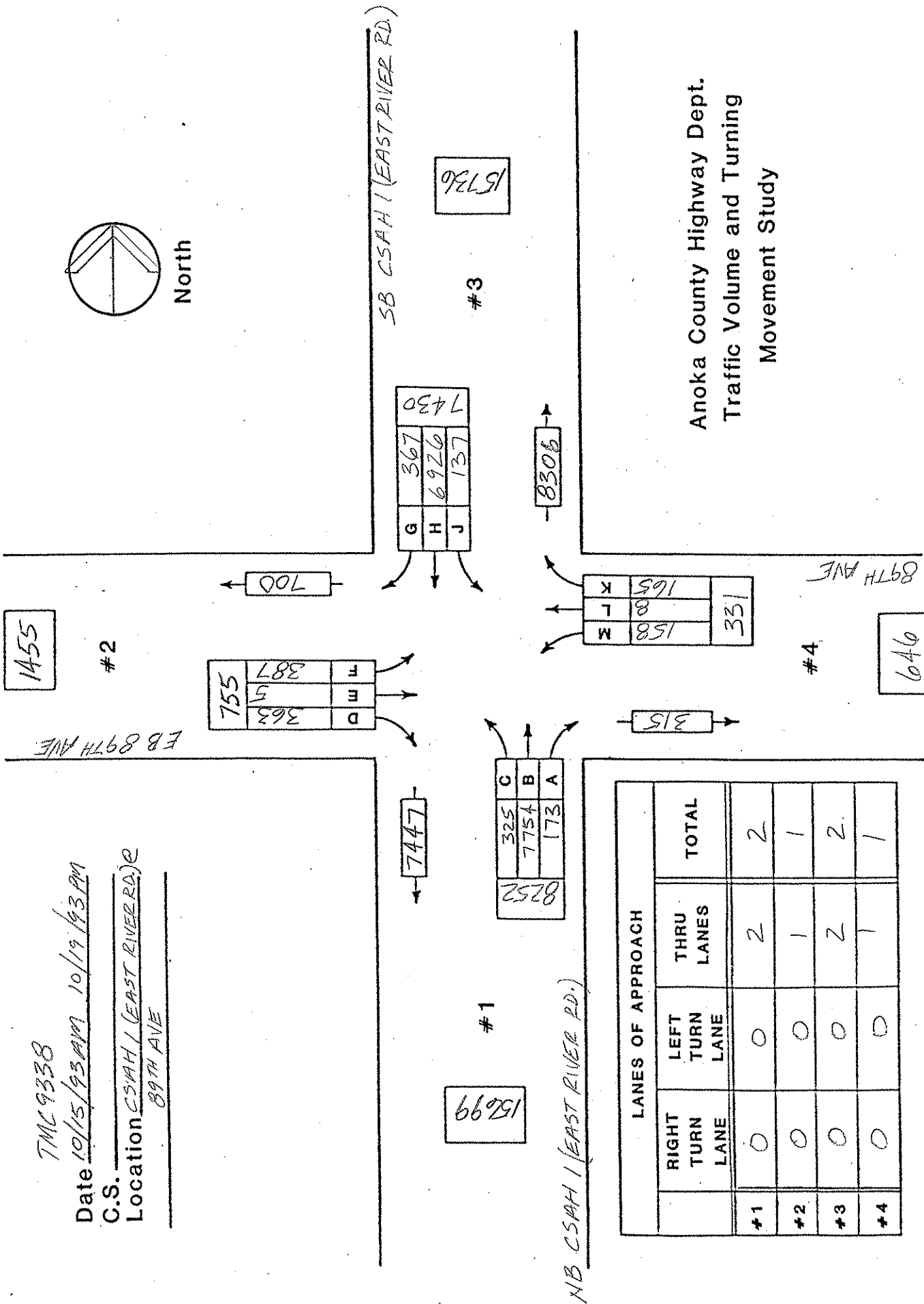


North

Anoka County Highway Dept.  
Traffic Volume and Turning  
Movement Study



1455

#2

EB 89TH AVE

755	363	D
5		W
387		L

7447

#1

15699

8252	A	173
	B	7754
	C	325

7430	J	137
	H	6926
	G	367

#3

15736

8306

331	M	158
	L	8
	K	165

#4

646

WB 89TH AVE

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

TMC 9338  
Date 10/15/93 AM 10/19/93 AM  
C.S. Location CSAH 1 (EAST RIVER RD.)  
89TH AVE

ANOKA COUNTY HIGHWAY DEPARTMENT  
 TRAFFIC ENGINEERING SECTION  
 TRAFFIC VOLUME AND  
 TURNING MOVEMENT STUDY

Site Code : 93380101  
 Start Date: 10/19/93  
 File I.D. : TMC9338)  
 Page : 1

WEATHER: CLEAR/70 CLEAR/75  
 cer : TDC EIGHT  
 led by Naomi/Eileen

Vehicle group 1

Date	CSAH 1 (EAST RIVER RD) Southbound				189TH AVE. Westbound				CSAH 1 (EAST RIVER RD) Northbound				189TH AVE. Eastbound				Vehicle Total	Other Total
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left		
10/19/93	-----																	
06:00	2	1	103	2	0	3	0	3	0	0	20	1	0	11	0	9	153	2
06:15	6	2	191	1	0	3	0	4	0	0	30	1	0	8	1	5	246	6
06:30	5	4	284	2	0	4	0	12	0	1	28	2	1	13	0	12	362	6
06:45	5	3	355	1	0	5	0	4	1	1	52	1	1	6	0	7	435	7
Hr Total	18	10	933	6	0	15	0	23	1	2	130	5	2	38	1	33	1196	21
07:00	5	6	304	0	0	6	0	5	4	0	50	6	0	10	0	8	395	9
07:15	10	3	418	0	0	1	0	8	2	0	82	1	2	5	0	8	526	14
07:30	3	5	357	0	0	5	1	3	3	2	81	5	1	8	0	5	472	7
07:45	5	4	340	2	0	4	0	10	4	1	93	2	0	12	0	8	476	9
Hr Total	23	18	1419	2	0	16	1	26	13	3	306	14	3	35	0	29	1869	39
08:00	7	10	187	1	0	3	0	3	4	0	62	7	2	11	0	4	288	13
08:15	6	17	99	0	0	5	0	7	3	0	50	8	1	5	0	5	196	11
08:30	7	12	98	2	0	3	0	1	5	0	63	3	2	6	0	4	192	14
08:45	13	17	86	1	0	2	0	2	9	3	65	8	3	1	0	7	192	23
Hr Total	33	56	470	4	0	13	0	13	21	3	240	26	8	23	0	20	868	62
09:00	10	17	79	0	0	6	0	3	3	4	52	16	11	13	0	24	214	23
09:15	4	10	71	6	1	3	0	4	3	0	54	6	3	6	1	8	169	11
09:30	6	11	69	1	0	4	1	2	4	3	70	4	2	9	0	7	181	11
09:45	6	4	83	1	0	2	1	1	6	1	63	5	0	4	0	5	170	11
Hr Total	26	42	302	8	1	15	2	10	16	8	239	31	16	32	1	44	734	59
10:00	1	4	64	3	0	0	0	0	3	0	58	7	0	4	0	1	141	11
10:15	4	2	67	2	0	2	0	3	6	1	65	1	0	3	0	5	151	11
10:30	4	4	56	3	0	1	0	1	2	2	63	1	0	4	0	4	139	11
10:45	2	9	61	2	1	2	0	2	8	1	69	1	0	5	0	3	155	11
Hr Total	11	19	248	10	1	5	0	6	19	4	255	10	0	16	0	13	586	31
11:00	2	2	71	1	2	4	0	2	6	2	66	5	0	3	0	4	160	11
11:15	2	3	67	3	0	1	0	3	2	2	56	7	1	2	0	8	152	11
11:30	2	6	52	0	0	1	0	0	3	1	62	6	1	4	0	4	136	11
11:45	5	4	61	0	0	1	0	2	6	4	85	1	1	3	0	3	164	11
Hr Total	11	15	251	4	2	7	0	7	17	9	269	19	3	12	0	19	612	33
12:00	4	6	63	0	1	1	1	1	4	2	69	3	1	6	0	7	159	11
12:15	2	1	61	1	0	1	0	2	2	0	79	4	1	4	1	4	158	11
12:30	5	3	74	5	0	2	0	3	3	1	80	6	1	2	0	6	182	11
12:45	4	4	84	1	1	3	0	4	6	4	87	10	0	7	0	4	208	11
Hr Total	15	14	282	7	2	7	1	10	15	7	315	23	3	19	1	21	707	33

ANOKA COUNTY HIGHWAY DEPARTMENT  
TRAFFIC ENGINEERING SECTION  
TRAFFIC VOLUME AND  
TURNING MOVEMENT STUDY

Site Code : 93380101  
Start Date: 10/19/93  
File I.D. : TMC93381  
Page : 2

WEATHER: CLEAR/70 CLEAR/75  
Operator : TDC EIGHT  
Checked by Naomi/Eileen

Vehicle group 1

Date	CSAH 1 (EAST RIVER RD) Southbound				189TH AVE. Westbound				CSAH 1 (EAST RIVER RD) Northbound				189TH AVE. Eastbound				Vehicle Total	Other Total	
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left			
10/19/93																			
13:00	5	3	69	2	0	0	0	1	4	0	79	7	2	7	0	4	172	11	
13:15	4	5	85	0	0	1	0	0	5	5	74	4	0	7	0	1	182	9	
13:30	3	3	84	3	0	4	1	3	0	0	66	5	0	2	1	0	172	3	
13:45	2	5	78	1	0	3	0	2	6	1	84	0	0	4	0	6	184	8	
Hr Total	14	16	316	6	0	8	1	6	15	6	303	16	2	20	1	11	710	31	
14:00	9	6	95	0	0	2	0	4	5	6	94	3	0	2	0	4	216	14	
14:15	5	5	99	4	0	4	0	2	4	0	107	6	0	4	0	7	238	9	
14:30	4	4	94	0	0	2	1	2	9	1	115	3	0	1	0	8	231	13	
14:45	8	2	111	0	0	2	0	1	6	7	145	10	0	6	0	8	292	14	
Hr Total	26	17	399	4	0	10	1	9	24	14	461	22	0	13	0	27	977	50	
15:00	5	3	115	6	1	2	0	4	3	1	160	6	0	3	0	2	302	9	
15:15	3	4	92	4	0	2	0	2	7	6	195	5	1	4	0	6	320	11	
15:30	2	4	80	5	1	3	0	1	1	3	239	7	1	3	0	7	352	5	
15:45	3	7	85	1	0	4	0	2	3	6	257	6	0	4	0	5	377	6	
Hr Total	13	18	372	16	2	11	0	9	14	16	851	24	2	14	0	20	1351	31	
16:00	3	8	86	3	0	3	0	1	2	7	249	5	0	11	0	5	378	5	
16:15	4	7	87	3	1	4	0	1	3	11	310	5	0	8	0	9	445	6	
16:30	2	4	94	4	0	1	0	2	2	6	272	9	0	14	0	2	408	4	
16:45	1	4	95	2	0	7	0	3	7	6	368	11	0	7	0	11	514	6	
Hr Total	10	23	362	12	1	15	0	7	14	30	1199	30	0	40	0	27	1745	25	
17:00	3	6	98	4	0	2	0	1	2	3	417	3	0	11	0	10	555	5	
17:15	3	8	100	4	0	1	1	6	2	8	368	4	0	8	0	8	516	5	
17:30	0	6	102	4	0	3	0	1	5	7	423	8	0	13	0	9	576	5	
17:45	4	5	101	3	0	5	0	4	2	7	283	5	0	5	1	10	429	6	
Hr Total	10	25	401	15	0	11	1	12	11	25	1491	20	0	37	1	37	2076	21	
18:00	1	6	91	5	0	3	0	4	1	3	218	6	0	7	0	4	347	3	
18:15	0	7	111	2	0	3	0	3	3	3	169	5	0	11	0	12	326	3	
18:30	0	10	94	6	0	4	0	3	1	3	138	7	0	8	0	8	281	3	
18:45	1	9	111	3	0	3	0	5	1	6	108	10	0	5	0	8	268	3	
Hr Total	2	32	407	16	0	13	0	15	6	15	633	28	0	31	0	32	1222	8	
19:00	0	12	100	3	0	7	0	2	0	4	121	8	0	4	0	5	266	3	
19:15	0	5	80	2	0	1	0	1	0	1	104	6	0	2	0	10	212	3	
19:30	1	3	84	2	0	2	0	0	0	2	85	6	0	2	0	3	189	3	
19:45	1	10	72	1	0	0	0	0	1	3	100	3	0	3	0	1	193	3	
Hr Total	2	30	336	8	0	10	0	3	1	10	410	23	0	11	0	19	860	3	

ANOKA COUNTY HIGHWAY DEPARTMENT  
 TRAFFIC ENGINEERING SECTION  
 TRAFFIC VOLUME AND  
 TURNING MOVEMENT STUDY

Site Code : 93380101  
 Start Date: 10/19/93  
 File I.D. : TMC93383  
 Page : 3

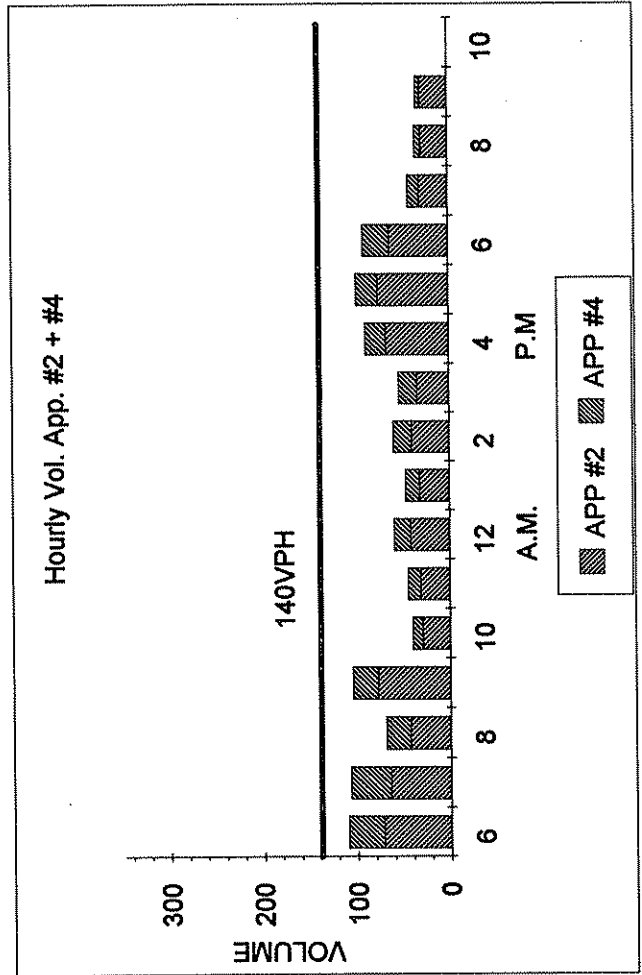
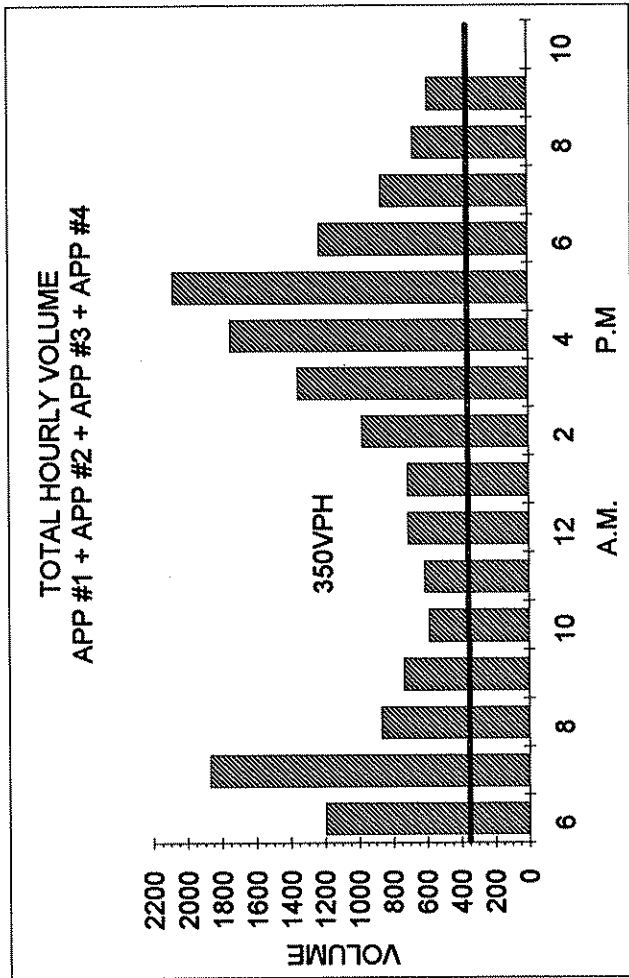
WEATHER: CLEAR/70 CLEAR/75  
 Date: 10/19/93  
 Prepared by: TDC EIGHT  
 Checked by: Naomi/Eileen

Vehicle group 1

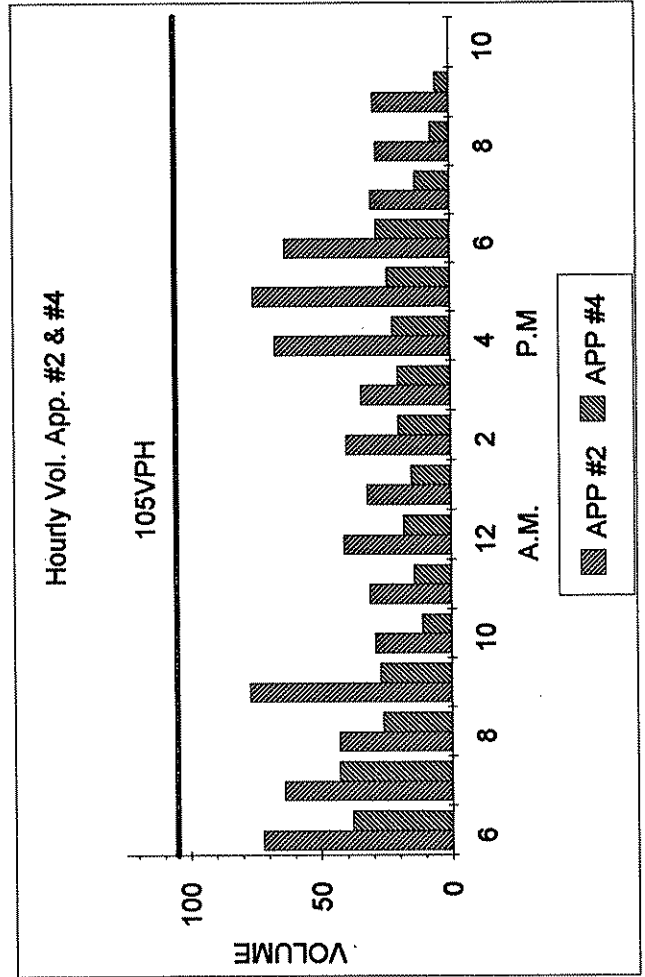
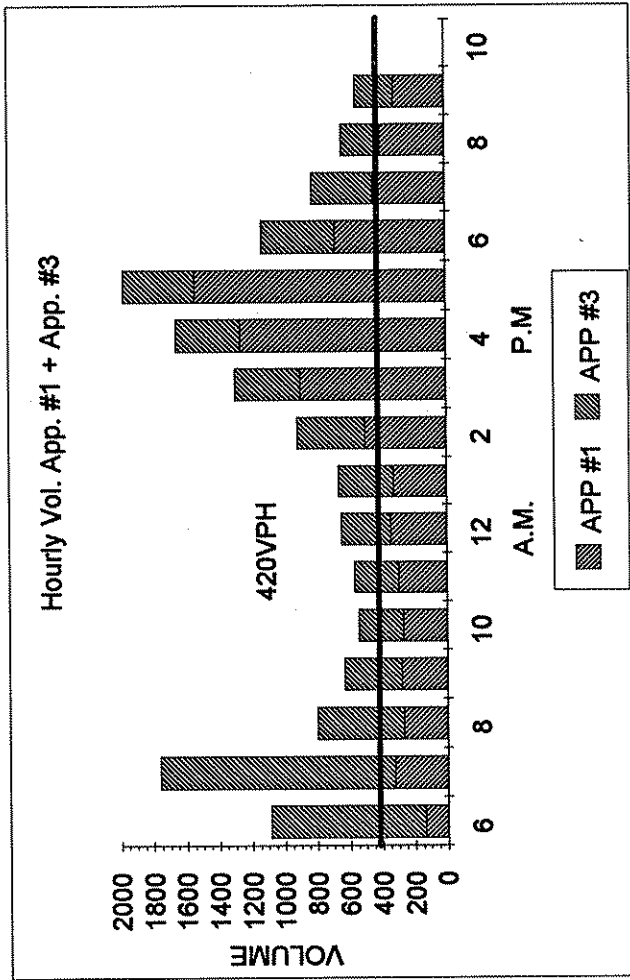
Date	CSAH 1 (EAST RIVER RD) Southbound				189TH AVE. Westbound				CSAH 1 (EAST RIVER RD) Northbound				189TH AVE. Eastbound				Vehicle Total	Other Total	
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left			
10/19/93																			
20:00	0	6	55	1	0	1	0	0	0	2	99	2	0	3	0	6	175	0	
20:15	0	7	51	1	0	2	0	0	0	3	94	5	0	2	0	8	173	0	
20:30	0	1	63	3	0	1	0	0	0	5	89	2	0	4	0	1	169	0	
20:45	0	4	46	2	0	1	0	2	1	1	90	4	0	2	0	2	154	1	
Hr Total	0	18	215	7	0	5	0	2	1	11	372	13	0	11	0	17	671	1	
21:00	0	3	59	1	0	2	0	0	1	3	75	8	0	5	0	5	161	1	
21:15	0	2	55	4	0	0	0	0	0	3	71	9	0	4	0	2	150	0	
21:30	0	7	60	5	0	2	1	0	0	2	77	2	0	0	0	5	161	0	
21:45	0	2	39	2	0	0	0	0	0	2	57	2	0	2	0	6	112	0	
Hr Total	0	14	213	12	0	4	1	0	1	10	280	21	0	11	0	18	584	1	
*TOTAL*	214	367	6926	137	9	165	8	158	189	173	7754	325	39	363	5	387	16768	451	

8

TMC9338 STOP WARRANT STUDY

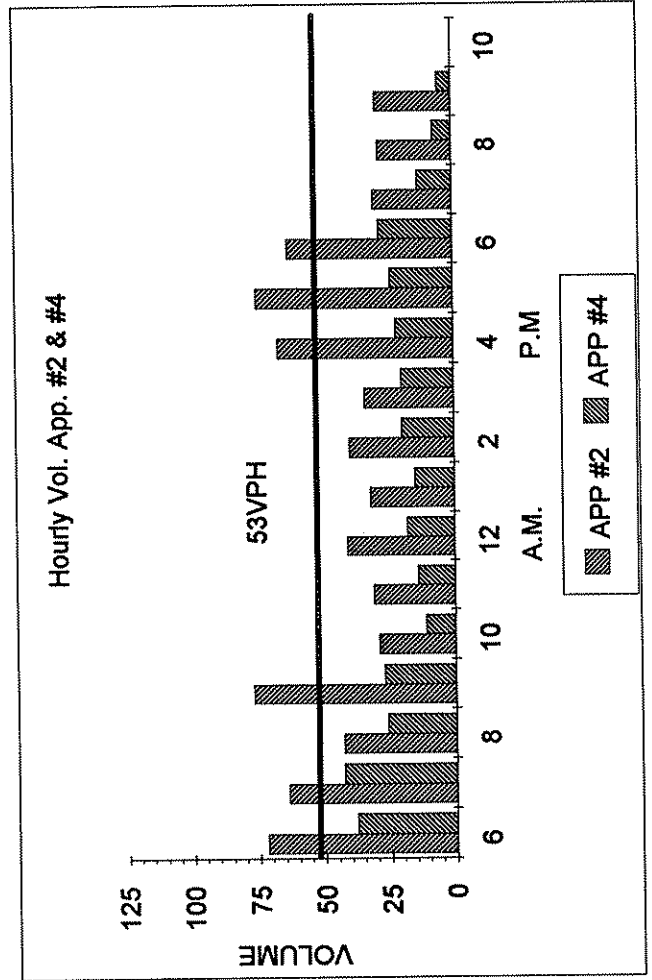
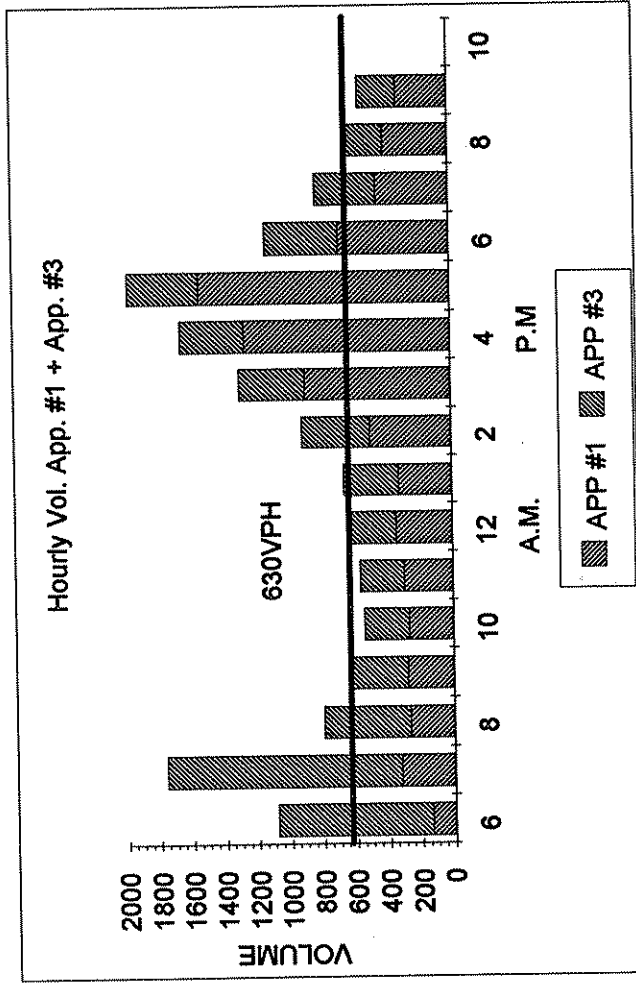


TMC9338 SIGNAL WARRANT 1 STUDY



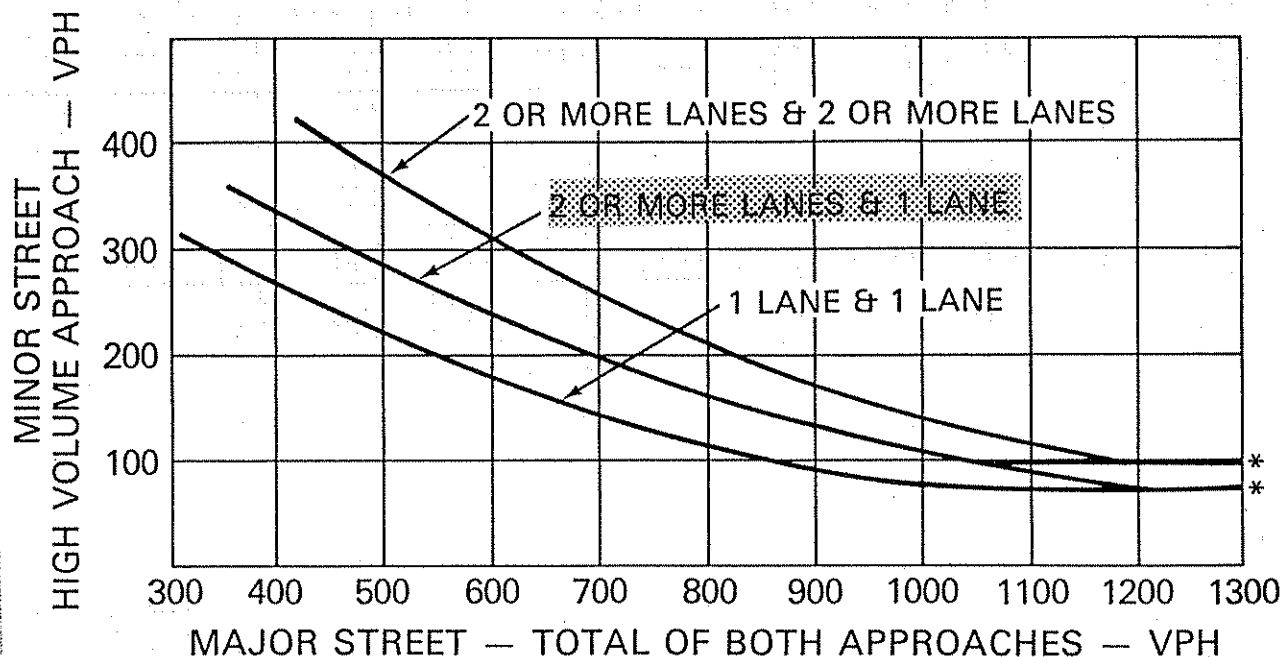
CSAH 1 (EAST RIVER RD) @ 89TH AVE.

TMC9338 SIGNAL WARRANT 2 STUDY



## FIGURE 4-6. PEAK HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*NOTE: 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 75 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.

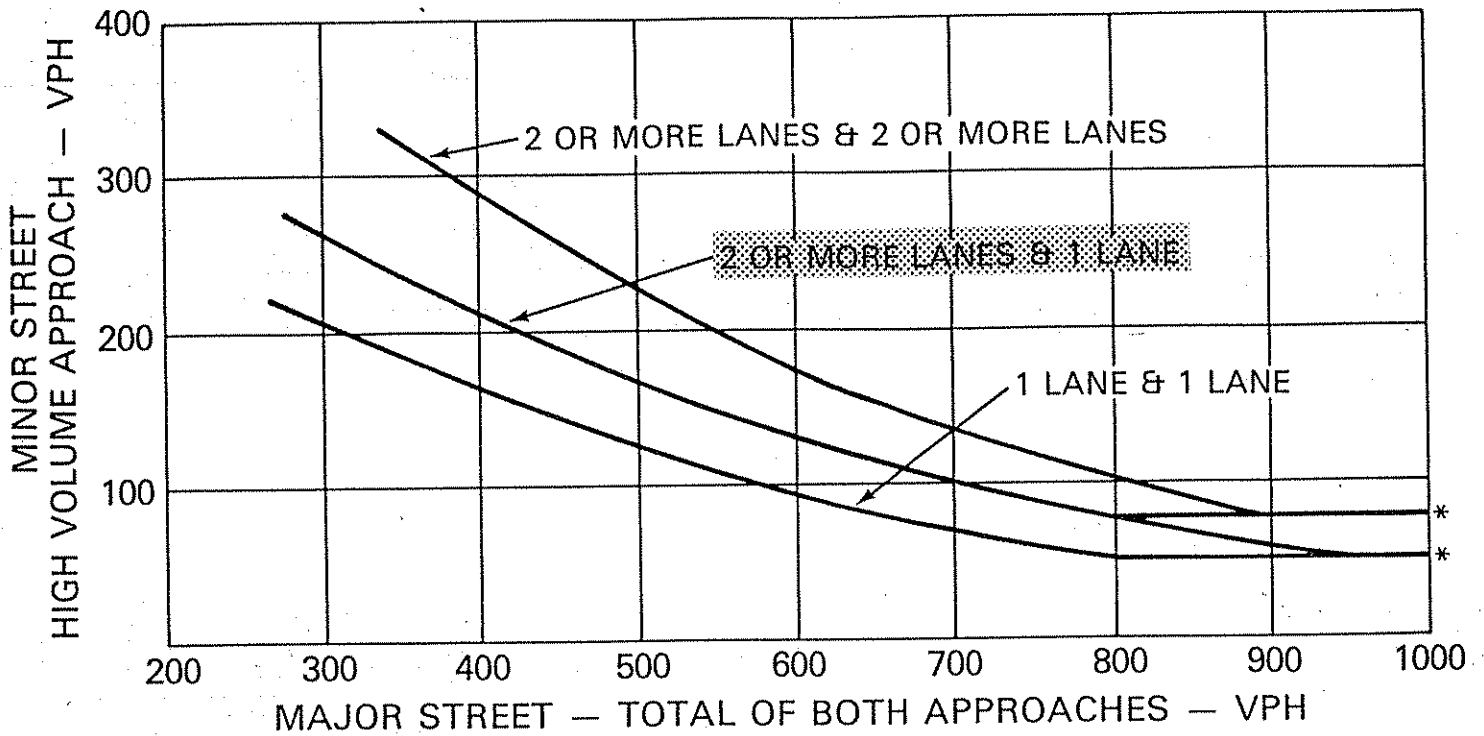
TIME	MAJOR STREETS (VPH)	MINOR STREET (VPH)
6-7 am	1086	72
7-8 am	1762	64
8-9 am	799	43
9-10 am	630	77
10-11 am	546	29
11-12 pm	567	31
12-1 pm	648	41
1-2 pm	663	32
2-3 pm	917	40
3-4 pm	1297	34
4-5 pm	1656	67
5-6 pm	1977	75
6-7 pm	1131	63
7-8 pm	817	30
8-9 pm	636	28
9-10 pm	550	29

★ TMC9338 CSAH 1 (EAST RIVER RD) @ 89TH AVE.



# FIGURE 4-8. FOUR HOUR VOLUME WARRANT

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



\*NOTE: 80 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 60 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	1086	72
★ 7-8 am	1762	64
8-9 am	799	43
9-10 am	630	77
10-11 am	546	29
11-12 pm	567	31
12-1 pm	648	41
1-2 pm	663	32
2-3 pm	917	40
3-4 pm	1297	34
★ 4-5 pm	1656	67
★ 5-6 pm	1977	75
★ 6-7 pm	1131	63
7-8 pm	817	30
8-9 pm	636	28
9-10 pm	550	29

TMC9338 CSAH 1 (EAST RIVER RD) @ 89TH AVE.

COUNT LOCATION: CSAH 1 (EAST RIVER RD)  
89TH AVE.

DATE: 10/15/93

**NORTH**

APP. #1=NB CSAH1  
 APP. #2=EB 89TH AVE.  
 (EAST RIVER RD)  
 APP. #3=SB CSAH 1  
 (EAST RIVER RD)  
 APP. #4=WB 89TH AVE.

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						1		1
6:15-6:30			1	1	2	4		2
6:30-6:45			2		2	5		1
6:45-7:00			2		2	3		4
<b>HOURLY TOTAL</b>					<b>6</b>	<b>HOURLY TOTAL</b>		<b>21</b>
7:00-7:15	1		1	1	3	5		4
7:15-7:30			1		1	11		3
7:30-7:45						6		1
7:45-8:00						3		6
<b>HOURLY TOTAL</b>					<b>4</b>	<b>HOURLY TOTAL</b>		<b>39</b>
8:00-8:15		1		1	2	9		4
8:15-8:30						7		4
8:30-8:45						8	1	4
8:45-9:00						17		7
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>61</b>
9:00-9:15						7		18
9:15-9:30						7		4
9:30-9:45						9		3
9:45-10:00						12		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>60</b>
10:00-10:15						3		1
10:15-10:30						9		1
10:30-10:45						6		
10:45-11:00						11		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>31</b>
11:00-11:15						10		
11:15-11:30						4		1
11:30-11:45				3		6		
11:45-12:00						9		3
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>33</b>
12:00-12:15						9		1
12:15-12:30				1	1	4		1
12:30-12:45						7		2
12:45-1:00			1		1	7		3
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>34</b>
1:00-1:15						8		3
1:15-1:30						9		
1:30-1:45						3		
1:45-2:00						7		1
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>31</b>

COUNT LOCATION: CSAH 1 (EAST RIVER RD) @  
89TH AVE.

DATE: 10/19/93

**NORTH**

APP. #1=NB CSAH 1  
(EAST RIVER RD)  
APP. #2=EB 89TH AVE.  
APP. #3=SB CSAH 1  
(EAST RIVER RD)  
APP. #4=WB 89TH AVE.

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						14		
2:15-2:30		1			1	9		
2:30-2:45		2			2	12		1
2:45-3:00						14		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>50</b>
3:00-3:15		1	1	1	3	9		
3:15-3:30	1	1			2	9		1
3:30-3:45		1		1	2	5		
3:45-4:00				3	3	4		2
<b>HOURLY TOTAL</b>					<b>10</b>	<b>HOURLY TOTAL</b>		<b>30</b>
4:00-4:15	1			2	3	5		
4:15-4:30	1	2			3	7		2
4:30-4:45						3		1
4:45-5:00				1	1	6	1	1
<b>HOURLY TOTAL</b>					<b>7</b>	<b>HOURLY TOTAL</b>		<b>26</b>
5:00-5:15						4		1
5:15-5:30			2		2	4		1
5:30-5:45	2			3	5	4		1
5:45-6:00			2		2	4		2
<b>HOURLY TOTAL</b>					<b>9</b>	<b>HOURLY TOTAL</b>		<b>21</b>
6:00-6:15		1			1	2		
6:15-6:30				1	1	2		1
6:30-6:45	1			1	2	1		
6:45-7:00	1				1	1		1
<b>HOURLY TOTAL</b>					<b>5</b>	<b>HOURLY TOTAL</b>		<b>8</b>
7:00-7:15	1			1	2			
7:15-7:30	2			1	3			
7:30-7:45						1		
7:45-8:00						2		
<b>HOURLY TOTAL</b>					<b>5</b>	<b>HOURLY TOTAL</b>		<b>3</b>
8:00-8:15								
8:15-8:30								
8:30-8:45								
8:45-9:00						1		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>1</b>
9:00-9:15						1		
9:15-9:30								
9:30-9:45								
9:45-10:00								
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>1</b>