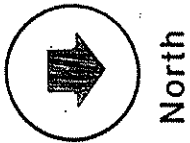
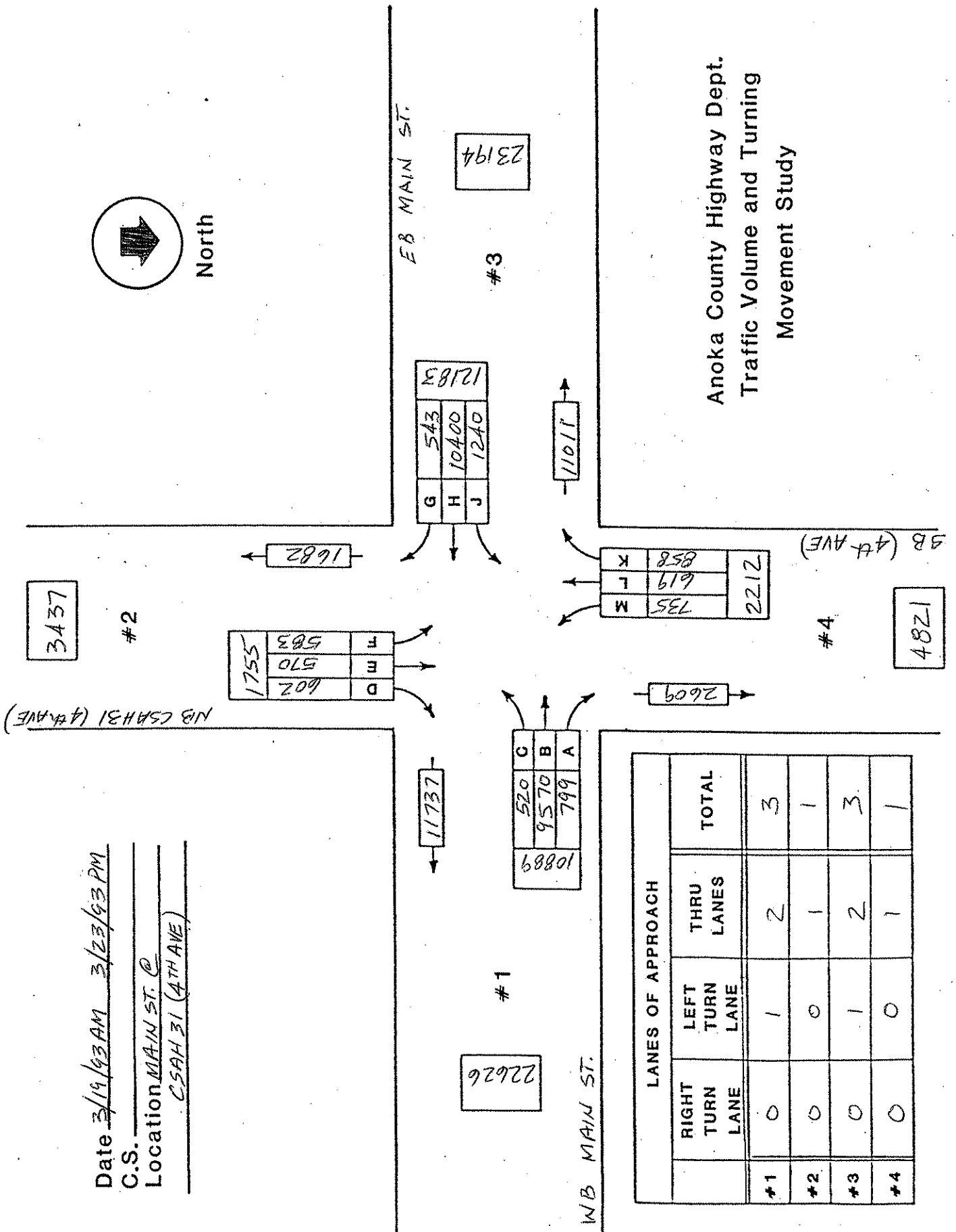


Date 3/19/93 AM 3/23/93 PM
 C.S. _____
 Location MAIN ST. @
CSAH 31 (4TH AVE)



Anoka County Highway Dept.
 Traffic Volume and Turning
 Movement Study



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

VOLUME & MOVEMENT

LANES OF APPROACH	RIGHT		THRU		TOTAL		DESCRIPTION	# RT.TURN	THRU	LT. TURN	SUB		TOTAL
	TURN L.	TURN L.	LANES	LANES	RT. TURN	LT. TURN					OPPOSING	TOTAL	
1	0	1	2	3	WESTBOUND MAIN STREET	1	799	9570	520	10889	11737	22626	
2	0	0	1	1	NORTHBOUND CSAH 31 (4TH AVE)	2	602	570	583	1755	1682	3437	
3	0	1	2	3	EASTBOUND MAIN STREET	3	543	10400	1240	12183	11011	23194	
4	0	0	1	1	SOUTHBOUND 4TH AVE	4	858	619	735	2212	2609	4821	

TIME INTERVALS	WESTBOUND				EASTBOUND				NORTHBOUND				SOUTHBOUND									
	TO TO		TO TO		TO TO		TO TO		TO TO		TO TO		TO TO		TO TO							
	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL						
	H.V.				H.V.				H.V.				H.V.									
6:00 - 6:15	1	0	82	1	83	3	2	40	1	43	0	2	1	0	3	0	2	5	5	12		
6:15 - 6:30	0	2	100	8	110	6:00 to	4	6	61	0	67	6:00 to	0	3	1	2	6	6:00 to	0	2	5	9
6:30 - 6:45	3	2	139	8	149	7:00	2	9	73	4	86	7:00	2	3	6	2	11	7:00	0	4	6	6
6:45 - 7:00	2	5	90	3	98	440	8	14	113	5	132	328	0	6	7	3	16	36	0	3	13	9
7:00 - 7:15	2	7	108	10	125		4	8	80	11	99		1	5	3	6	14		0	5	12	15
7:15 - 7:30	4	11	148	16	175	7:00 to	7	9	100	13	122	7:00 to	0	13	11	8	32	7:00 to	1	2	20	11
7:30 - 7:45	6	23	170	18	211	8:00	6	15	108	9	132	8:00	0	12	15	13	40	8:00	7	9	38	15
7:45 - 8:00	6	14	168	31	213	724	12	27	166	12	199	552	15	23	18	15	56	142	6	5	28	6
8:00 - 8:15	2	8	119	17	144		2	17	106	7	130		1	7	11	7	25		1	16	7	4
8:15 - 8:30	3	7	116	21	144	8:00 to	3	10	99	5	114	8:00 to	0	8	5	5	18	8:00 to	2	5	9	12
8:30 - 8:45	7	7	128	12	147	9:00	7	18	117	10	145	9:00	4	6	5	6	17	9:00	1	9	8	13
8:45 - 9:00	14	22	158	17	197	632	6	17	135	9	161	550	3	5	5	6	16	76	0	11	18	18
9:00 - 9:15	4	7	138	18	163		7	23	135	8	166		1	14	10	17	41		3	10	8	13
9:15 - 9:30	4	6	138	10	154	9:00 to	5	11	132	4	147	9:00 to	1	8	12	3	23	9:00 to	0	16	12	14
9:30 - 9:45	3	7	125	15	147	10:00	8	22	152	7	181	10:00	1	7	6	6	19	10:00	1	15	4	20
9:45 - 10:00	5	6	148	15	169	633	5	18	150	5	173	667	1	9	3	5	17	100	1	13	8	12
10:00 - 10:15	5	9	137	11	157		5	25	135	4	164		1	4	9	8	21		1	13	10	18
10:15 - 10:30	4	10	117	17	144	10:00 to	6	19	146	12	177	10:00 to	0	5	6	9	20	10:00 to	0	8	8	23
10:30 - 10:45	4	7	159	13	179	11:00	5	20	153	8	181	11:00	1	9	6	4	19	11:00	1	12	9	17
10:45 - 11:00	9	5	179	19	203	683	5	15	166	10	191	713	1	6	7	4	17	77	0	16	6	14
11:00 - 11:15	6	11	151	10	172		3	21	149	4	174		1	14	5	8	27		3	13	12	22
11:15 - 11:30	6	15	157	17	189	11:00 to	8	23	157	11	191	11:00 to	2	6	13	7	26	11:00 to	2	16	6	14
11:30 - 11:45	8	7	179	13	199	12:00	10	16	138	8	162	12:00	1	22	13	28	63	12:00	0	10	8	23
11:45 - 12:00	7	9	192	12	213	773	2	19	160	10	189	716	0	5	9	11	25	141	0	15	14	12
12:00 - 12:15	7	7	185	16	208		6	19	167	6	192		0	6	10	8	24		0	24	9	22
12:15 - 12:30	5	8	147	20	175	12:00 to	4	28	167	8	203	12:00 to	0	8	7	11	26	12:00 to	0	13	10	15
12:30 - 12:45	7	4	169	24	197	1:00	6	10	159	5	174	1:00	1	10	14	14	38	1:00	1	15	6	20
12:45 - 1:00	3	11	194	20	225	805	7	32	200	8	240	809	0	7	2	3	12	100	0	12	6	22
1:00 - 1:15	7	5	165	23	193		4	30	165	9	204		1	9	8	9	26		0	10	6	18
1:15 - 1:30	5	7	172	22	201	1:00 to	7	29	172	7	208	1:00 to	2	12	7	8	27	1:00 to	1	15	6	23
1:30 - 1:45	7	7	193	16	216	2:00	6	29	180	9	218	2:00	0	6	12	5	23	2:00	0	15	8	10
1:45 - 2:00	7	10	181	25	216	826	7	27	179	5	211	841	0	8	8	10	26	102	1	17	12	12
2:00 - 2:15	7	5	180	12	197		7	16	157	18	231		0	6	8	8	22		0	19	4	14

WESTBOUND APPROACH # 1
 EASTBOUND APPROACH # 3
 NORTHBOUND APPROACH # 2
 SOUTHBOUND APPROACH # 4

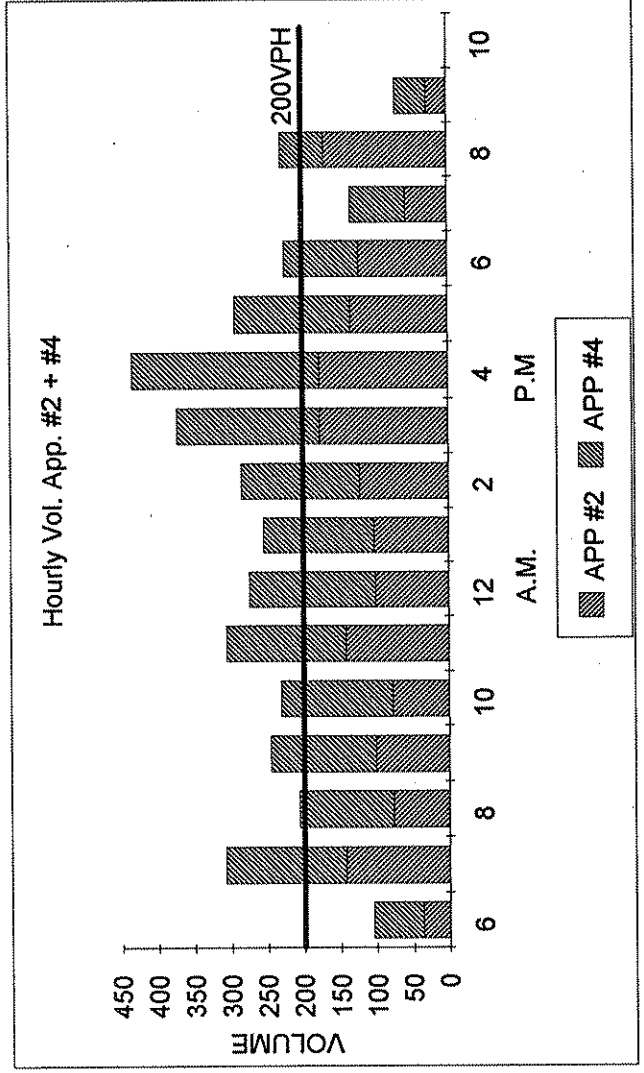
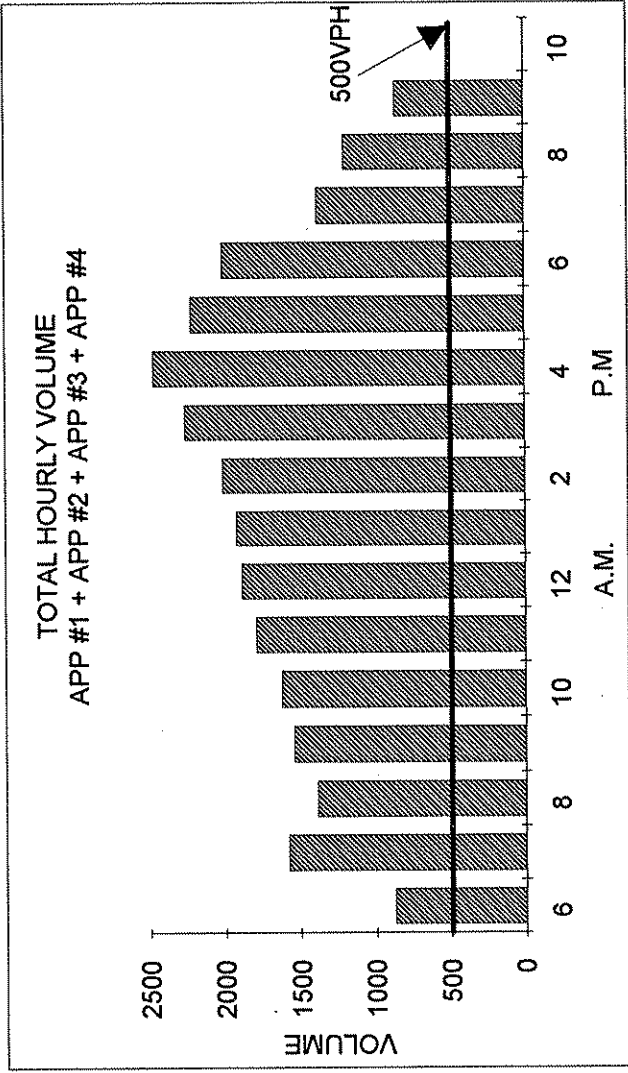
H.V. TO TO 15 MIN HOURLY H.V. TO TO 15 MIN HOURLY H.V. TO TO 15 MIN HOURLY H.V. TO TO 15 MIN HOURLY

LT TH RT TOTAL LT TH RT TOTAL LT TH RT TOTAL LT TH RT TOTAL

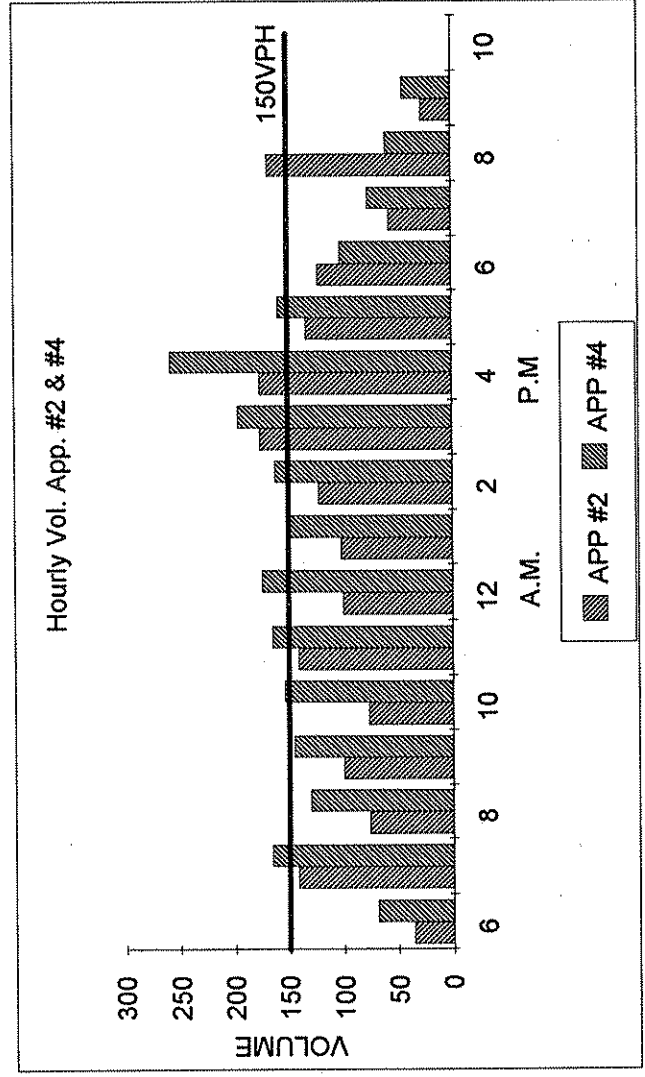
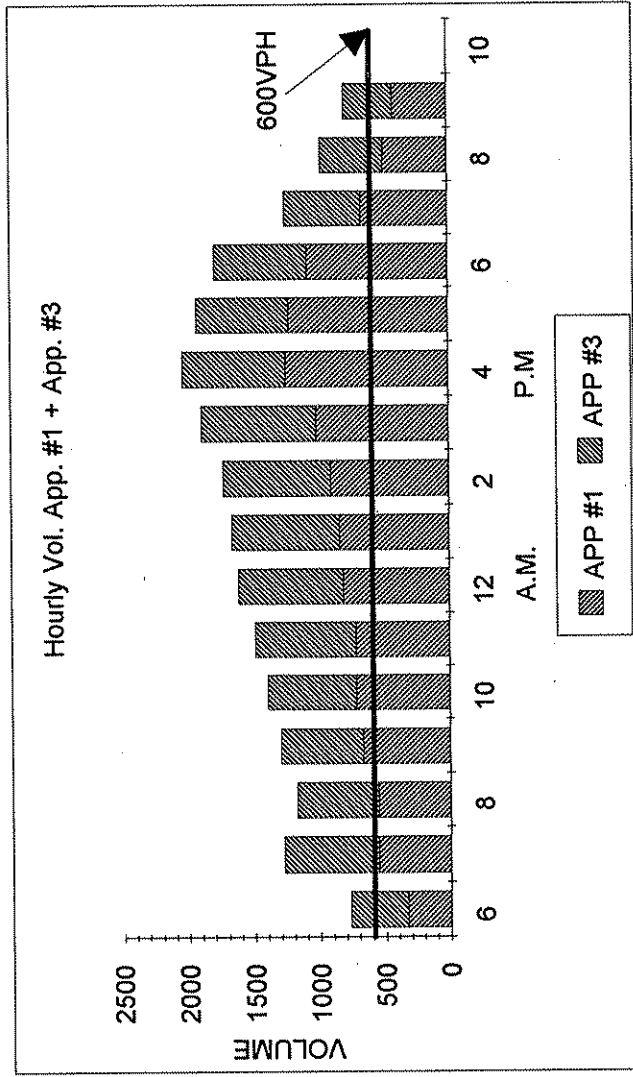
TIME INTERVALS

TIME INTERVALS	WESTBOUND APPROACH # 1				EASTBOUND APPROACH # 3				NORTHBOUND APPROACH # 2				SOUTHBOUND APPROACH # 4																
	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL	LT	TH	RT	TOTAL													
2:15 - 2:30	7	8	170	15	193	2:00 to	5	20	189	9	218	2:00 to	1	9	6	7	22	2:00 to	0	9	7	16	32	2:00 to	0	9	7	16	
2:30 - 2:45	9	8	197	23	228	3:00	4	24	178	14	215	3:00	2	12	11	9	32	3:00	2	18	15	15	48	3:00	2	18	15	15	48
2:45 - 3:00	2	26	169	13	208	826	9	24	194	19	237	901	14	17	14	15	46	122	3	14	15	16	45	162	3	14	15	16	45
3:00 - 3:15	2	7	232	14	253	2	29	170	16	215	1	19	22	27	68	41	3:00 to	1	17	10	19	46	3:00 to	1	17	10	19	46	
3:15 - 3:30	5	6	185	15	206	3:00 to	4	23	191	8	222	3:00 to	0	10	18	13	41	3:00 to	1	17	10	19	46	3:00 to	1	17	10	19	46
3:30 - 3:45	3	6	184	19	209	4:00	6	32	243	7	282	4:00	0	7	7	6	20	4:00	1	19	9	20	48	4:00	1	19	9	20	48
3:45 - 4:00	11	10	187	12	209	877	3	37	248	9	294	1013	0	15	20	12	47	176	0	20	9	21	50	196	0	20	9	21	50
4:00 - 4:15	7	9	185	14	208	6	34	247	20	301	0	13	15	16	44	56	4:00 to	0	17	16	17	50	4:00 to	0	17	16	17	50	
4:15 - 4:30	1	12	194	10	216	4:00 to	7	32	249	7	288	4:00 to	0	21	21	14	56	4:00 to	0	17	16	17	50	4:00 to	0	17	16	17	50
4:30 - 4:45	3	7	159	6	172	5:00	4	40	274	10	324	5:00	0	9	13	14	36	5:00	0	40	21	32	93	5:00	0	40	21	32	93
4:45 - 5:00	1	14	175	8	197	793	6	33	291	7	331	1244	0	9	16	15	40	176	0	18	16	24	58	258	0	18	16	24	58
5:00 - 5:15	1	11	176	10	197	1	38	284	14	336	0	17	17	18	52	42	5:00 to	0	18	18	16	52	5:00 to	0	18	18	16	52	
5:15 - 5:30	5	9	165	10	184	5:00 to	5	35	268	3	306	5:00 to	4	8	19	15	42	5:00 to	0	8	14	11	33	5:00 to	0	8	14	11	33
5:30 - 5:45	1	7	134	7	148	6:00	2	30	242	7	279	6:00	0	7	9	6	22	6:00	0	40	21	32	93	6:00	0	40	21	32	93
5:45 - 6:00	1	3	166	12	181	710	3	35	260	2	297	1218	0	5	3	9	17	133	0	6	7	15	28	159	0	6	7	15	28
6:00 - 6:15	1	7	158	9	174	1	28	249	7	284	0	8	11	6	25	19	6:00 to	0	8	2	12	22	6:00 to	0	8	2	12	22	
6:15 - 6:30	2	5	136	11	152	6:00 to	0	30	244	9	283	6:00 to	0	4	6	9	19	6:00 to	0	11	5	10	26	6:00 to	0	11	5	10	26
6:30 - 6:45	1	16	148	17	181	7:00	2	21	196	34	251	7:00	1	10	13	8	31	7:00	0	6	16	3	25	7:00	0	6	16	3	25
6:45 - 7:00	1	31	168	8	207	714	0	16	192	50	258	1076	0	16	12	19	47	122	0	6	14	9	29	102	0	6	14	9	29
7:00 - 7:15	1	10	120	3	133	0	9	185	7	201	0	4	9	7	28	7:00 to	0	4	3	6	7	16	7:00 to	0	4	3	6	7	
7:15 - 7:30	0	3	134	10	147	7:00 to	2	10	162	4	176	7:00 to	0	8	3	4	15	7:00 to	0	5	3	7	15	7:00 to	0	5	3	7	15
7:30 - 7:45	1	4	147	5	156	8:00	1	8	132	3	143	8:00	0	4	3	6	13	8:00	0	9	1	14	24	8:00	0	9	1	14	24
7:45 - 8:00	1	14	136	4	154	590	0	6	129	3	138	658	0	2	4	3	9	57	0	9	8	4	21	76	0	9	8	4	21
8:00 - 8:15	0	6	108	8	122	0	7	99	7	113	0	28	9	21	58	8:00 to	0	15	6	6	27	8:00 to	0	15	6	6	27		
8:15 - 8:30	0	2	126	2	130	8:00 to	3	2	120	3	125	8:00 to	0	21	10	36	67	8:00 to	0	5	2	3	10	8:00 to	0	5	2	3	10
8:30 - 8:45	2	1	119	4	124	9:00	2	9	98	5	112	9:00	0	13	1	16	30	9:00	0	4	4	8	16	9:00	0	4	4	8	16
8:45 - 9:00	2	1	106	4	111	487	0	3	132	1	136	486	0	4	4	5	13	168	0	2	1	4	7	60	0	2	1	4	7
9:00 - 9:15	1	2	119	7	128	0	4	120	1	125	0	5	7	6	18	9:00 to	0	12	7	3	22	9:00 to	0	12	7	3	22		
9:15 - 9:30	1	2	98	2	102	9:00 to	1	5	99	2	106	9:00 to	0	3	1	0	4	9:00 to	1	5	1	3	9	9:00 to	1	5	1	3	9
9:30 - 9:45	0	0	70	4	74	10:00	0	10	91	2	103	10:00	0	0	1	0	1	10:00	0	0	0	8	8	10:00	0	0	0	8	8
9:45 - 10:00	0	2	67	3	72	376	1	3	73	1	77	411	0	1	2	1	4	27	0	3	1	1	5	44	0	3	1	1	5

TMC9307 STOP WARRANT STUDY



TMC9307 SIGNAL WARRANT 1 STUDY



TMC9307 SIGNAL WARRANT 2 STUDY

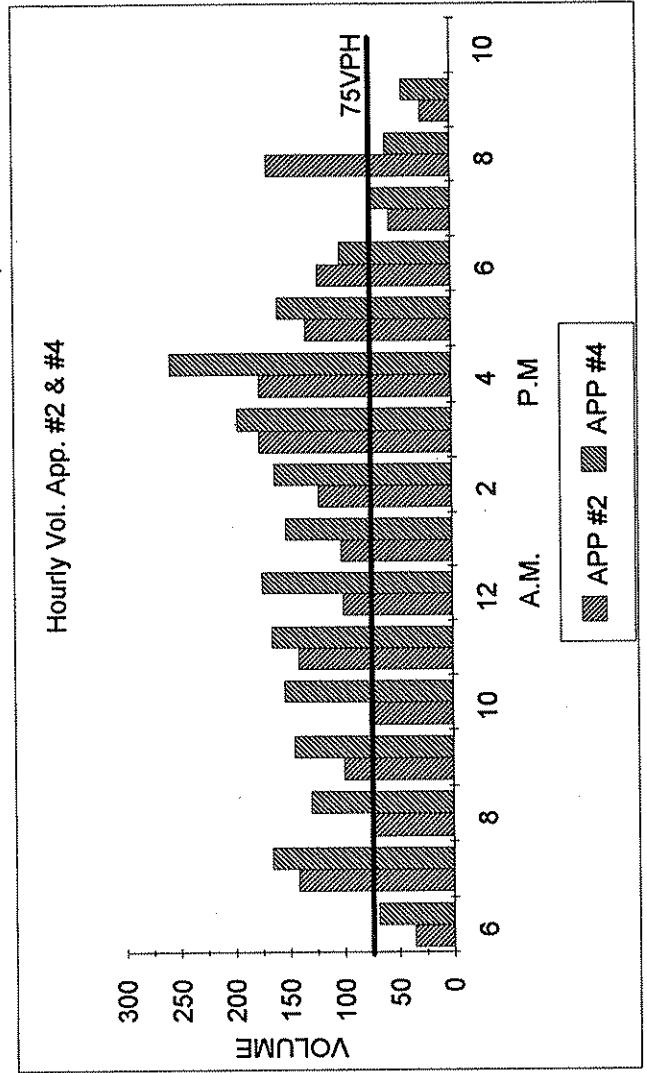
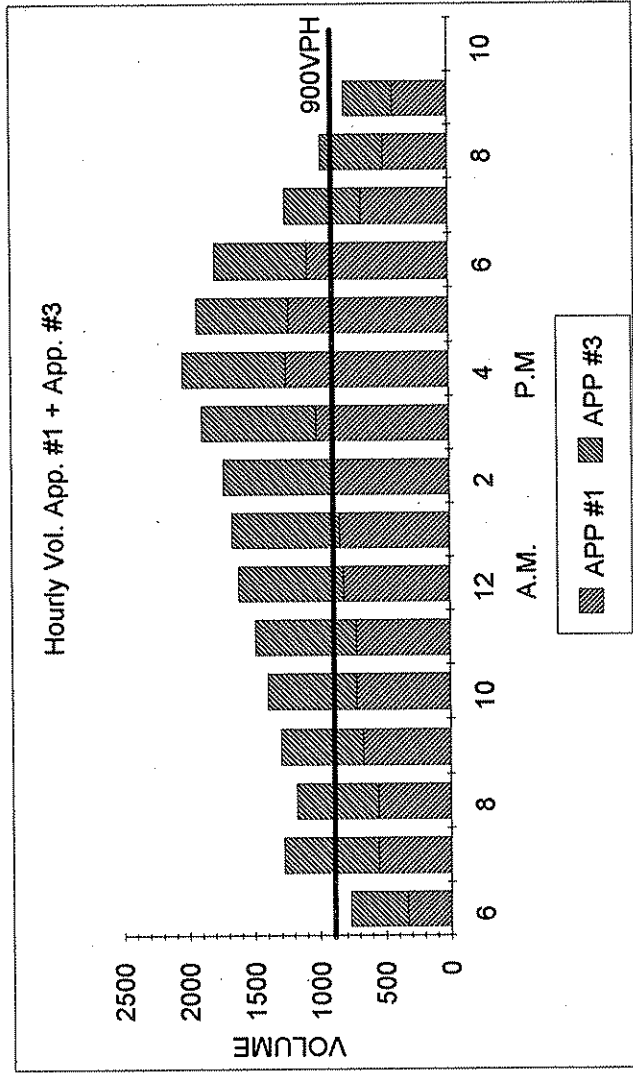
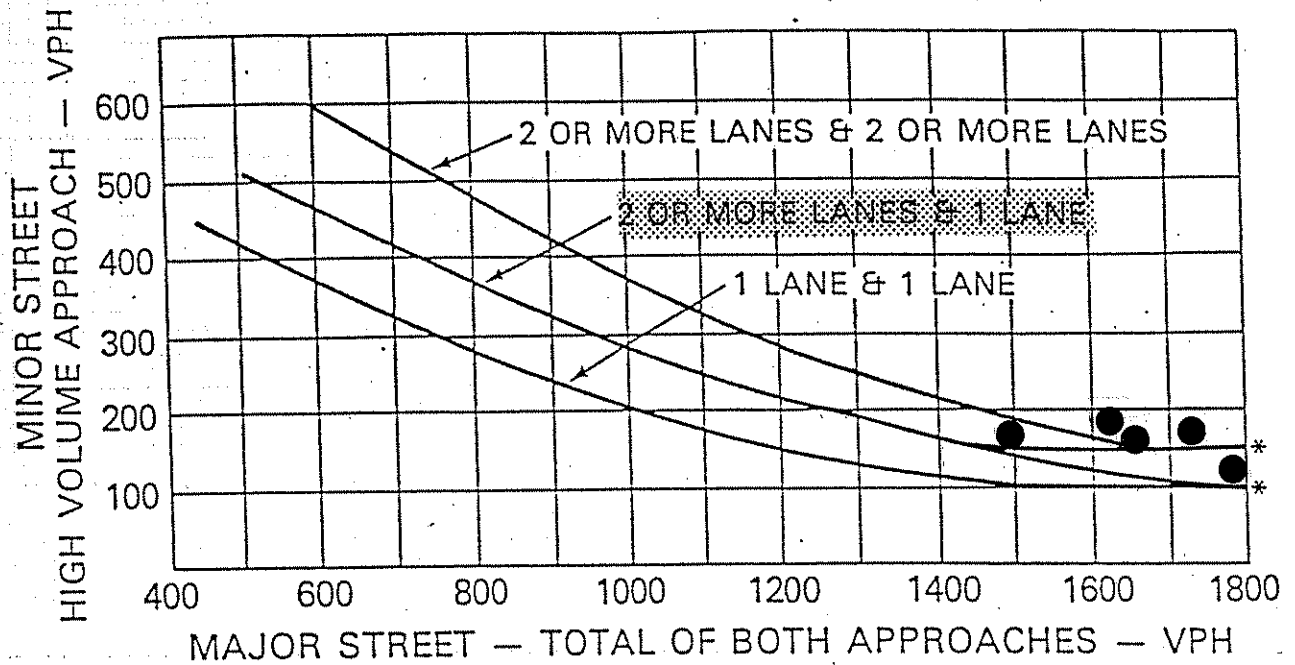


FIGURE 4-5. PEAK HOUR VOLUME WARRANT



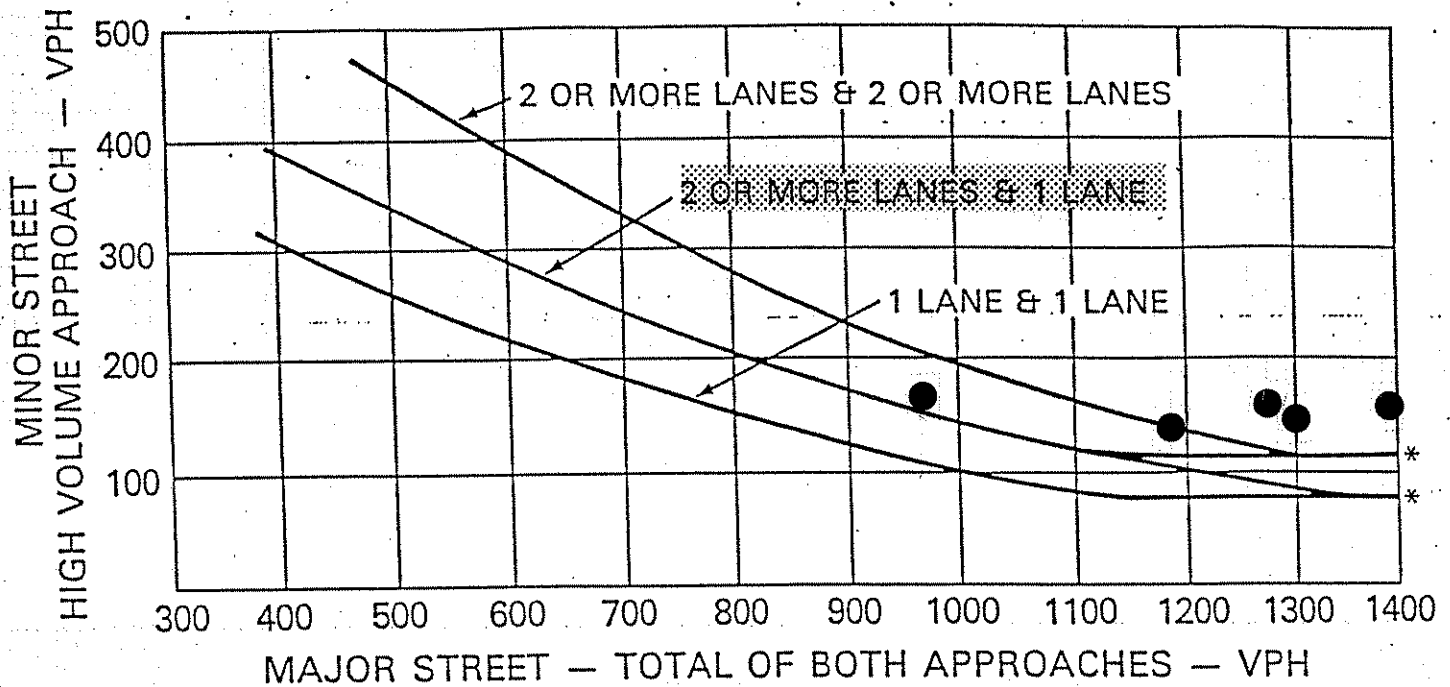
*NOTE: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

● = 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	768	69
7-8 am	1276	166
8-9 am	1182	130
9-10 am	1300	145
10-11 am	1396	154
● 11-12 pm	1489	165
● 12-1 pm	1614	174
● 1-2 pm	1667	152
● 2-3 pm	1727	162
★ 3-4 pm	1890	196
★ 4-5 pm	2037	258
★ 5-6 pm	1928	159
● 6-7 pm	1790	122
7-8 pm	1248	76
8-9 pm	973	168
9-10 pm	787	44

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	768	69
7-8 am	1276	166
8-9 am	1182	130
9-10 am	1300	145
10-11 am	1396	154
11-12 pm	1489	165
12-1 pm	1614	174
1-2 pm	1667	152
2-3 pm	1727	162
3-4 pm	1890	196
4-5 pm	2037	258
5-6 pm	1928	159
6-7 pm	1790	122
7-8 pm	1248	76
8-9 pm	973	168
9-10 pm	787	44

TMC9307 MAIN STREET @ CSAH 31 (4 TH AVE)

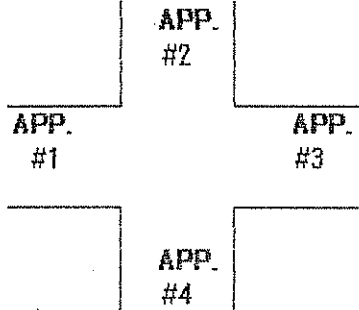


NORTH

APP. #1= EB MAIN ST.
APP. #2= SB 4TH AVE.
APP. #3= WB MAIN ST.
APP. #4= NB 4TH AVE.

COUNT LOCATION: MAIN STREET @ 4TH AVE

DATE: 3/19/93



- 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							3		2
6:15-6:30							1		2
6:30-6:45	1			2	3		3		4
6:45-7:00			1		1		7		3
HOURLY TOTAL					4	HOURLY TOTAL			25
7:00-7:15				1	1		3		4
7:15-7:30	1			1	2		8		4
7:30-7:45	3	2	3		8		5		14
7:45-8:00	2				2		9		29
HOURLY TOTAL					13	HOURLY TOTAL			76
8:00-8:15		1	1	1	3		4		2
8:15-8:30	2	2	2		6		6		2
8:30-8:45	1	5	1	2	9		7		12
8:45-9:00		3	1	1	5		7		15
HOURLY TOTAL					23	HOURLY TOTAL			55
9:00-9:15	4	3	1		8		12		3
9:15-9:30		4	1	1	6		8		2
9:30-9:45		1	1	6	8		11		2
9:45-10:00	4	3			7		8		4
HOURLY TOTAL					29	HOURLY TOTAL			50
10:00-10:15		4			4		10		1
10:15-10:30	3	7	1	1	12		7		3
10:30-10:45		4	1	6	11		8		2
10:45-11:00	1	5		1	7		12		3
HOURLY TOTAL					34	HOURLY TOTAL			46
11:00-11:15		4	1	2	7		11		4
11:15-11:30	3	3	2		8		11		4
11:30-11:45		3	1	3	7		15		5
11:45-12:00	1	3	1	1	6		6		2
HOURLY TOTAL					28	HOURLY TOTAL			58
12:00-12:15	1	5		4	10		12		1
12:15-12:30		6	1		7		7		2
12:30-12:45	3	4	2	4	13		14		1
12:45-1:00		7	3	1	11		9		2
HOURLY TOTAL					41	HOURLY TOTAL			48
1:00-1:15		3	1	4	8		10		1
1:15-1:30	2	1		7	10		14	1	
1:30-1:45	1	4	2	5	12		12		1
1:45-2:00	2	7		2	11		12		4
HOURLY TOTAL					41	HOURLY TOTAL			55