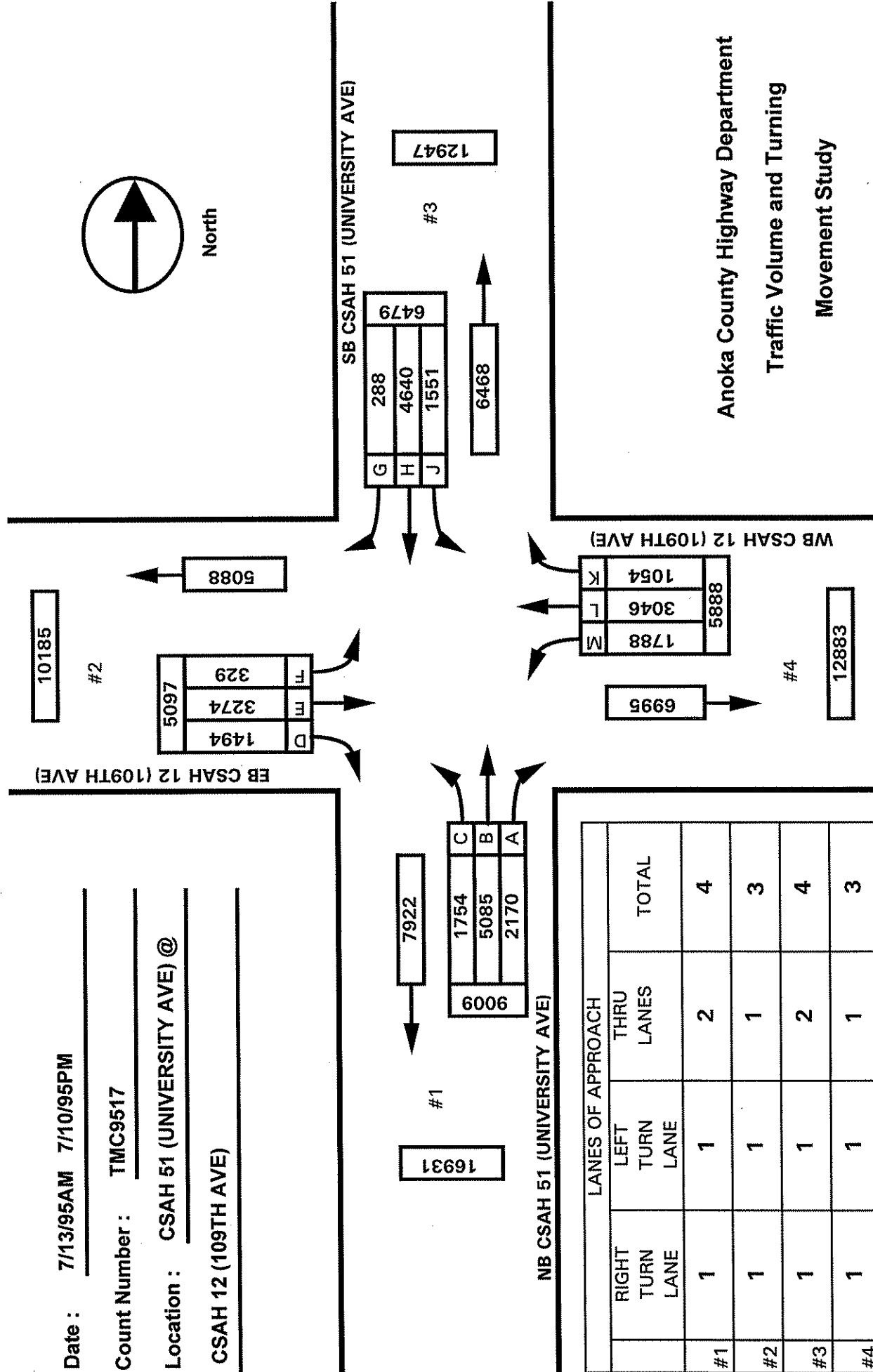


Date: 7/13/95AM 7/10/95PM

Count Number: TMC9517

Location: CSAH 51 (UNIVERSITY AVE) @

CSAH 12 (109TH AVE)



Anoka County Highway Department  
Traffic Volume and Turning  
Movement Study

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

Site Cod 95170101  
 Start Date: 07/10/95  
 File I.D. : TMC9517  
 Page : 1

Counter : EIGHT  
 Counted by ANN/LAURIE  
 PARTLY CLOUDY/90s

Vehicle group 1

Date 07/10/95	CSAH 51 (UNIVERSITY AVE) Southbound				CSAH 12 (109TH AVE) Westbound				CSAH 51 (UNIVERSITY AVE) Northbound				CSAH 12 (109TH AVE) Eastbound				Vehicle Total	Other Total
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left		
06:00	0	4	103	15	0	3	16	21	1	3	15	2	0	27	41	1	251	1
06:15	2	1	133	13	2	2	13	33	0	10	8	3	1	29	44	0	289	5
06:30	1	2	158	23	1	5	21	48	0	14	16	7	1	38	54	1	387	3
06:45	2	4	188	31	1	5	43	33	1	21	23	7	1	39	55	3	452	5
Hr Total	5	11	582	82	4	15	93	135	2	48	62	19	3	133	194	5	1379	14
07:00	4	4	159	38	0	5	23	30	0	18	22	13	1	46	49	1	408	5
07:15	2	3	157	26	1	13	31	34	0	25	12	10	5	43	73	3	430	8
07:30	4	5	166	39	2	9	33	29	1	16	20	6	1	27	64	2	416	8
07:45	2	2	129	19	1	2	36	42	3	27	28	3	6	35	47	3	373	12
Hr Total	12	14	611	122	4	29	123	135	4	86	82	32	13	151	233	9	1637	33
08:00	5	3	117	28	5	6	24	21	2	25	28	12	2	15	57	1	337	14
08:15	2	7	67	18	1	12	18	29	5	17	24	6	2	19	42	3	262	10
08:30	1	5	69	18	5	15	36	22	4	21	31	3	1	23	45	1	289	11
08:45	2	8	77	17	2	8	29	35	7	28	23	9	2	19	47	2	302	13
Hr Total	10	23	330	81	13	41	107	107	18	91	106	30	7	76	191	7	1190	48
09:00	0	2	56	14	2	13	23	18	3	19	30	13	4	19	44	2	253	9
09:15	4	6	58	28	3	5	24	15	2	16	18	17	2	10	35	4	236	11
09:30	6	3	56	21	3	6	37	26	1	17	38	11	2	26	46	4	291	12
09:45	3	4	69	19	3	11	35	24	2	26	38	22	1	16	49	4	317	9
Hr Total	13	15	239	82	11	35	119	83	8	78	124	63	9	71	174	14	1097	41
10:00	5	3	59	17	2	11	33	24	1	22	46	20	1	17	41	2	295	9
10:15	1	3	51	26	3	12	29	19	2	19	37	20	2	17	25	3	261	8
10:30	3	7	56	21	3	13	26	22	1	21	29	14	3	24	39	7	279	10
10:45	2	4	44	12	4	12	46	25	0	18	45	14	2	18	42	2	282	8
Hr Total	11	17	210	76	12	48	134	90	4	80	157	68	8	76	147	14	1117	35
11:00	4	3	56	19	6	15	45	21	1	18	44	24	1	22	39	5	311	12
11:15	6	5	66	20	4	16	30	23	0	32	44	22	4	22	52	4	336	14
11:30	0	3	46	20	5	13	40	27	3	29	48	21	4	15	57	6	325	12
11:45	1	8	59	18	1	11	30	22	2	26	52	23	1	26	42	7	324	5
Hr Total	11	19	227	77	16	55	145	93	6	105	188	90	10	85	190	22	1296	43
12:00	6	7	61	12	4	24	40	17	0	40	75	17	6	25	58	7	383	16
12:15	2	2	50	19	4	17	47	22	3	33	49	43	3	27	35	7	351	12
12:30	2	7	64	10	7	20	39	22	0	34	71	24	2	12	43	3	349	11
12:45	1	6	51	17	0	10	36	28	2	23	59	23	1	27	52	5	337	4
Hr Total	11	22	226	58	15	71	162	89	5	130	254	107	12	91	188	22	1420	43

ANOKA COUNTY HIGHWAY DEPARTMENT

Site Cod. 95170101  
 Start Date: 07/10/95  
 File I.D. : TMC9517  
 Page : 2

Counter : T. EIGHT  
 Counted by ANN/LAURIE  
 PARTLY CLOUDY/90s

TRAFFIC ENGINE NG SECTION  
 TRAFFIC VOLUME AND  
 TURNING MOVEMENT STUDY

Vehicle group 1

Date 07/10/95	CSAH 51 (UNIVERSITY AVE) Southbound				CSAH 12 (109TH AVE) Westbound				CSAH 51 (UNIVERSITY AVE) Northbound				CSAH 12 (109TH AVE) Eastbound					
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left	Vehicle Total	Other Total
13:00	1	4	60	24	4	18	31	22	4	24	56	32	0	29	50	4	354	9
13:15	1	4	48	19	2	15	40	28	3	28	62	35	3	19	33	0	331	9
13:30	1	6	54	24	4	16	57	31	2	35	61	29	1	27	38	4	382	8
13:45	2	3	51	13	6	12	42	36	3	30	75	15	8	18	52	1	348	19
Hr Total	5	17	213	80	16	61	170	117	12	117	254	111	12	93	173	9	1415	45
14:00	0	4	44	21	2	18	43	19	3	32	66	21	2	18	58	4	348	7
14:15	1	1	64	21	1	19	48	38	2	34	79	26	3	19	57	4	410	7
14:30	2	2	61	26	2	16	46	27	1	43	71	29	2	19	43	2	385	7
14:45	3	12	66	21	1	26	65	25	0	38	57	35	2	18	55	6	424	6
Hr Total	6	19	235	89	6	79	202	109	6	147	273	111	9	74	213	16	1567	27
15:00	0	5	62	27	3	19	61	31	1	44	88	34	3	23	37	4	435	7
15:15	1	3	46	13	2	24	42	28	2	38	104	50	1	23	35	7	413	6
15:30	1	2	53	19	2	18	61	37	3	49	103	28	1	19	58	6	453	7
15:45	2	6	59	30	3	11	90	23	3	43	163	29	1	21	62	5	542	9
Hr Total	4	16	220	89	10	72	254	119	9	174	458	141	6	86	192	22	1843	29
16:00	2	1	61	34	2	21	79	33	2	63	156	45	4	20	68	9	590	10
16:15	0	4	57	25	1	20	57	28	3	66	172	49	3	18	50	14	560	7
16:30	1	5	41	30	2	25	79	24	2	58	155	46	1	15	68	9	555	6
16:45	1	5	76	26	4	20	91	36	1	64	196	48	2	27	53	11	653	8
Hr Total	4	15	235	115	9	86	306	121	8	251	679	188	10	80	239	43	2358	31
17:00	1	8	61	20	2	31	74	23	2	69	218	62	4	29	80	5	680	9
17:15	0	2	71	33	3	27	85	37	2	67	223	77	0	17	67	11	717	5
17:30	0	5	70	32	6	44	75	41	2	51	187	60	1	18	62	10	655	9
17:45	3	3	69	33	2	33	74	39	0	71	219	62	2	28	66	9	706	7
Hr Total	4	18	271	118	13	135	308	140	6	258	847	261	7	92	275	35	2758	30
18:00	1	5	85	38	3	29	74	24	0	58	179	48	1	22	66	11	639	5
18:15	0	2	60	37	2	17	72	47	1	53	165	41	0	28	65	4	591	3
18:30	1	5	88	36	0	23	68	25	1	36	112	32	2	30	59	10	524	4
18:45	0	9	67	28	1	22	63	32	0	37	98	42	1	26	56	6	486	2
Hr Total	2	21	300	139	6	91	277	128	2	184	554	163	4	106	246	31	2240	14
19:00	0	3	74	43	0	21	64	34	1	38	111	27	1	32	63	7	517	2
19:15	1	3	85	33	1	24	68	28	1	35	101	34	0	27	66	7	511	3
19:30	0	7	74	21	1	21	52	30	1	36	84	39	0	25	64	7	460	2
19:45	0	7	58	32	1	19	58	27	0	36	74	32	0	27	48	8	426	1
Hr Total	1	20	291	129	3	85	242	119	3	145	370	132	1	111	241	29	1914	8

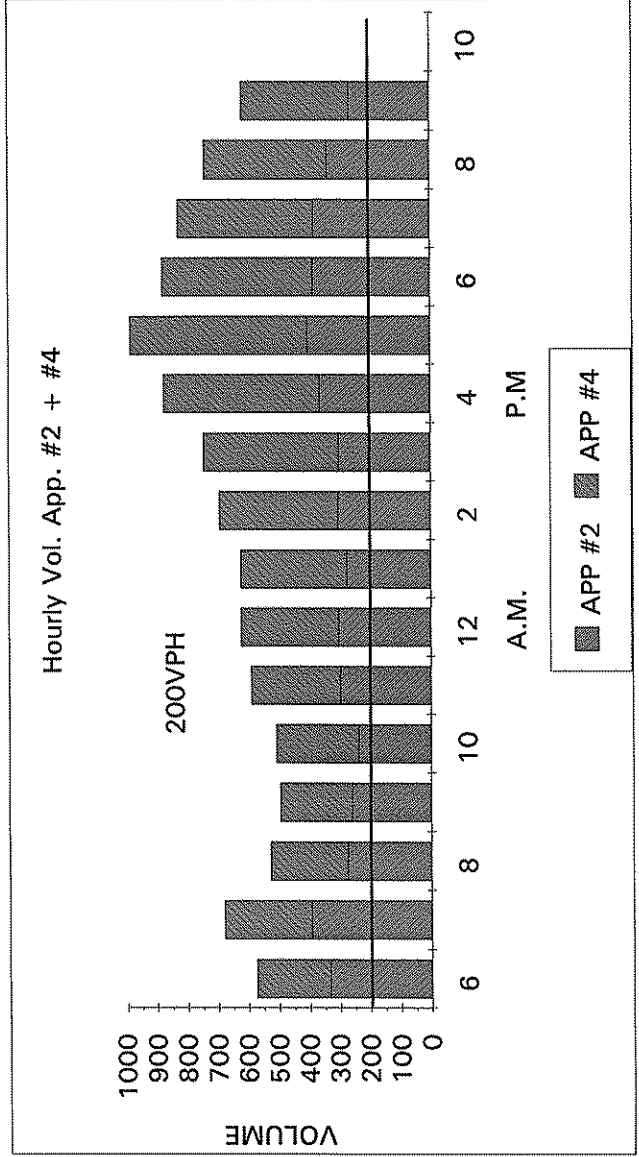
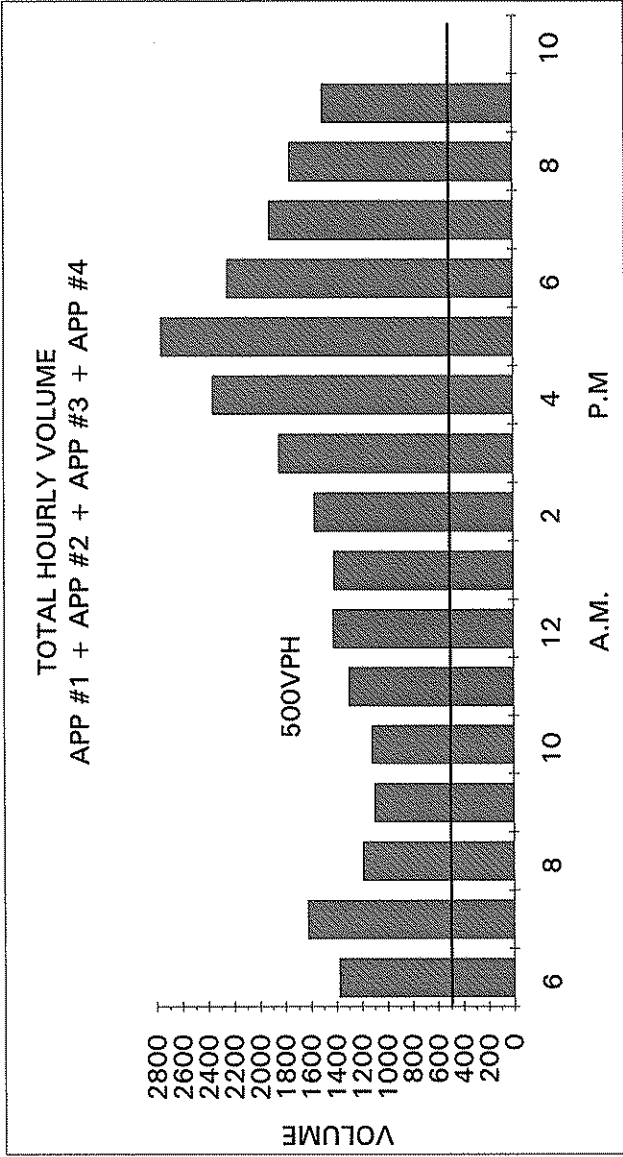
Counter : TD-8IGHT  
 Counted by ANN/LAURIE  
 PARTLY CLOUDY/90s

Vehicle group 1

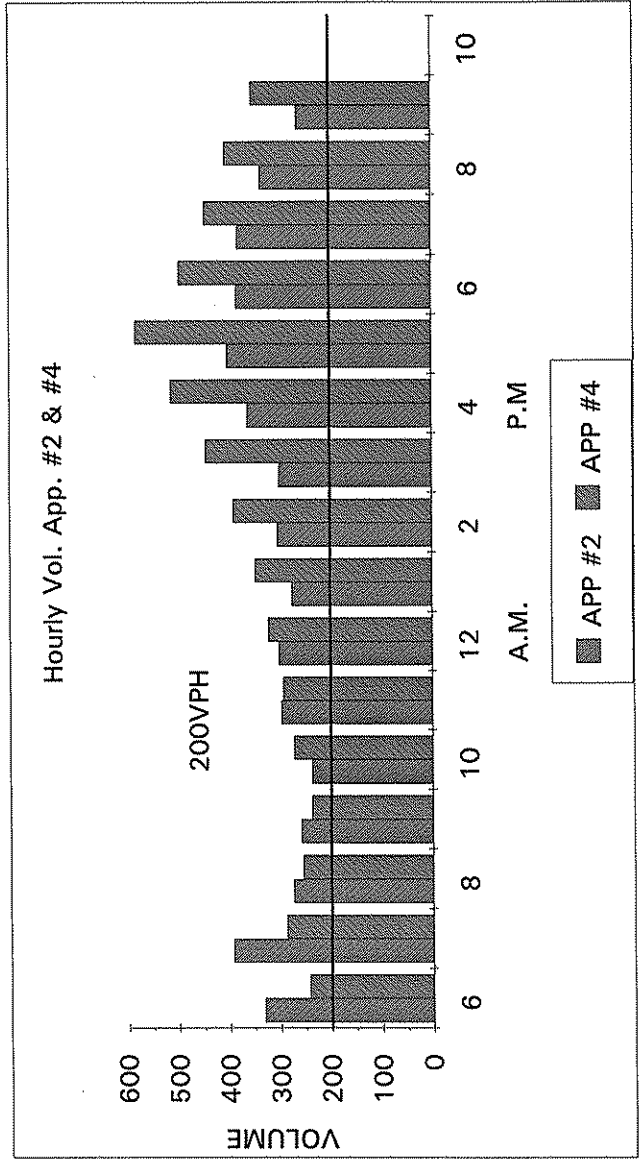
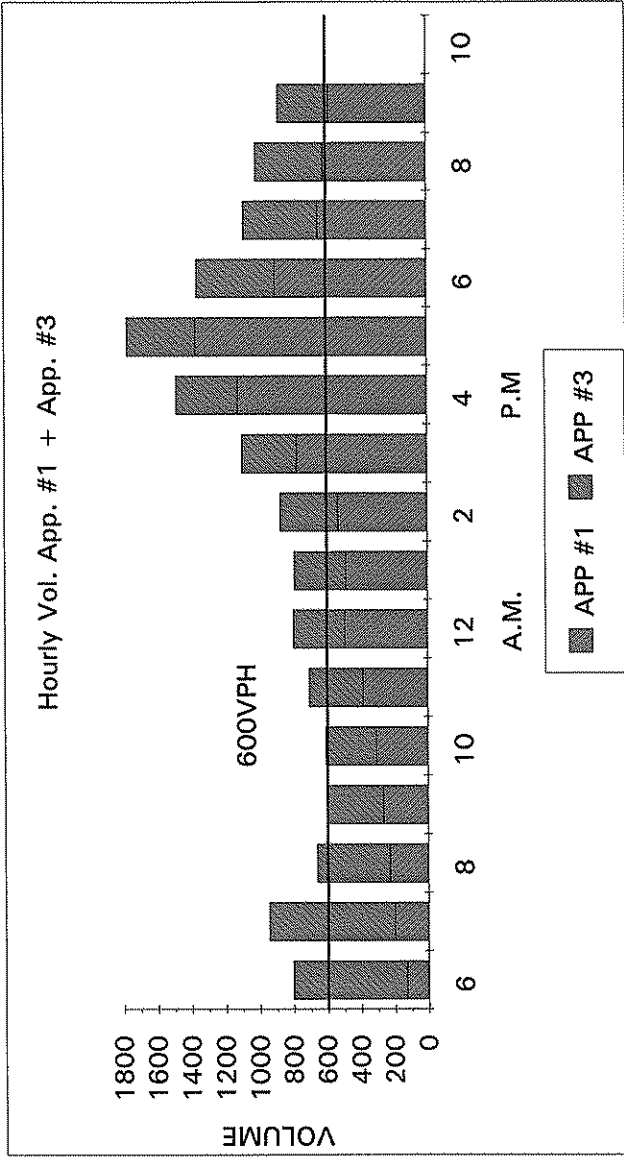
Date 07/10/95	CSAH 51 (UNIVERSITY AVE) Southbound			CSAH 12 (109TH AVE) Westbound			CSAH 51 (UNIVERSITY AVE) Northbound			CSAH 12 (109TH AVE) Eastbound			Vehicle Total	Other Total				
	Other	Right	Thru	Left	Other	Right	Thru	Left	Other	Right	Thru	Left			Vehicle Total	Other Total		
20:00	0	1	56	32	0	19	51	44	0	26	84	26	0	26	57	15	437	0
20:15	0	8	77	25	1	16	49	29	0	32	84	41	0	25	50	5	441	1
20:30	0	7	52	31	0	18	63	28	0	37	88	25	0	24	43	8	424	0
20:45	0	5	77	30	0	26	44	18	1	33	97	40	0	24	56	2	452	1
Hr Total	0	21	262	118	1	79	207	119	1	128	353	132	0	99	206	30	1754	2
21:00	0	5	55	25	0	19	60	14	0	40	88	29	0	20	51	4	410	0
21:15	0	9	45	29	0	15	61	25	0	36	90	27	0	28	47	8	420	0
21:30	0	4	57	22	0	21	42	25	1	38	85	20	0	10	37	4	365	1
21:45	1	2	31	20	0	17	34	20	5	34	61	30	0	12	37	5	303	6
Hr Total	1	20	188	96	0	72	197	84	6	148	324	106	0	70	172	21	1498	7

\*TOTAL\* 100 288 4640 1551 139 1054 3046 1788 100 2170 5085 1754 111 1494 3274 329 26473 450

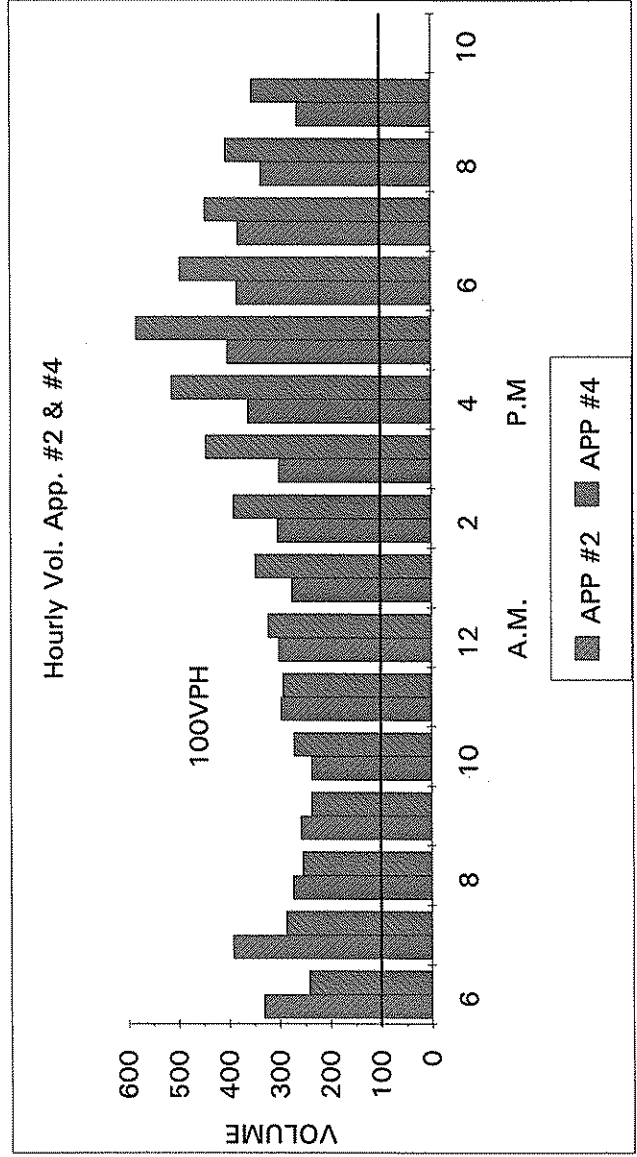
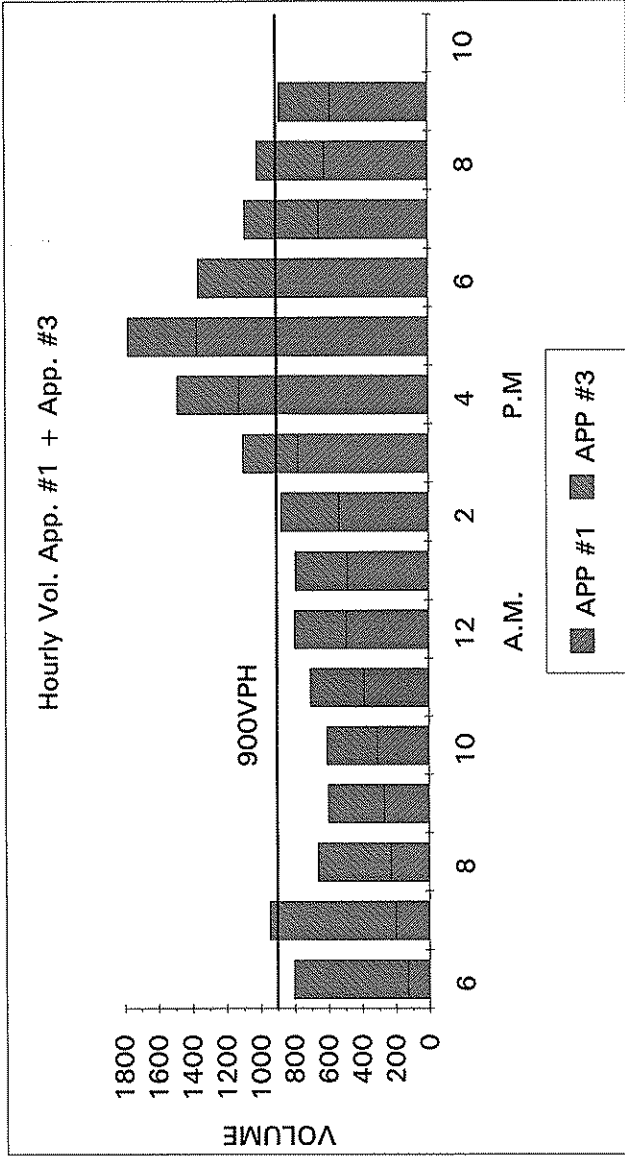
TMC9517 STOP WARRANT STUDY



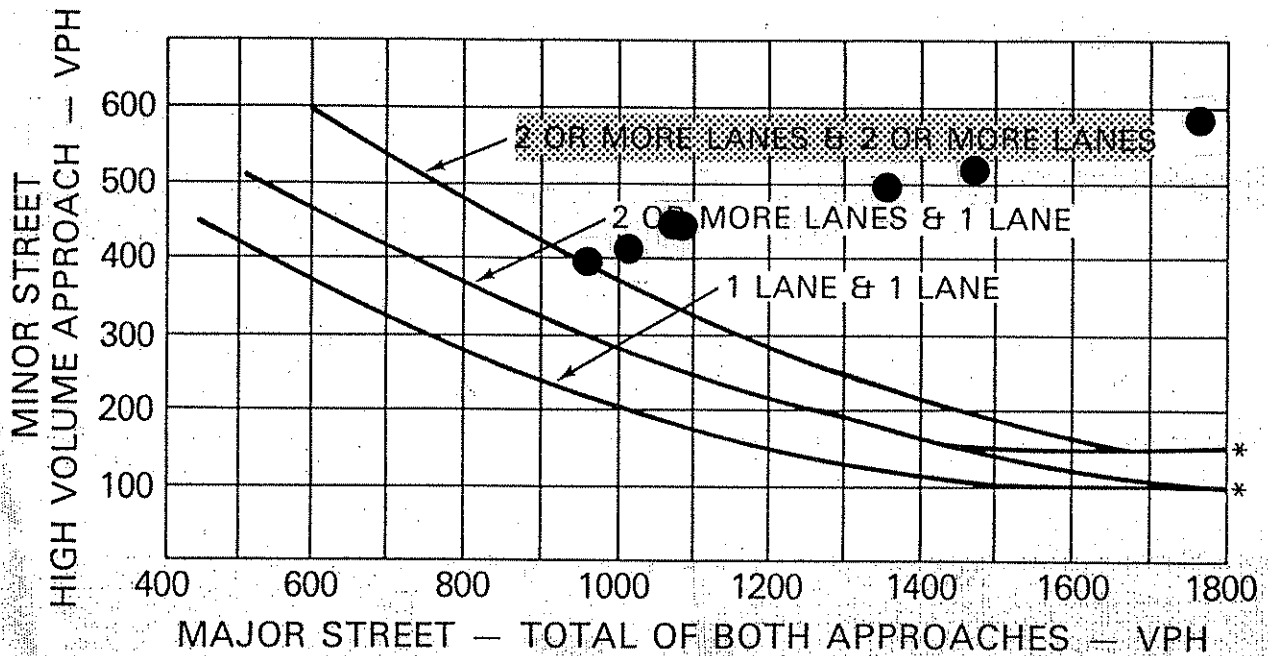
TMC9517 SIGNAL WARRANT 1 STUDY



TMC9517 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.

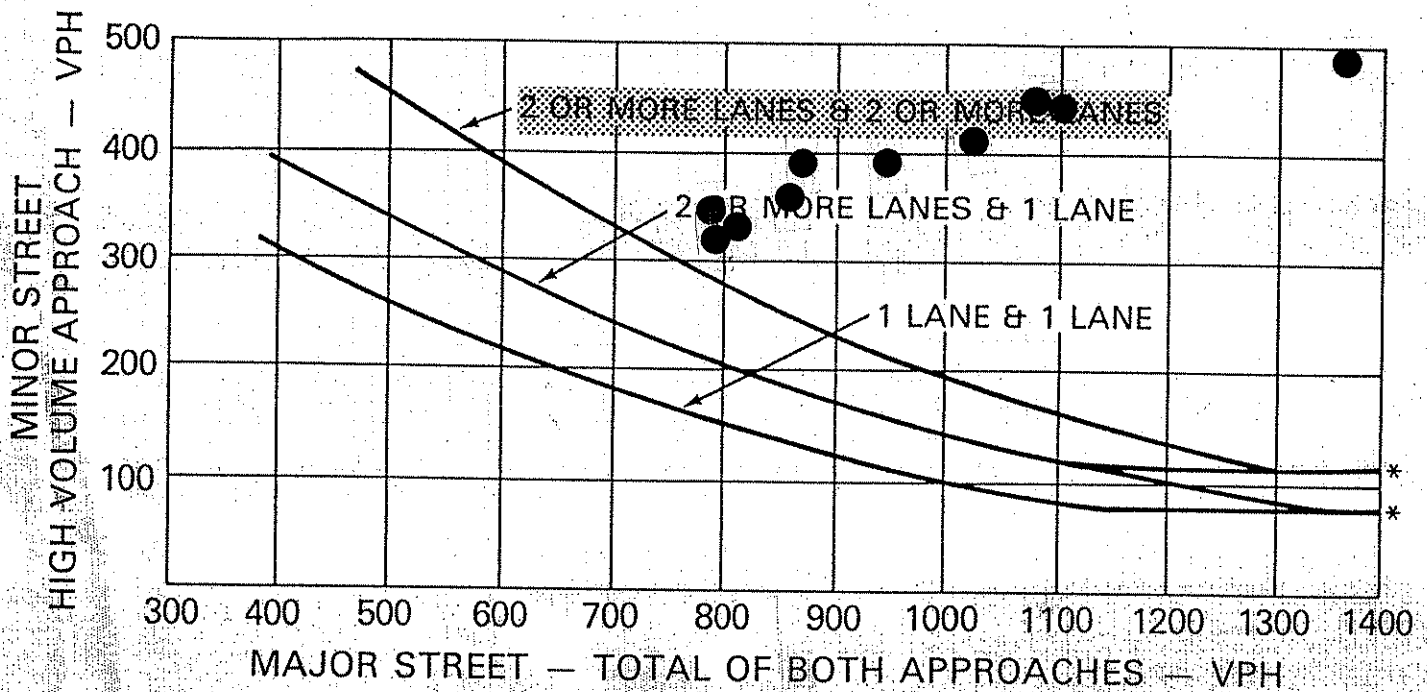
● = VOLUMES WHICH EXCEED THE THRESHOLD AND ARE REPRESENTED ON THE GRAPH.

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

TIME	MAJOR STREETS (VPH)	MINOR STREET (VPH)
6-7 am	804	332
7-8 am	947	393
8-9 am	661	274
9-10 am	601	259
10-11 am	608	272
11-12 pm	706	297
12-1 pm	797	322
1-2 pm	792	348
2-3 pm	874	390
3-4 pm	1098	445
4-5 pm	1483	513
5-6 pm	1773	583
6-7 pm	1361	496
7-8 pm	1087	446
8-9 pm	1014	405
9-10 pm	882	353



# 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	804	332
● 7-8 am	947	393
● 8-9 am	661	274
● 9-10 am	601	259
● 10-11 am	608	272
● 11-12 pm	706	297
● 12-1 pm	797	322
● 1-2 pm	792	348
● 2-3 pm	874	390
● 3-4 pm	1098	445
★ 4-5 pm	1483	513
★ 5-6 pm	1773	583
● 6-7 pm	1361	496
● 7-8 pm	1087	446
● 8-9 pm	1014	405
● 9-10 pm	882	353

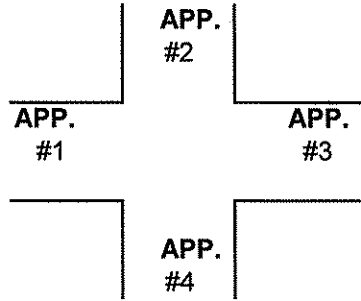
TMC9517 CSAH 51 (UNIVERSITY AVE) @ CSAH 12 (109TH AVE)



**COUNT LOCATION:** CSAH 51 (UNIVERSITY AVE) @  
CSAH 12 (109TH AVE)

**DATE:** 7/13/95

- NORTH**
- APP. #1= NB CSAH 51 (UNIVERSITY AVE)
  - APP. #2= EB CSAH 12 (109TH AVE)
  - APP. #3= SB CSAH 51 (UNIVERSITY AVE)
  - APP. #4= WB CSAH 12 (109TH AVE)



- 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.

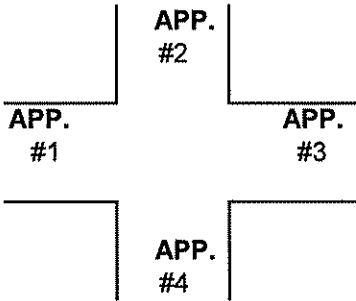
TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
6:00-6:15AM						1		1
6:15-6:30						1		2
6:30-6:45						2		1
6:45-7:00						3		2
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>13</b>
7:00-7:15						2		2
7:15-7:30						8		2
7:30-7:45						5		3
7:45-8:00						7		5
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>34</b>
8:00-8:15						13		1
8:15-8:30						7		2
8:30-8:45						8	1	1
8:45-9:00				1	1	9	1	3
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>46</b>
9:00-9:15						8		2
9:15-9:30						8		3
9:30-9:45						11		1
9:45-10:00	3				3	7		2
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>42</b>
10:00-10:15				3	3	10		
10:15-10:30						8		
10:30-10:45						9		1
10:45-11:00	1				1	8		
<b>HOURLY TOTAL</b>					<b>4</b>	<b>HOURLY TOTAL</b>		<b>36</b>
11:00-11:15						10		
11:15-11:30						10		3
11:30-11:45	3				3	9	1	1
11:45-12:00						4		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>38</b>
12:00-12:15		1			1	16		
12:15-12:30	1				1	11		1
12:30-12:45						9		2
12:45-1:00						6		
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>45</b>
1:00-1:15						9		
1:15-1:30						5		4
1:30-1:45						6		
1:45-2:00						17		1
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>42</b>

**COUNT LOCATION:** CSAH 51 (UNIVERSITY AVE) @  
CSAH 12 (109TH AVE)

**DATE:** 7/10/95

**NORTH**

APP. #1= NB CSAH 51  
(UNIVERSITY AVE)  
 APP. #2= EB CSAH 12  
(109TH AVE)  
 APP. #3= SB CSAH 51  
(UNIVERSITY AVE)  
 APP. #4= WB CSAH 12  
(109TH AVE)



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						5	1	
2:15-2:30						4	1	1
2:30-2:45						5		2
2:45-3:00	1				1	4		1
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>24</b>
3:00-3:15						9		
3:15-3:30						4		
3:30-3:45						6		1
3:45-4:00						7	1	1
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>29</b>
4:00-4:15						10		
4:15-4:30	3				3	6		1
4:30-4:45						4		1
4:45-5:00						7		1
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>30</b>
5:00-5:15						7		2
5:15-5:30						5		1
5:30-5:45						7		1
5:45-6:00						7		1
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>31</b>
6:00-6:15						2	2	1
6:15-6:30						2		1
6:30-6:45						3		
6:45-7:00						2		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>13</b>
7:00-7:15						3		
7:15-7:30	1				1	2		1
7:30-7:45						2		
7:45-8:00						1		
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>9</b>
8:00-8:15								
8:15-8:30	2				2			
8:30-8:45								
8:45-9:00						1		
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>1</b>
9:00-9:15				2	2			
9:15-9:30								
9:30-9:45		1			1	1		
9:45-10:00						6		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>7</b>