5:00-5:15PM						10		3	
5:15-5:30						8		3	
5:30-5:45						13		1	
5:45-6:00						8		2	
HOURLY TOTAL						HOURLY TOTAL		48	
6:00-6:15PM						5		5	
6:15-6:30						9			
6:30-6:45						13			
6:45-7:00						8			
HOURLY TOTAL						HOURLY TOTAL		40	
					TOTAL	1	TOTAL		140