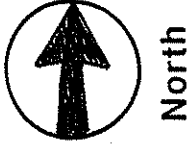


Date 3/3/93 PM 3/5/93 AM

C.S. Location CSAH 18 (CROOKED LAKE BLVD) @ 13TH AVE



SB CSAH 18 (CROOKED LAKE BLVD)

08811

#3

G	1650	5981
H	4205	
J	118	

5899

Anoka County Highway Dept.  
Traffic Volume and Turning  
Movement Study

WB 113TH AVE

#4

390

M	43	178
L	31	
K	104	

220

EB 113TH AVE

3463

#2

D	250	1531
E	39	
F	1242	

4498

#1

9357

A	63	4859
B	4553	
C	243	

NB CSAH 18 (CROOKED LAKE BLVD)

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

DATE 3/5/93AM 3/3/93PM ANOKA COUNTY HIGHWAY DEPARTMENT  
 C.S. TRAFFIC ENGINEERING SECTION

LOCATION CSAH #18 CROOKED LAKE BLVD. AT 113TH

H.V. or PDS H.V. TRAFFIC VOLUME AND  
 TURNING MOVEMENT STUDY

VOLUME & MOVEMENT

LANES OF APPROACH	RIGHT TURN L. LANE		THRU TOTAL		DESCRIPTION	# RT. TURN		THRU LT. TURN		SUB TOTAL		TOTAL
	#	TURN L.	#	TOTAL		#	RT. TURN	#	THRU	#	LT. TURN	
1	1	0	1	2	NORTHBOUND CSAH #18	1	63	4553	243	4859	4498	9357
2	0	0	1	1	EASTBOUND 113 TH AVE	2	250	39	1242	1531	1932	3463
3	1	0	1	2	SOUTHBOUND CSAH #18	3	1658	4205	118	5981	5899	11880
4	0	0	1	1	WESTBOUND 113 TH AVE	4	104	31	43	178	220	398

TIME INTERVALS	NORTHBOUND APPROACH # 1				SOUTHBOUND APPROACH # 3				EASTBOUND APPROACH # 2				WESTBOUND APPROACH # 4									
	TO	TO	TO	TOTAL	TO	TO	TO	TOTAL	TO	TO	TO	TOTAL	TO	TO	TO	TOTAL						
6:00 - 6:15	0	0	5	0	0	0	14	2	16	0	1	0	7	8	0	0	1	0				
6:15 - 6:30	0	0	9	0	1	0	39	8	47	6:00 to	0	2	0	7	9	6:00 to	0	0	1	2		
6:30 - 6:45	1	1	14	0	1	1	46	8	55	7:00	0	6	0	2	8	7:00	2	2	1	4		
6:45 - 7:00	1	0	23	0	5	0	68	16	84	202	0	5	0	9	14	39	0	3	1	0		
7:00 - 7:15	4	2	26	0	3	2	58	16	76	1	10	0	5	15	0	1	0	1	0	2		
7:15 - 7:30	2	2	53	0	6	3	72	32	107	7:00 to	0	8	1	8	17	7:00 to	0	0	2	4		
7:30 - 7:45	5	1	29	1	7	0	79	58	137	8:00	0	11	0	7	18	8:00	0	2	1	1		
7:45 - 8:00	6	3	26	1	30	1	81	131	451	0	7	0	4	11	61	0	1	0	3	4		
8:00 - 8:15	1	0	21	0	3	0	46	26	72	0	6	0	8	14	0	0	1	0	1	2		
8:15 - 8:30	7	1	35	2	38	8:00 to	6	1	42	29	0	9	1	11	8:00 to	0	3	0	1	4		
8:30 - 8:45	6	1	33	0	34	9:00	7	2	51	41	0	6	0	2	8	9:00	1	0	1	2		
8:45 - 9:00	5	2	43	0	45	138	3	1	57	67	125	363	4	27	60	0	0	1	1	11		
9:00 - 9:15	1	2	29	0	31	2	1	54	26	81	1	15	1	4	20	1	1	0	1	2		
9:15 - 9:30	3	1	52	0	53	9:00 to	1	0	65	14	1	12	0	2	14	9:00 to	0	1	0	0		
9:30 - 9:45	0	3	49	1	53	10:00	1	2	57	34	93	10:00	0	6	0	6	10:00	0	0	1	0	
9:45 - 10:00	6	4	49	0	53	190	2	2	70	51	123	376	1	22	0	3	25	65	0	0	0	
10:00 - 10:15	2	2	59	0	61	4	2	45	24	71	1	15	0	2	17	0	0	1	1	2		
10:15 - 10:30	0	2	55	1	58	10:00 to	2	5	56	20	81	10:00 to	0	12	0	2	14	10:00 to	0	0	0	1
10:30 - 10:45	3	3	64	1	68	11:00	1	1	52	25	78	11:00	1	12	0	0	12	11:00	0	0	0	3
10:45 - 11:00	2	4	69	0	73	260	3	0	64	29	93	323	1	32	1	1	34	77	0	0	0	1
11:00 - 11:15	1	3	77	1	81	2	1	72	24	97	1	16	0	7	23	0	0	0	1	1		
11:15 - 11:30	2	8	84	0	92	11:00 to	2	2	77	17	96	11:00 to	0	16	1	4	21	11:00 to	0	0	0	1
11:30 - 11:45	4	0	80	2	86	12:00	1	0	80	37	117	12:00	0	13	2	5	20	12:00	0	0	0	1
11:45 - 12:00	3	7	78	0	85	344	1	1	77	24	102	412	1	33	0	2	35	99	0	0	0	1
12:00 - 12:15	5	5	84	3	92	1	1	83	27	111	0	27	0	2	29	0	0	0	0	0		
12:15 - 12:30	3	6	87	4	97	12:00 to	3	2	69	22	93	12:00 to	0	16	0	4	20	12:00 to	0	4	1	1
12:30 - 12:45	3	0	81	1	82	1:00	4	1	76	32	109	1:00	0	32	2	5	39	1:00	0	3	0	3
12:45 - 1:00	3	4	76	3	83	354	3	1	67	28	96	409	0	40	1	5	46	134	0	1	0	1
1:00 - 1:15	3	5	93	0	98	3	1	83	28	112	1	32	1	1	34	0	0	0	1	1		
1:15 - 1:30	2	6	99	1	106	1:00 to	2	2	74	21	97	1:00 to	1	24	1	4	29	1:00 to	0	0	0	2
1:30 - 1:45	1	0	73	1	74	2:00	0	0	68	31	99	2:00	3	21	1	6	28	2:00	0	0	0	3
1:45 - 2:00	1	3	86	1	90	368	2	1	71	26	98	406	1	39	0	6	45	136	0	0	0	0
2:00 - 2:15	3	4	98	3	105	1	3	70	10	83	0	40	3	2	45	0	3	1	2	6		

TIME INTERVALS

NORTHBOUND APPROACH # 1

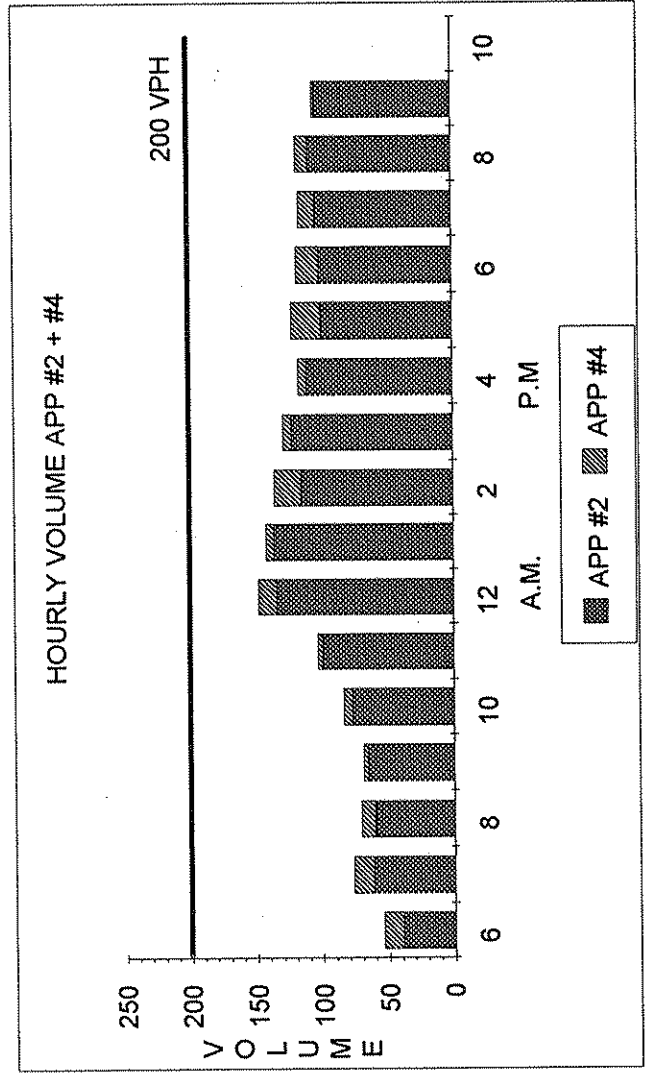
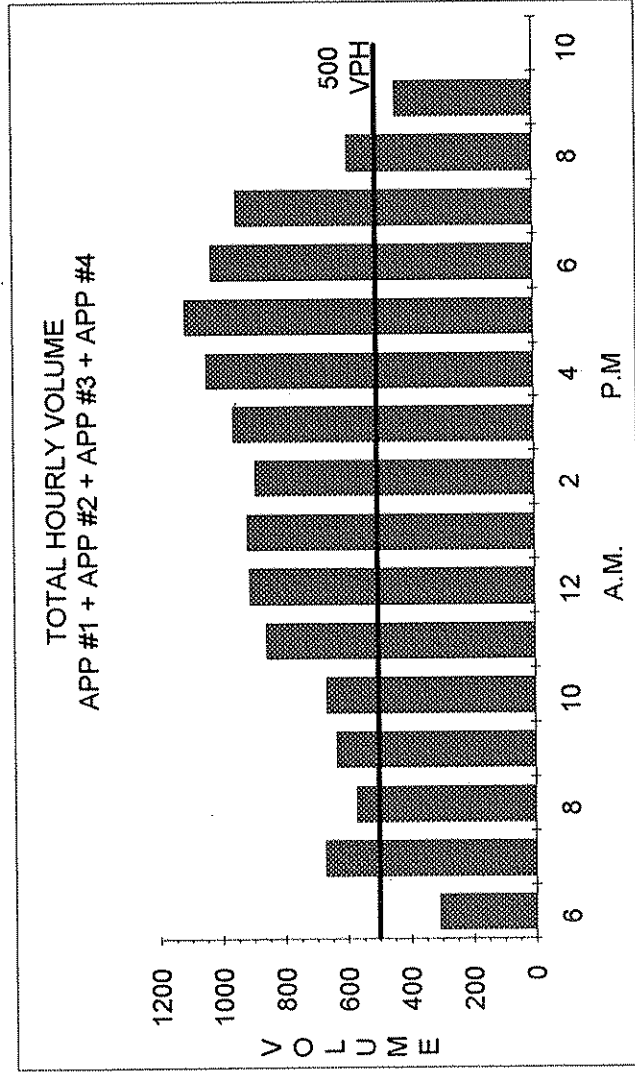
SOUTHBOUND APPROACH # 3

EASTBOUND APPROACH # 2

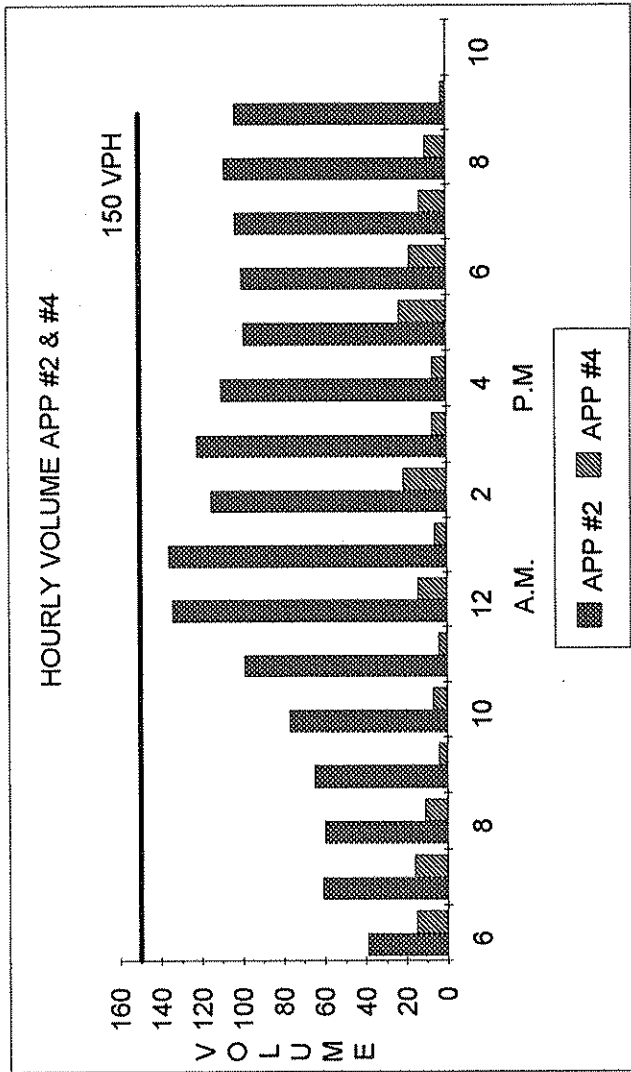
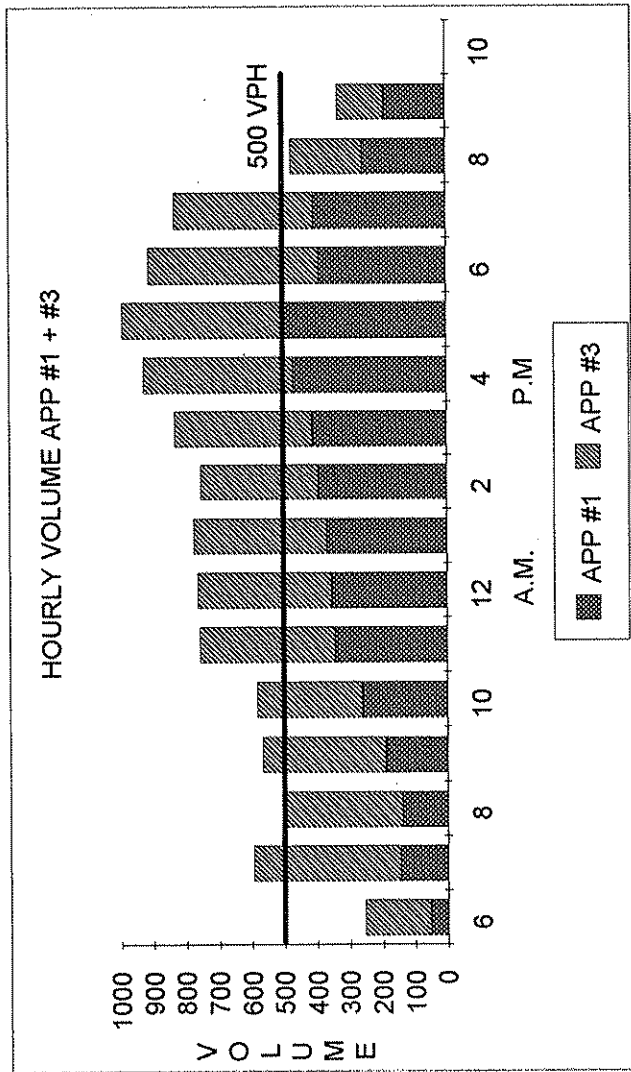
WESTBOUND APPROACH # 4

TIME INTERVALS	NORTHBOUND APPROACH # 1			SOUTHBOUND APPROACH # 3			EASTBOUND APPROACH # 2			WESTBOUND APPROACH # 4																							
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT																					
2:15 - 2:30	2	0	102	4	2	65	23	90	2:00 to	0	18	0	3	21	2:00 to	0	0	1	0	1	2:00 to	0	0	1	0								
2:30 - 2:45	5	4	87	2	4	70	26	100	3:00	3	20	0	6	26	3:00	1	1	3	3	7	3:00	1	1	3	3								
2:45 - 3:00	2	2	89	0	91	393	87	360	360	0	17	2	4	23	115	1	1	3	4	7	3:00	1	1	3	4								
3:00 - 3:15	4	10	81	1	92	2	71	25	98	0	39	0	6	45	1	1	1	0	2	3	3:00	1	1	0	2	3							
3:15 - 3:30	5	6	94	2	102	3:00 to	3	4	68	31	103	3:00 to	1	25	0	2	27	3:00 to	0	0	0	1	1	3:00 to	0	0	1						
3:30 - 3:45	5	8	109	2	119	4:00	1	1	78	23	102	4:00	2	22	1	4	27	4:00	0	0	0	0	0	0	4:00	0	0	0					
3:45 - 4:00	3	5	91	1	97	410	118	421	421	0	14	1	8	23	122	0	0	0	1	2	3	4:00	0	0	1	2	3						
4:00 - 4:15	2	4	111	4	119	3	1	78	30	109	0	24	0	2	26	0	0	0	0	0	0	0	0	0	0	0	0	0					
4:15 - 4:30	1	5	110	2	117	4:00 to	2	1	87	28	116	4:00 to	0	30	3	5	38	4:00 to	0	0	2	0	0	2	0	2	4:00 to	0	0	2	0		
4:30 - 4:45	3	5	96	0	101	5:00	0	2	90	22	114	5:00	0	24	0	3	27	5:00	0	0	0	3	0	0	3	3	5:00	0	0	0	3		
4:45 - 5:00	1	6	123	3	132	469	1	3	92	24	119	458	0	16	0	3	19	110	0	0	1	1	0	1	1	2	7	4					
5:00 - 5:15	0	12	114	0	126	0	2	90	26	118	0	22	1	3	26	0	1	0	3	4	0	1	0	3	4	4	4						
5:15 - 5:30	0	5	129	2	136	5:00 to	0	0	89	27	116	5:00 to	0	18	0	5	23	5:00 to	0	1	0	6	0	1	0	6	7	5:00 to	0	1	0	6	
5:30 - 5:45	1	12	119	2	133	6:00	2	8	85	29	122	6:00	0	17	4	6	27	6:00	0	4	1	1	0	1	1	2	6	6:00	0	4	1	1	
5:45 - 6:00	0	9	96	0	105	500	0	4	96	35	135	491	0	15	1	7	23	99	0	2	1	3	0	2	1	3	6	6:00	0	2	1	3	
6:00 - 6:15	1	3	119	0	122	0	0	97	57	154	0	20	1	5	26	0	0	0	2	2	0	2	1	0	2	2	2	6	6:00	0	2	1	3
6:15 - 6:30	0	6	74	1	81	6:00 to	1	7	98	53	158	6:00 to	0	18	2	2	22	6:00 to	0	0	1	6	0	0	1	6	7	6:00 to	0	0	1	6	
6:30 - 6:45	1	1	89	1	91	7:00	0	5	95	27	127	7:00	0	25	0	6	31	7:00	0	1	0	6	0	1	0	6	7	6:00 to	0	1	0	6	
6:45 - 7:00	0	2	93	0	95	389	0	1	61	20	82	521	0	17	0	4	21	100	0	0	0	2	0	0	2	2	18	7:00	0	0	0	2	
7:00 - 7:15	0	5	94	1	100	0	5	86	20	111	0	17	0	4	21	0	0	1	5	6	0	0	1	5	6	6	7:00	0	0	1	5		
7:15 - 7:30	0	5	99	2	106	7:00 to	0	2	91	25	118	7:00 to	2	22	0	3	25	7:00 to	0	2	0	1	0	2	0	1	3	7:00 to	0	2	0	1	
7:30 - 7:45	0	5	93	1	99	8:00	0	6	91	19	116	8:00	0	26	0	0	26	8:00	0	0	0	1	0	0	1	1	1	8:00	0	0	0	1	
7:45 - 8:00	0	4	95	1	100	405	0	2	72	8	82	427	1	23	0	8	31	103	0	1	1	1	1	1	1	3	13	8:00	0	1	1	1	
8:00 - 8:15	1	4	62	0	66	0	1	53	11	65	0	21	2	4	27	0	0	1	0	1	0	1	0	1	0	1	1	8:00	0	0	1	0	
8:15 - 8:30	0	3	65	0	68	8:00 to	0	0	36	15	51	8:00 to	0	17	1	3	21	8:00 to	0	0	1	2	0	0	1	2	3	8:00 to	0	0	1	2	
8:30 - 8:45	0	4	54	3	61	9:00	1	4	31	16	51	9:00	0	31	1	3	35	9:00	1	1	1	2	1	1	2	4	9:00	1	1	1	2		
8:45 - 9:00	0	8	52	0	60	255	0	3	34	14	51	218	0	21	1	3	25	108	0	0	0	2	0	0	2	2	10	9:00	0	0	2	2	
9:00 - 9:15	0	1	45	1	47	0	1	31	11	43	0	24	1	2	27	0	0	1	1	1	0	0	0	1	1	1	1	9:00	0	0	1	1	
9:15 - 9:30	0	2	48	0	50	9:00 to	1	1	27	14	42	9:00 to	0	27	0	0	27	9:00 to	0	0	0	0	0	0	0	0	0	9:00 to	0	0	0	0	
9:30 - 9:45	1	5	48	1	54	10:00	0	1	23	9	33	10:00	0	30	0	2	32	10:00	0	0	0	0	0	0	0	0	0	10:00	0	0	0	0	
9:45 - 10:00	0	3	33	1	37	188	0	1	20	4	25	143	0	16	0	1	17	103	0	1	0	0	1	0	0	1	1	2	10:00	0	1	0	0

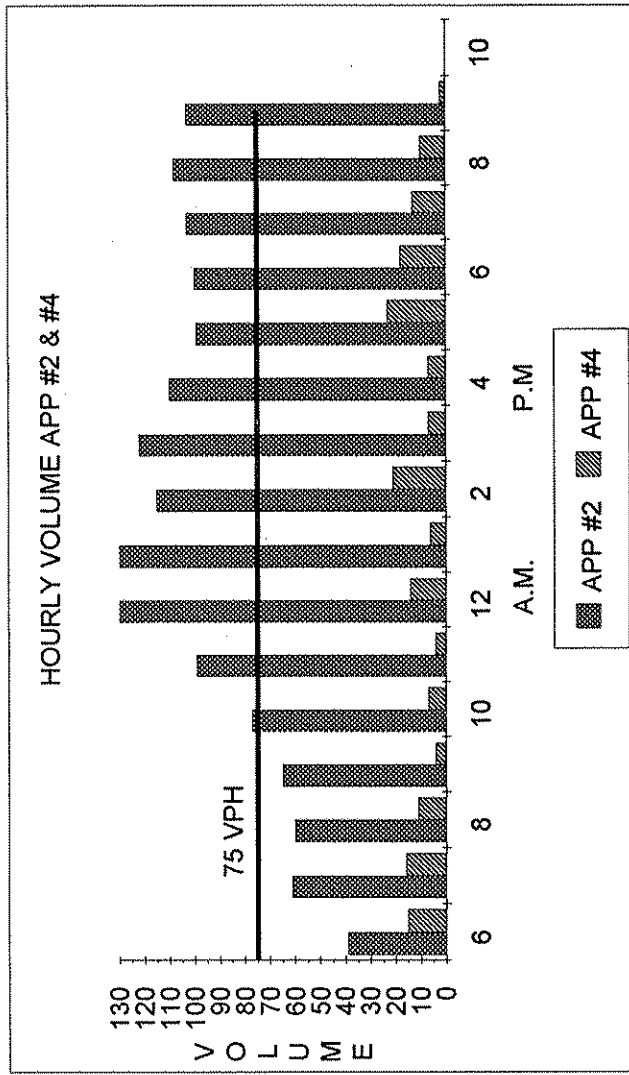
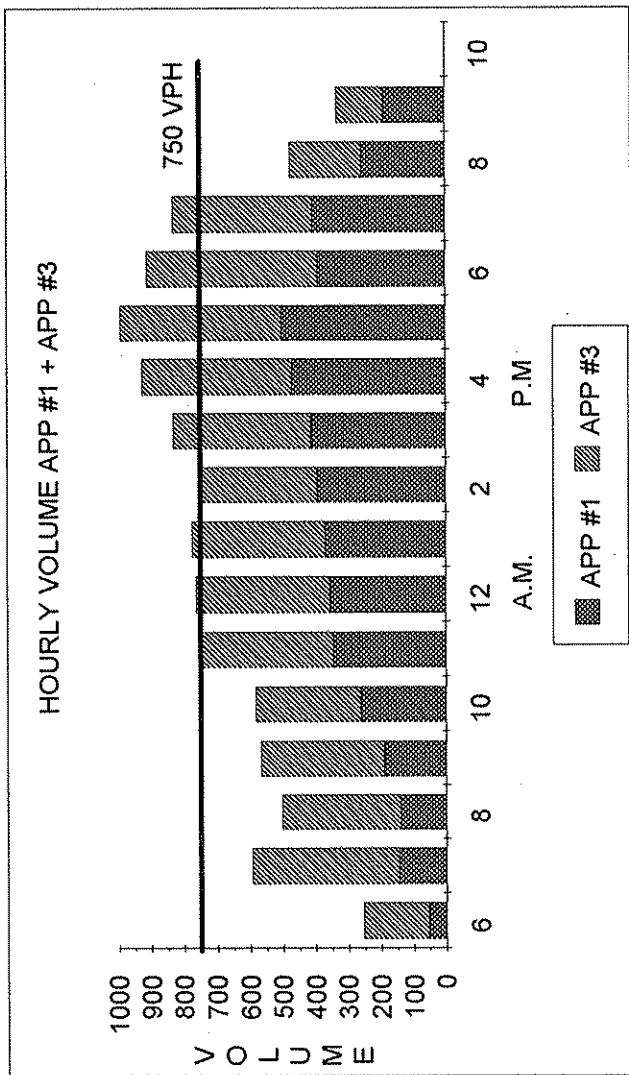
TMC9304 STOP WARRANT STUDY



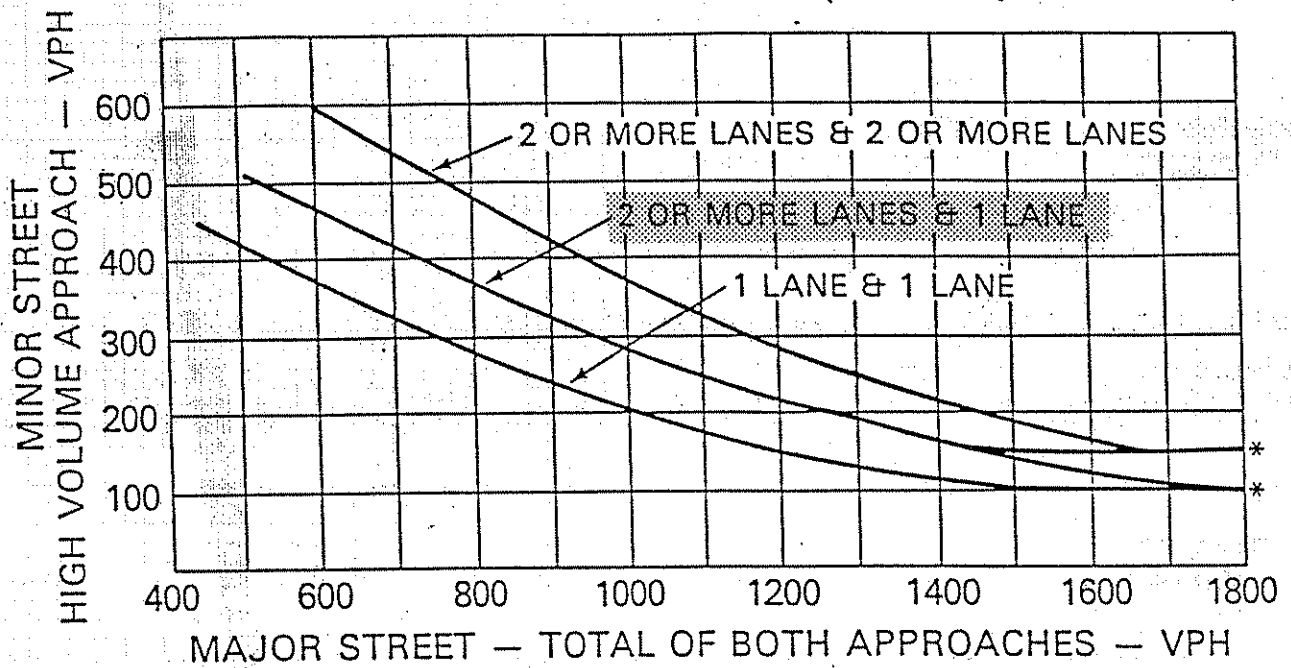
TMC 9304 SIGNAL WARRANT 1 STUDY



TMC9304 SIGNAL WARRANT 2 STUDY



# FIGURE 4-5. PEAK HOUR VOLUME WARRANT



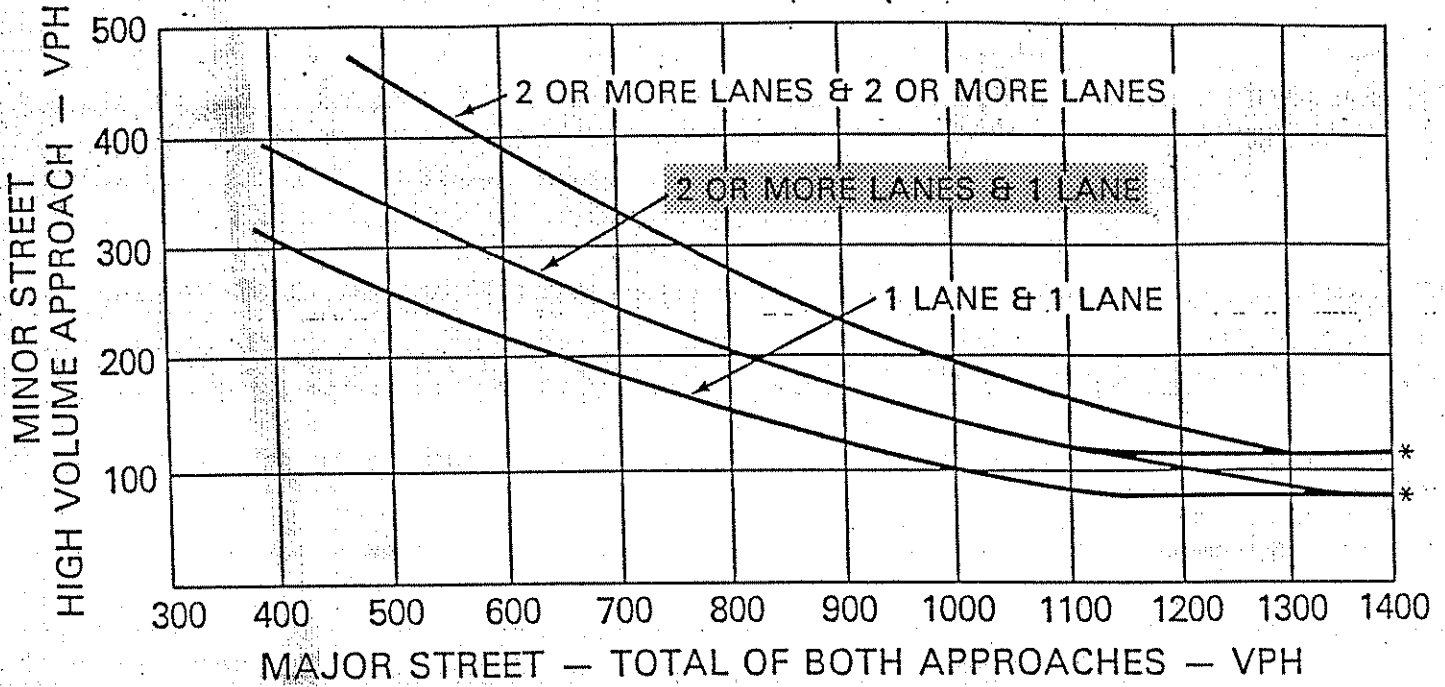
\*NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

● = VOLUMES WHICH EXCEED THE THRESHOLD AND ARE REPRESENTED ON THE GRAPH.

★ = VOLUMES WHICH EXCEED THE THRESHOLD BUT CANNOT BE REPRESENTED ON THE GRAPH.

TIME	MAJOR STREETS (VPH)	MINOR STREET (VPH)
6-7 am	254	39
7-8 am	595	61
8-9 am	501	60
9-10 am	566	65
10-11 am	583	77
11-12 pm	756	99
12-1 pm	763	134
1-2 pm	774	136
2-3 pm	753	115
3-4 pm	831	122
4-5 pm	927	110
5-6 pm	991	99
6-7 pm	910	100
7-8 pm	832	103
8-9 pm	473	108
9-10 pm	331	103

# FIGURE 4-7. FOUR HOUR VOLUME WARRANT



\*NOTE: 115 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

● = VOLUMES WHICH EXCEED THE THRESHOLD AND ARE REPRESENTED ON THE GRAPH.

★ = VOLUMES WHICH EXCEED THE THRESHOLD BUT CANNOT BE REPRESENTED ON THE GRAPH.

TIME	MAJOR STREETS (VPH)	MINOR STREET (VPH)
6-7 am	254	39
7-8 am	595	61
8-9 am	501	60
9-10 am	566	65
10-11 am	583	77
11-12 pm	756	99
12-1 pm	763	134
1-2 pm	774	136
2-3 pm	753	115
3-4 pm	831	122
4-5 pm	927	110
5-6 pm	991	99
6-7 pm	910	100
7-8 pm	832	103
8-9 pm	473	108
9-10 pm	331	103





**NORTH**

APP. #1= WB 113th AVE

APP. #2= NB CSAH 18  
(CROOKED LAKE BLVD)

APP. #3= EB 113th AVE

APP. #4= SB CSAH 18  
(CROOKED LAKE BLVD)

**COUNT LOCATION:** CSAH 18 (CROOKED LK BLVD) @  
113th AVE

**DATE:** 3/5/93

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
6:00-6:15AM								
6:15-6:30						1		
6:30-6:45						3		1
6:45-7:00						3		3
<b>HOURLY TOTAL</b>								<b>11</b>
7:00-7:15	1				1	3		5
7:15-7:30						1		7
7:30-7:45						5		7
7:45-8:00						2		6
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>36</b>
8:00-8:15	1		1		2	2		2
8:15-8:30			1		1	5		8
8:30-8:45						1		13
8:45-9:00						5		3
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>39</b>
9:00-9:15						5		
9:15-9:30						4		
9:30-9:45						2		
9:45-10:00						9		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>20</b>
10:00-10:15		1			1	6		1
10:15-10:30						3		
10:30-10:45			1		1	3		1
10:45-11:00						4		2
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>20</b>
11:00-11:15						3		1
11:15-11:30						4		
11:30-11:45			1		1	1		
11:45-12:00			2		2	5		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>14</b>
12:00-12:15		1	1		2	6		1
12:15-12:30				1	1	4	1	2
12:30-12:45						3		3
12:45-1:00								3
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>23</b>
1:00-1:15						5	1	1
1:15-1:30	1				1	4		1
1:30-1:45						4		
1:45-2:00						3		1
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>20</b>