

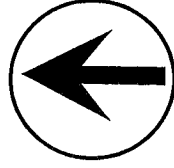
Date : 07/31/14

Count Number : TMC1416

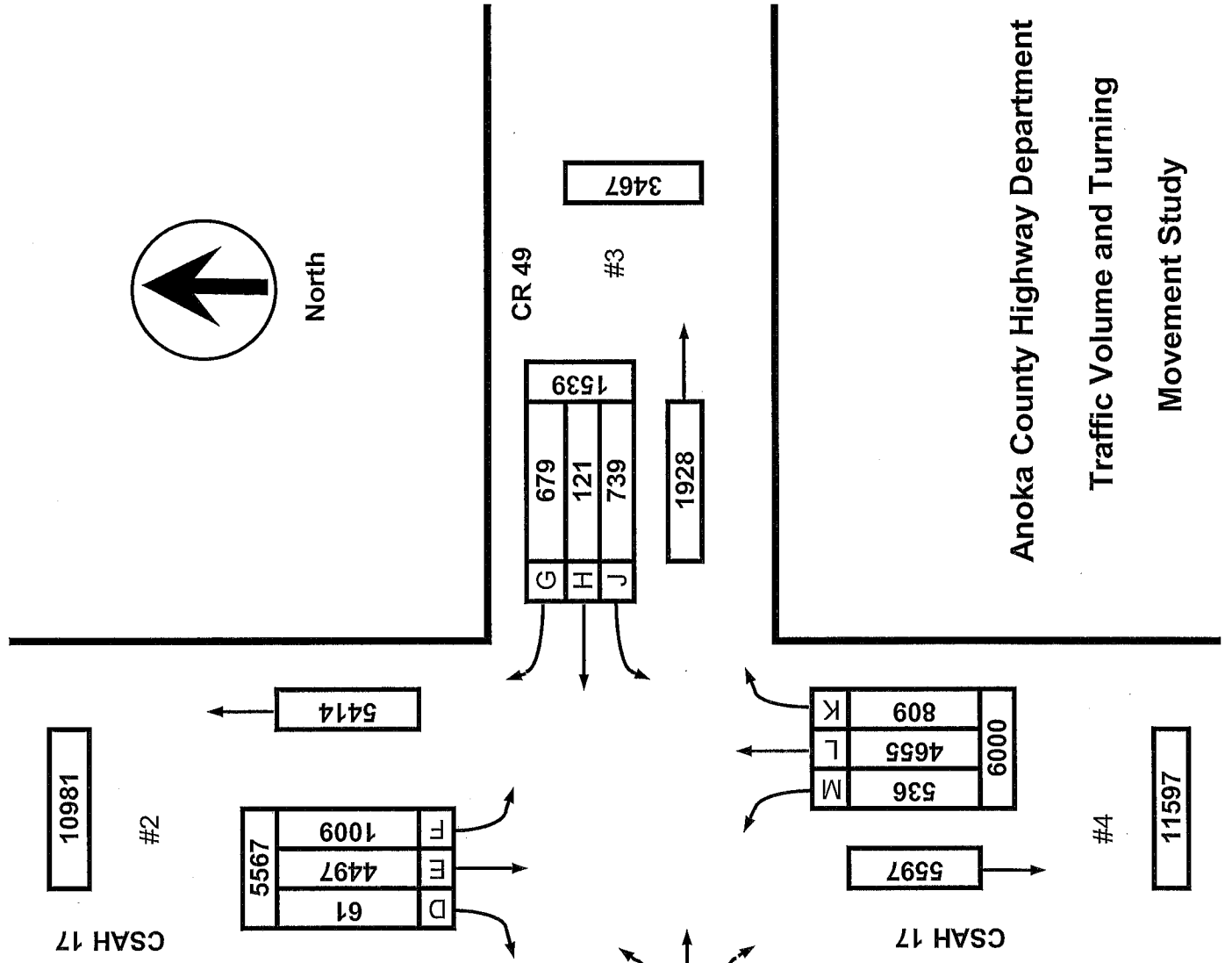
Location : CSAH 17 (Lexington Ave.)

@ CR 49 (North Road)

Collection Period : 6 AM - 10 PM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 07/31/14

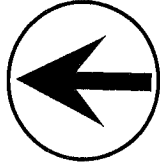
Count Number : TMC1416

Location : CSAH 17 (Lexington Ave.)

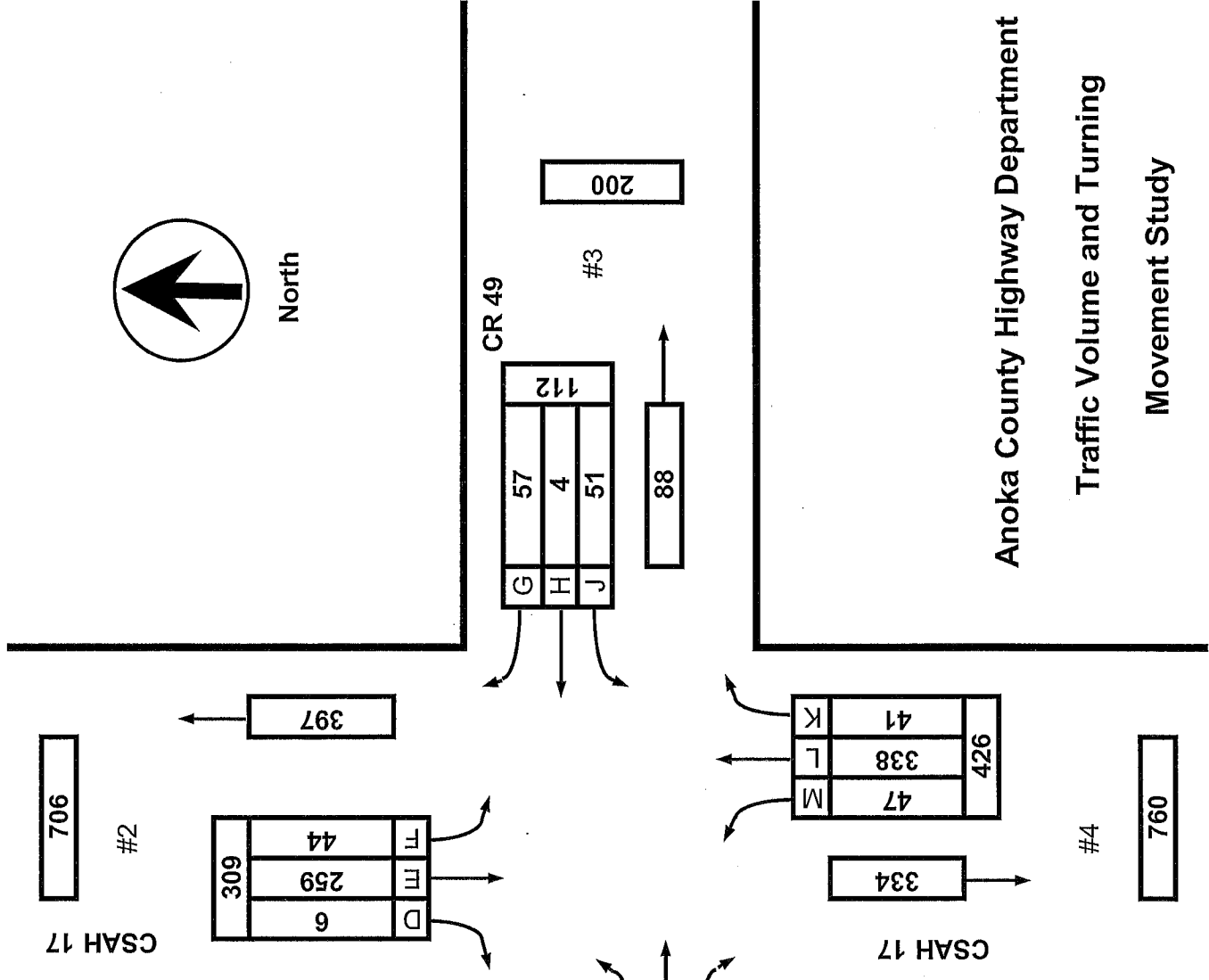
@ CR 49 (North Road)

Collection Period : AM PEAK

Hour : 11:00 - 12:00 PM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 07/28/14

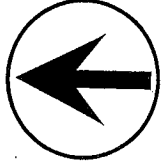
Count Number : TMC1416

Location : CSAH 17 (Lexington Ave.)

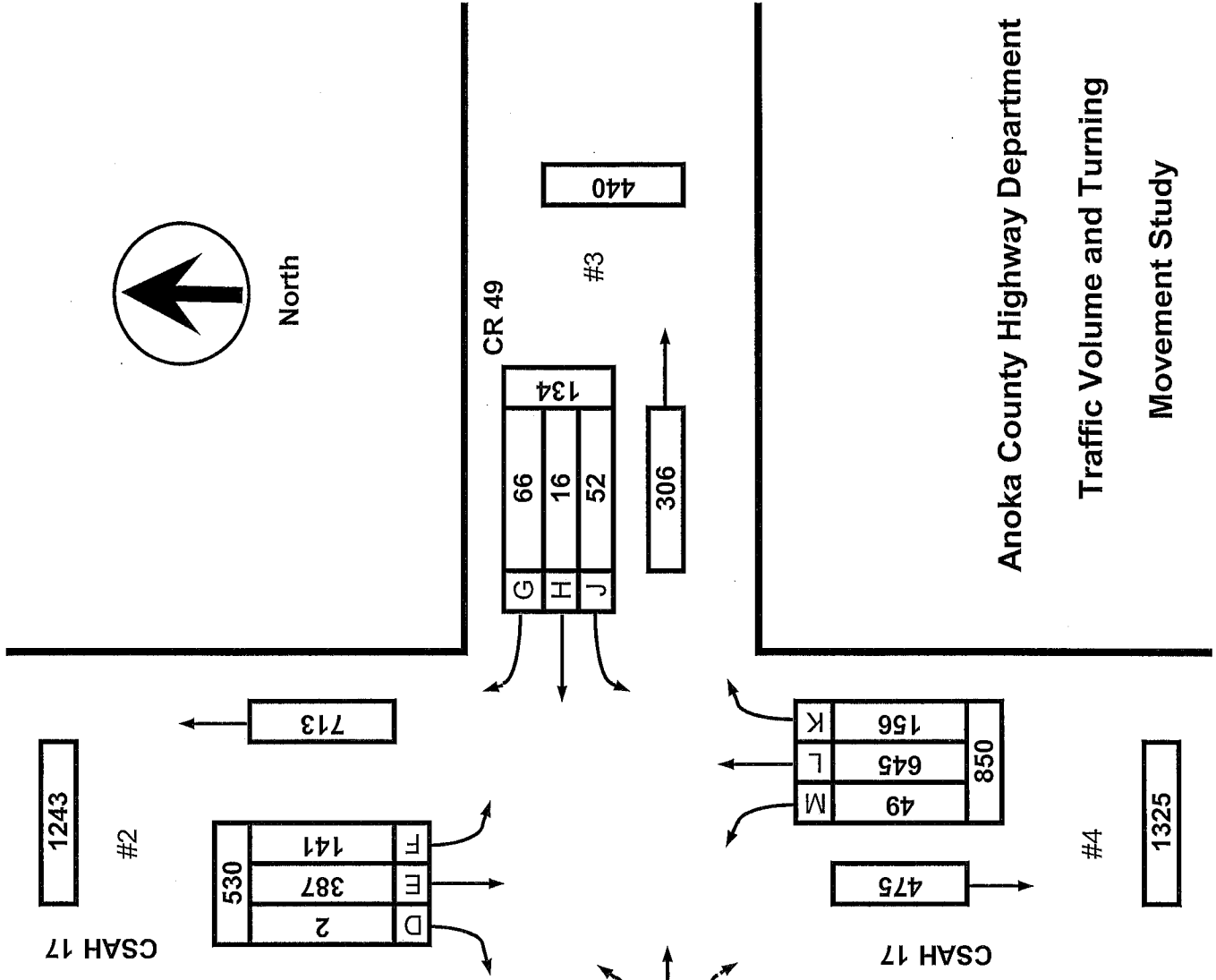
@ CR 49 (North Road)

Collection Period : PM PEAK

Hour : 4:45 - 5:45 PM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Default Comments  
 Weather: Warm and Sunny  
 Counter: DB-400  
 Study Conducted By: Jack and Steven

File Name : TMC 1416  
 Site Code : 14160202  
 Start Date : 07/28/2014  
 Page No : 1

#### Groups Printed- Unshifted

Start Time	CSAH 17 Southbound					CR 49 Westbound					CSAH 17 Northbound					PARKING LOT ENTRANCE 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	2	36	0	5	38	9	0	19	2	28	0	25	2	1	27	0	0	1	0	1	8	94	102
06:15	4	57	0	0	61	17	1	6	2	24	0	17	4	1	21	0	0	1	0	1	3	107	110
06:30	8	107	0	3	115	35	1	10	2	46	2	21	3	1	26	0	0	0	0	0	6	187	193
06:45	10	117	0	2	127	13	1	5	0	19	0	26	6	1	32	0	0	3	2	3	5	181	186
<b>Total</b>	<b>24</b>	<b>317</b>	<b>0</b>	<b>10</b>	<b>341</b>	<b>74</b>	<b>3</b>	<b>40</b>	<b>6</b>	<b>117</b>	<b>2</b>	<b>89</b>	<b>15</b>	<b>4</b>	<b>106</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>22</b>	<b>569</b>	<b>591</b>
07:00	12	109	0	1	121	27	0	9	1	36	0	29	7	0	36	0	0	0	0	0	2	193	195
07:15	13	140	0	1	153	29	0	12	1	41	1	38	1	3	40	0	0	1	1	1	6	235	241
07:30	14	128	0	4	142	23	0	9	0	32	0	20	9	1	29	0	0	1	0	1	5	204	209
07:45	14	103	0	3	117	33	3	14	1	50	0	38	1	0	39	0	0	2	0	2	4	208	212
<b>Total</b>	<b>53</b>	<b>480</b>	<b>0</b>	<b>9</b>	<b>533</b>	<b>112</b>	<b>3</b>	<b>44</b>	<b>3</b>	<b>159</b>	<b>1</b>	<b>125</b>	<b>18</b>	<b>4</b>	<b>144</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>17</b>	<b>840</b>	<b>857</b>
08:00	11	89	1	4	101	32	1	5	0	38	3	40	9	2	52	1	2	0	0	3	6	194	200
08:15	11	59	3	2	73	13	1	10	0	24	1	37	14	0	52	0	1	4	0	5	2	154	156
08:30	14	54	0	1	68	34	3	19	0	56	1	44	10	4	55	0	1	0	0	1	5	180	185
08:45	5	61	0	1	66	13	0	10	0	23	9	32	6	6	47	0	0	0	0	0	7	136	143
<b>Total</b>	<b>41</b>	<b>263</b>	<b>4</b>	<b>8</b>	<b>308</b>	<b>92</b>	<b>5</b>	<b>44</b>	<b>0</b>	<b>141</b>	<b>14</b>	<b>153</b>	<b>39</b>	<b>12</b>	<b>206</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>9</b>	<b>20</b>	<b>664</b>	<b>684</b>
09:00	9	67	2	6	78	16	2	10	1	28	2	52	1	2	55	1	0	1	0	2	9	163	172
09:15	5	46	2	3	53	10	3	10	0	23	3	55	8	3	66	0	0	3	1	3	7	145	152
09:30	6	45	1	6	52	11	2	4	0	17	10	36	8	1	54	2	0	2	1	4	8	127	135
09:45	2	52	1	2	55	11	0	1	0	12	11	62	10	2	83	2	2	4	1	8	5	158	163
<b>Total</b>	<b>22</b>	<b>210</b>	<b>6</b>	<b>17</b>	<b>238</b>	<b>48</b>	<b>7</b>	<b>25</b>	<b>1</b>	<b>80</b>	<b>26</b>	<b>205</b>	<b>27</b>	<b>8</b>	<b>258</b>	<b>5</b>	<b>2</b>	<b>10</b>	<b>3</b>	<b>17</b>	<b>29</b>	<b>593</b>	<b>622</b>
10:00	3	53	1	1	57	12	4	5	1	21	4	53	9	2	66	1	0	7	2	8	6	152	158
10:15	5	41	2	3	48	4	1	13	0	18	12	54	9	2	75	2	2	4	0	8	5	149	154
10:30	16	36	1	2	53	13	3	16	0	32	15	55	10	1	80	0	1	7	0	8	3	173	176
10:45	16	43	3	5	62	5	3	15	1	23	11	74	10	1	95	5	3	2	2	10	9	190	199
<b>Total</b>	<b>40</b>	<b>173</b>	<b>7</b>	<b>11</b>	<b>220</b>	<b>34</b>	<b>11</b>	<b>49</b>	<b>2</b>	<b>94</b>	<b>42</b>	<b>236</b>	<b>38</b>	<b>6</b>	<b>316</b>	<b>8</b>	<b>6</b>	<b>20</b>	<b>4</b>	<b>34</b>	<b>23</b>	<b>664</b>	<b>687</b>
11:00	10	46	4	8	60	19	1	14	1	34	11	78	11	3	100	0	1	8	1	9	13	203	216
11:15	9	65	0	4	74	20	0	24	0	44	10	75	10	3	95	0	0	5	0	5	7	218	225
11:30	19	73	0	2	92	9	3	11	0	23	11	79	9	1	99	1	1	1	0	3	3	217	220
11:45	6	75	2	2	83	3	0	8	1	11	15	106	11	4	132	1	1	10	0	12	7	238	245
<b>Total</b>	<b>44</b>	<b>259</b>	<b>6</b>	<b>16</b>	<b>309</b>	<b>51</b>	<b>4</b>	<b>57</b>	<b>2</b>	<b>112</b>	<b>47</b>	<b>338</b>	<b>41</b>	<b>11</b>	<b>426</b>	<b>2</b>	<b>3</b>	<b>24</b>	<b>1</b>	<b>29</b>	<b>30</b>	<b>876</b>	<b>906</b>
12:00	8	71	1	3	80	1	1	5	0	7	5	85	10	2	100	3	3	1	1	7	6	194	200
12:15	16	78	0	2	94	6	5	12	3	23	8	138	9	2	155	2	1	9	0	12	7	284	291
12:30	9	61	1	1	71	4	3	10	1	17	14	95	5	2	114	3	1	5	1	9	5	211	216
12:45	11	81	2	5	94	5	4	17	0	26	16	65	8	3	89	5	0	9	2	14	10	223	233
<b>Total</b>	<b>44</b>	<b>291</b>	<b>4</b>	<b>11</b>	<b>339</b>	<b>16</b>	<b>13</b>	<b>44</b>	<b>4</b>	<b>73</b>	<b>43</b>	<b>383</b>	<b>32</b>	<b>9</b>	<b>458</b>	<b>13</b>	<b>5</b>	<b>24</b>	<b>4</b>	<b>42</b>	<b>28</b>	<b>912</b>	<b>940</b>
13:00	9	68	3	3	80	9	0	11	1	20	17	65	12	0	94	2	4	12	1	18	5	212	217
13:15	11	60	1	0	72	4	0	9	1	13	25	100	12	4	137	2	1	7	0	10	5	232	237
13:30	6	70	5	8	81	10	0	8	1	18	9	74	8	6	91	2	0	8	2	10	17	200	217
13:45	12	72	0	3	84	11	5	5	2	21	12	80	13	3	105	3	1	5	0	9	8	219	227
<b>Total</b>	<b>38</b>	<b>270</b>	<b>9</b>	<b>14</b>	<b>317</b>	<b>34</b>	<b>5</b>	<b>33</b>	<b>5</b>	<b>72</b>	<b>63</b>	<b>319</b>	<b>45</b>	<b>13</b>	<b>427</b>	<b>9</b>	<b>6</b>	<b>32</b>	<b>3</b>	<b>47</b>	<b>35</b>	<b>863</b>	<b>898</b>
*** BREAK ***																							
14:15	19	80	1	4	100	9	3	7	0	19	7	85	11	1	103	1	2	7	1	10	6	232	238
14:30	14	88	1	3	103	6	3	5	0	14	1	84	15	5	100	0	5	6	0	11	8	228	236
14:45	12	72	0	2	84	5	2	10	1	17	10	87	15	3	112	0	4	6	1	10	7	223	230
<b>Total</b>	<b>45</b>	<b>240</b>	<b>2</b>	<b>9</b>	<b>287</b>	<b>20</b>	<b>8</b>	<b>22</b>	<b>1</b>	<b>50</b>	<b>18</b>	<b>256</b>	<b>41</b>	<b>9</b>	<b>315</b>	<b>1</b>	<b>11</b>	<b>19</b>	<b>2</b>	<b>31</b>	<b>21</b>	<b>683</b>	<b>704</b>
15:00	15	73	5	1	93	6	2	5	0	13	11	71	12	2	94	1	1	5	0	7	3	207	210
15:15	28	79	1	4	108	10	1	5	0	16	15	107	9	2	131	4	1	9	0	14	6	269	275
15:30	20	114	1	0	135	10	3	11	5	24	16	101	13	6	130	3	8	11	0	22	11	311	322
15:45	16	82	2	3	100	11	0	11	0	22	15	99	16	1	130	3	3	6	0	12	4	264	268
<b>Total</b>	<b>79</b>	<b>348</b>	<b>9</b>	<b>8</b>	<b>436</b>	<b>37</b>	<b>6</b>	<b>32</b>	<b>5</b>	<b>75</b>	<b>57</b>	<b>378</b>	<b>50</b>	<b>11</b>	<b>485</b>	<b>11</b>	<b>13</b>	<b>31</b>	<b>0</b>	<b>55</b>	<b>24</b>	<b>1051</b>	<b>1075</b>
16:00	14	71	1	0	86	10	5	12	0	27	10	138	36	1	184	1	0	9	0	10	1	307	308
16:15	16	72	1	3	89	10	2	18	0	30	20	132	21	3	173	4	10	14	1	28	7	320	327
16:30	31	90	2	2	123	11	2	11	0	24	16	143	22	1	181	3	4	11	1	18	4	346	350
16:45	34	76	2	0	112	12	3	17	0	32	16	169	37	0	222	1	4	4	0	9	0	375	375
<b>Total</b>	<b>95</b>	<b>309</b>	<b>6</b>	<b>5</b>	<b>410</b>	<b>43</b>	<b>12</b>	<b>58</b>	<b>0</b>	<b>113</b>	<b>62</b>	<b>582</b>	<b>116</b>	<b>5</b>	<b>760</b>	<b>9</b>	<b>18</b>	<b>38</b>	<b>2</b>	<b>65</b>	<b>12</b>	<b>1348</b>	<b>1360</b>
17:00	25	94	0	1	119	10	3	8	0	21	11	139	30	6	180	0	1	12	0	13	7	333	340
17:15	41	108	0	2	149	12	9	21	1	42	12	186	44	1	242	1	1	14	0	16	4	449	453



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Default Comments  
 Weather: Warm and Sunny  
 Counter: DB-400  
 Study Conducted By: Jack and Steven

File Name : TMC 1416  
 Site Code : 14160202  
 Start Date : 07/28/2014  
 Page No : 2

#### Groups Printed- Unshifted

Start Time	CSAH 17 Southbound					CR 49 Westbound					CSAH 17 Northbound					PARKING LOT ENTRANCE 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			
17:30	41	109	0	0	150	18	1	20	0	39	10	151	45	1	206	0	3	6	0	9	1	404	405
17:45	43	73	0	0	116	18	3	13	0	34	19	152	32	2	203	0	2	5	0	7	2	360	362
<b>Total</b>	<b>150</b>	<b>384</b>	<b>0</b>	<b>3</b>	<b>534</b>	<b>58</b>	<b>16</b>	<b>62</b>	<b>1</b>	<b>136</b>	<b>52</b>	<b>628</b>	<b>151</b>	<b>10</b>	<b>831</b>	<b>1</b>	<b>7</b>	<b>37</b>	<b>0</b>	<b>45</b>	<b>14</b>	<b>1546</b>	<b>1560</b>
18:00	29	92	2	0	123	15	2	12	0	29	6	109	17	1	132	1	3	10	0	14	1	298	299
18:15	47	94	2	1	143	11	1	18	1	30	7	95	30	1	132	2	3	7	0	12	3	317	320
18:30	26	70	0	1	96	20	1	12	0	33	7	84	9	1	100	0	0	9	0	9	2	238	240
18:45	19	70	0	0	89	4	1	11	0	16	9	68	11	0	88	2	4	8	0	14	0	207	207
<b>Total</b>	<b>121</b>	<b>326</b>	<b>4</b>	<b>2</b>	<b>451</b>	<b>50</b>	<b>5</b>	<b>53</b>	<b>1</b>	<b>108</b>	<b>29</b>	<b>356</b>	<b>67</b>	<b>3</b>	<b>452</b>	<b>5</b>	<b>10</b>	<b>34</b>	<b>0</b>	<b>49</b>	<b>6</b>	<b>1060</b>	<b>1066</b>
19:00	23	66	0	0	89	7	0	11	0	18	9	74	11	0	94	3	1	9	1	13	1	214	215
19:15	26	58	0	1	84	11	4	6	0	21	6	49	6	0	61	0	1	3	0	4	1	170	171
19:30	23	74	0	0	97	2	2	6	0	10	15	81	13	0	109	0	1	12	0	13	0	229	229
19:45	20	42	0	2	62	2	5	5	0	12	11	65	17	1	93	3	0	6	0	9	3	176	179
<b>Total</b>	<b>92</b>	<b>240</b>	<b>0</b>	<b>3</b>	<b>332</b>	<b>22</b>	<b>11</b>	<b>28</b>	<b>0</b>	<b>61</b>	<b>41</b>	<b>269</b>	<b>47</b>	<b>1</b>	<b>357</b>	<b>6</b>	<b>3</b>	<b>30</b>	<b>1</b>	<b>39</b>	<b>5</b>	<b>789</b>	<b>794</b>
20:00	11	57	1	0	69	7	0	8	0	15	7	60	15	0	82	0	0	6	0	6	0	172	172
20:15	15	51	1	0	67	8	2	22	1	32	17	66	18	0	101	0	4	8	0	12	1	212	213
20:30	29	57	0	0	86	3	4	11	0	18	8	34	9	3	51	1	5	9	0	15	3	170	173
20:45	17	55	0	0	72	10	3	14	0	27	2	42	9	0	53	2	3	14	0	19	0	171	171
<b>Total</b>	<b>72</b>	<b>220</b>	<b>2</b>	<b>0</b>	<b>294</b>	<b>28</b>	<b>9</b>	<b>55</b>	<b>1</b>	<b>92</b>	<b>34</b>	<b>202</b>	<b>51</b>	<b>3</b>	<b>287</b>	<b>3</b>	<b>12</b>	<b>37</b>	<b>0</b>	<b>52</b>	<b>4</b>	<b>725</b>	<b>729</b>
21:00	11	42	0	1	53	3	2	5	0	10	3	37	12	1	52	2	6	2	0	10	2	125	127
21:15	6	41	0	0	47	9	1	8	0	18	1	29	8	0	38	3	3	5	0	11	0	114	114
21:30	12	39	0	0	51	2	0	9	0	11	1	25	5	0	31	0	1	1	0	2	0	95	95
21:45	10	28	2	1	40	4	0	7	0	11	0	22	3	0	25	1	0	1	0	2	1	78	79
<b>Total</b>	<b>39</b>	<b>150</b>	<b>2</b>	<b>2</b>	<b>191</b>	<b>18</b>	<b>3</b>	<b>29</b>	<b>0</b>	<b>50</b>	<b>5</b>	<b>113</b>	<b>28</b>	<b>1</b>	<b>146</b>	<b>6</b>	<b>10</b>	<b>9</b>	<b>0</b>	<b>25</b>	<b>3</b>	<b>412</b>	<b>415</b>
22:00	10	17	0	0	27	2	0	4	0	6	0	23	3	0	26	0	0	3	0	3	0	62	62
<b>Grand Total</b>	<b>1009</b>	<b>4497</b>	<b>61</b>	<b>128</b>	<b>5567</b>	<b>739</b>	<b>121</b>	<b>679</b>	<b>32</b>	<b>1539</b>	<b>536</b>	<b>4655</b>	<b>809</b>	<b>110</b>	<b>6000</b>	<b>80</b>	<b>110</b>	<b>361</b>	<b>23</b>	<b>551</b>	<b>293</b>	<b>13657</b>	<b>13950</b>
Approch %	18.1	80.8	1.1			48	7.9	44.1			8.9	77.6	13.5			14.5	20	65.5					
Total %	7.4	32.9	0.4		40.8	5.4	0.9	5		11.3	3.9	34.1	5.9		43.9	0.6	0.8	2.6		4	2.1	97.9	

Start Time	CSAH 17 Southbound				CR 49 Westbound				CSAH 17 Northbound				PARKING LOT ENTRANCE 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 11:00																	
11:00	10	46	4	60	19	1	14	34	11	78	11	100	0	1	8	9	203
11:15	9	65	0	74	20	0	24	44	10	75	10	95	0	0	5	5	218
11:30	19	73	0	92	9	3	11	23	11	79	9	99	1	1	1	3	217
11:45	6	75	2	83	3	0	8	11	15	106	11	132	1	1	10	12	238
<b>Total Volume</b>	<b>44</b>	<b>259</b>	<b>6</b>	<b>309</b>	<b>51</b>	<b>4</b>	<b>57</b>	<b>112</b>	<b>47</b>	<b>338</b>	<b>41</b>	<b>426</b>	<b>2</b>	<b>3</b>	<b>24</b>	<b>29</b>	<b>876</b>
% App. Total	14.2	83.8	1.9		45.5	3.6	50.9		11	79.3	9.6		6.9	10.3	82.8		
PHF	.579	.863	.375	.840	.638	.333	.594	.636	.783	.797	.932	.807	.500	.750	.600	.604	.920

Peak Hour Analysis From 12:00 to 22:00 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:45																	
16:45	34	76	2	112	12	3	17	32	16	169	37	222	1	4	4	9	375
17:00	25	94	0	119	10	3	8	21	11	139	30	180	0	1	12	13	333
17:15	41	108	0	149	12	9	21	42	12	186	44	242	1	1	14	16	449
17:30	41	109	0	150	18	1	20	39	10	151	45	206	0	3	6	9	404
<b>Total Volume</b>	<b>141</b>	<b>387</b>	<b>2</b>	<b>530</b>	<b>52</b>	<b>16</b>	<b>66</b>	<b>134</b>	<b>49</b>	<b>645</b>	<b>156</b>	<b>850</b>	<b>2</b>	<b>9</b>	<b>36</b>	<b>47</b>	<b>1561</b>
% App. Total	26.6	73	0.4		38.8	11.9	49.3		5.8	75.9	18.4		4.3	19.1	76.6		
PHF	.860	.888	.250	.883	.722	.444	.786	.798	.766	.867	.867	.878	.500	.563	.643	.734	.869



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

Study Name : TMC 1416  
Study Date : 08/01/14  
Page No. : 1

**Signal Warrants - Summary**

**Major Street Approaches**

**Northbound: CSAH 17**  
Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 6,000

**Southbound: CSAH 17**  
Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 5,567

**Minor Street Approaches**

**Eastbound: PARKING LOT ENTRANCE**  
Number of Lanes: 2  
Total Approach Volume: 551

**Westbound: CR 49**  
Number of Lanes: 2  
Total Approach Volume: 1,539

**Warrant Summary (Rural values apply.)**

<b>Warrant 1 - Eight Hour Vehicular Volumes</b> .....	<b>Satisfied</b>
<b>Warrant 1A - Minimum Vehicular Volume</b> ..... <b>Not Satisfied</b>	
Required volumes reached for 3 hours, 8 are needed	
<b>Warrant 1B - Interruption of Continuous Traffic</b> ..... <b>Satisfied</b>	
Required volumes reached for 8 hours, 8 are needed	
<b>Warrant 1 A&amp;B - Combination of Warrants</b> ..... <b>Not Satisfied</b>	
Required volumes reached for 5 hours, 8 are needed	
<b>Warrant 2 - Four Hour Volumes</b> .....	<b>Satisfied</b>
Number of hours (5) volumes exceed minimum $\geq$ minimum required (4).	
<b>Warrant 3 - Peak Hour</b> .....	<b>Satisfied</b>
<b>Warrant 3A - Peak Hour Delay</b> ..... <b>Satisfied</b>	
Number of hours (2) volumes exceed minimum $\geq$ required (1). Delay data not evaluated.	
<b>Warrant 3B - Peak Hour Volumes</b> ..... <b>Satisfied</b>	
Volumes exceed minimums for at least one hour.	
<b>Warrant 4 - Pedestrian Volumes</b> .....	<b>Not Evaluated</b>
<b>Warrant 5 - School Crossing</b> .....	<b>Not Evaluated</b>
<b>Warrant 6 - Coordinated Signal System</b> .....	<b>Not Evaluated</b>
<b>Warrant 7 - Crash Experience</b> .....	<b>Not Evaluated</b>
<b>Warrant 8 - Roadway Network</b> .....	<b>Not Evaluated</b>
<b>Warrant 9 - Intersection Near a Grade Crossing</b> .....	<b>Not Evaluated</b>



# ANOKA COUNTY HIGHWAY

## PC-WARRANTS

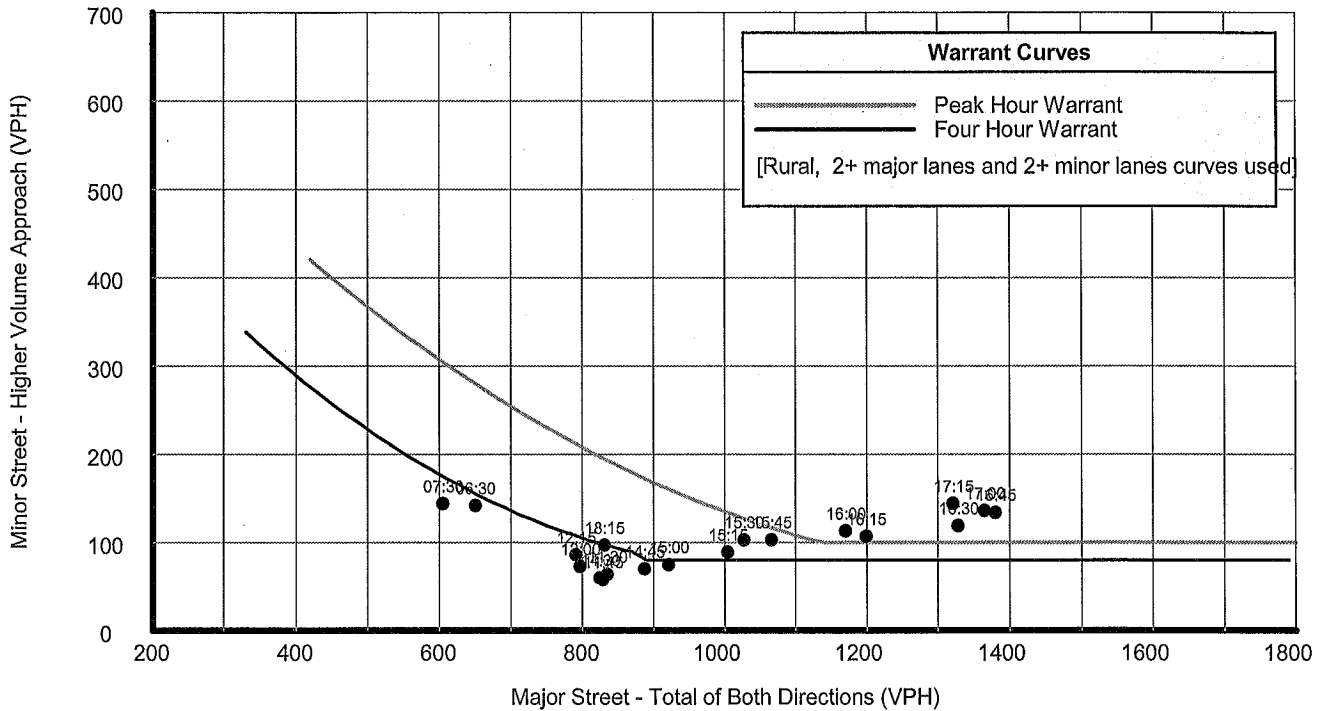
### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC 1416

Study Date : 08/01/14

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
17:15	1,321	144 W	Yes	Yes	16:45	1,380	134 W	Yes	Yes	17:00	1,365	136 W	Yes	Yes
06:30	650	142 W	Yes	Yes	15:45	1,066	103 W	Yes	Yes	16:00	1,170	113 W	Yes	Yes
07:30	605	144 W	Yes	Yes	17:45	1,045	126 W	Yes	Yes	07:15	673	161 W	Yes	Yes
16:45	1,380	134 W	Yes	No	14:45	887	70 W	Yes	Yes	10:30	619	133 W	Yes	Yes
17:00	1,365	136 W	Yes	No	12:00	797	73 W	Yes	Yes	06:15	539	125 W	Yes	Yes
16:30	1,328	119 W	Yes	No	13:00	744	72 W	Yes	Yes	15:45	1,066	103 W	Yes	No
16:15	1,199	107 W	Yes	No	10:45	677	124 W	Yes	Yes	15:30	1,027	103 W	Yes	No
16:00	1,170	113 W	Yes	No	06:30	650	142 W	Yes	Yes	15:15	1,004	89 W	Yes	No
15:45	1,066	103 W	Yes	No	11:45	829	58 W	Yes	No	15:00	921	75 W	Yes	No
15:30	1,027	103 W	Yes	No	14:30	825	60 W	Yes	No	18:00	903	108 W	Yes	No
15:15	1,004	89 W	Yes	No	14:15	789	63 W	Yes	No	14:45	887	70 W	Yes	No
15:00	921	75 W	Yes	No	18:45	711	65 W	Yes	No	11:30	835	64 W	Yes	No
14:45	887	70 W	Yes	No	19:00	689	61 W	Yes	No	18:15	831	97 W	Yes	No
11:30	835	64 W	Yes	No	19:30	680	69 W	Yes	No	11:45	829	58 W	Yes	No
18:15	831	97 W	Yes	No	19:15	657	58 W	Yes	No	14:30	825	60 W	Yes	No
11:45	829	58 W	Yes	No	10:30	619	133 W	No	Yes	12:00	797	73 W	Yes	No
14:30	825	60 W	Yes	No	19:45	611	77 W	No	Yes	12:15	791	86 W	Yes	No
12:00	797	73 W	Yes	No	07:30	605	144 W	No	Yes	14:15	789	63 W	Yes	No
12:15	791	86 W	Yes	No	14:00	602	50 W	No	No	12:30	751	76 W	Yes	No
14:15	789	63 W	Yes	No	20:00	581	92 W	No	Yes	13:00	744	72 W	Yes	No
11:15	755	85 W	Yes	No	10:15	573	107 W	No	Yes	12:45	738	77 W	Yes	No
12:30	751	76 W	Yes	No	07:45	557	168 W	No	Yes	18:45	711	65 W	Yes	No
13:00	744	72 W	Yes	No	06:15	539	125 W	No	Yes	18:30	701	88 W	Yes	No
12:45	738	77 W	Yes	No	10:00	536	94 W	No	Yes	19:00	689	61 W	Yes	No



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

Study Name : TMC 1416  
Study Date : 08/01/14  
Page No. : 1

**Multi-Way Stop Warrant Report**

**Major Street Approaches**

**Northbound: CSAH 17**  
Total Approach Volume: 6,000  
85% Speed > 40 MPH.

**Southbound: CSAH 17**  
Total Approach Volume: 5,567  
85% Speed > 40 MPH.

**Minor Street Approaches**

**Eastbound: PARKING LOT ENTRANCE**  
Total Approach Volume: 551

**Westbound: CR 49**  
Total Approach Volume: 1,539

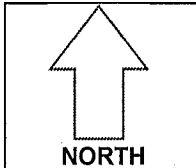
**Warrant Summary**

- Criteria A - Interim Measure** ..... **Not Evaluated**  
If traffic signals are justified, stop signs can be installed as an interim measure.
- Criteria B - Crash Experience** ..... **Not Evaluated**
- Criteria C - Minimum Volumes and Delays** ..... **Satisfied**  
Delay data not evaluated  
Required volumes reached for 8 hours, 8 are needed
- Criteria D - 80% of Volumes, Delays, and Crashes** ..... **Not Evaluated**  
Delay data not evaluated  
Number of crashes (-1) is less than the minimum required (4).  
Required volumes reached for 0 hours, 8 are needed

**Analysis of 8-Hour Volume Warrants:**

Time	Major Total	Minor Total	Crit C			Crit D		
			Major	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
06:30 - 07:30	650	146	210-Yes	140-Yes	Both	240-Yes	160-No	Major
07:30 - 08:30	605	155	210-Yes	140-Yes	Both	240-Yes	160-No	Major
10:15 - 11:15	573	142	210-Yes	140-Yes	Both	240-Yes	160-No	Major
15:15 - 16:15	1,004	147	210-Yes	140-Yes	Both	240-Yes	160-No	Major
16:15 - 17:15	1,199	175	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
17:15 - 18:15	1,321	190	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
18:15 - 19:15	831	145	210-Yes	140-Yes	Both	240-Yes	160-No	Major
20:00 - 21:00	581	144	210-Yes	140-Yes	Both	240-Yes	160-No	Major
05:45 - 06:45	288	100	210-Yes	140-No	Major	240-Yes	160-No	Major
06:00 - 07:00	447	122	210-Yes	140-No	Major	240-Yes	160-No	Major
06:15 - 07:15	539	129	210-Yes	140-No	Major	240-Yes	160-No	Major
08:30 - 09:30	488	136	210-Yes	140-No	Major	240-Yes	160-No	Major
08:45 - 09:45	471	100	210-Yes	140-No	Major	240-Yes	160-No	Major
09:00 - 10:00	496	97	210-Yes	140-No	Major	240-Yes	160-No	Major
09:15 - 10:15	486	96	210-Yes	140-No	Major	240-Yes	160-No	Major
09:30 - 10:30	490	96	210-Yes	140-No	Major	240-Yes	160-No	Major
09:45 - 10:45	517	115	210-Yes	140-No	Major	240-Yes	160-No	Major
10:00 - 11:00	536	128	210-Yes	140-No	Major	240-Yes	160-No	Major
11:15 - 12:15	755	112	210-Yes	140-No	Major	240-Yes	160-No	Major
11:30 - 12:30	835	98	210-Yes	140-No	Major	240-Yes	160-No	Major
11:45 - 12:45	829	98	210-Yes	140-No	Major	240-Yes	160-No	Major
12:00 - 13:00	797	115	210-Yes	140-No	Major	240-Yes	160-No	Major
12:15 - 13:15	791	139	210-Yes	140-No	Major	240-Yes	160-No	Major
12:30 - 13:30	751	127	210-Yes	140-No	Major	240-Yes	160-No	Major

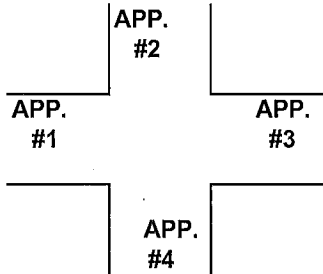




**COUNT LOCATION:** CSAH 17 (Lexington Ave.)  
@ CR 49 (North Road)

**DATE:** 07/31/2014

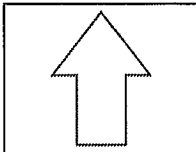
APP. #1 = Parking Lot Entrance
APP. #2 = CSAH 17
APP. #3 = CR 49
APP. #4 = CSAH 17



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						5		3
6:15-6:30	1				1	3		
6:30-6:45	2			1	3	5		1
6:45-7:00						5		
<b>HOURLY TOTAL</b>					<b>4</b>	<b>HOURLY TOTAL</b>		<b>22</b>
7:00-7:15				1	1	2		1
7:15-7:30						4	1	
7:30-7:45						4		1
7:45-8:00	2			1	3	3		
<b>HOURLY TOTAL</b>					<b>4</b>	<b>HOURLY TOTAL</b>		<b>16</b>
8:00-8:15						6		
8:15-8:30						2		
8:30-8:45						6		
8:45-9:00						7		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>21</b>
9:00-9:15				1	1	9		
9:15-9:30				1	1	7		
9:30-9:45						8		
9:45-10:00	3			3	6	4		
<b>HOURLY TOTAL</b>					<b>8</b>	<b>HOURLY TOTAL</b>		<b>28</b>
10:00-10:15				10	10	6		
10:15-10:30	1				1	5		
10:30-10:45		2			2	4		
10:45-11:00		1			1	8	1	
<b>HOURLY TOTAL</b>					<b>14</b>	<b>HOURLY TOTAL</b>		<b>24</b>
11:00-11:15	3			12	15	10	1	2
11:15-11:30		1			1	7		
11:30-11:45	2	1	1	1	5	5		
11:45-12:00	1		1	1	3	6		
<b>HOURLY TOTAL</b>					<b>24</b>	<b>HOURLY TOTAL</b>		<b>31</b>
12:00-12:15						6		
12:15-12:30	1			1	2	6		1
12:30-12:45	2	1		1	4	5		
12:45-1:00	2			4	6	9		
<b>HOURLY TOTAL</b>					<b>12</b>	<b>HOURLY TOTAL</b>		<b>27</b>
1:00-1:15				3	3	5		
1:15-1:30	1	2	1	1	5	5		
1:30-1:45	2	1			3	17		
1:45-2:00				5	5	10		
<b>HOURLY TOTAL</b>					<b>16</b>	<b>HOURLY TOTAL</b>		<b>37</b>
				<b>TOTAL</b>	<b>82</b>		<b>TOTAL</b>	<b>206</b>

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**NORTH**

APP. #1 = Parking Lot
APP. #2 = CSAH 17
APP. #3 = CR 49
APP. #4 = CSAH 17

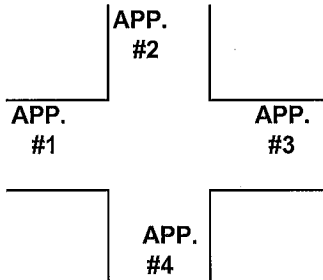
**COUNT LOCATION:**

CSAH 17 (Lexington Ave.)

**DATE:**

07/28/2014

@ CR 49 (North Road)



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	1		1		2	3	2	1
2:15-2:30	1	1		1	3	5		2
2:30-2:45	1				1	6		
2:45-3:00		2	2	3	7	2		
<b>HOURLY TOTAL</b>					<b>13</b>	<b>HOURLY TOTAL</b>		<b>21</b>
3:00-3:15				1	1	6		1
3:15-3:30	2			6	8	10		1
3:30-3:45						4		
3:45-4:00						1		
<b>HOURLY TOTAL</b>					<b>9</b>	<b>HOURLY TOTAL</b>		<b>23</b>
4:00-4:15						1		
4:15-4:30		1			1	7		
4:30-4:45						4		
4:45-5:00				6	6	1		1
<b>HOURLY TOTAL</b>					<b>7</b>	<b>HOURLY TOTAL</b>		<b>14</b>
5:00-5:15	2			2	4	7		1
5:15-5:30	1			1	2	4		
5:30-5:45				3	3	2		
5:45-6:00				2	2	1		
<b>HOURLY TOTAL</b>					<b>11</b>	<b>HOURLY TOTAL</b>		<b>15</b>
6:00-6:15				1	1	2		1
6:15-6:30						2		
6:30-6:45			1		1			
6:45-7:00								
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>5</b>
7:00-7:15		1		1	2	1		
7:15-7:30								
7:30-7:45			1	2	3	3		
7:45-8:00	4	8			12			
<b>HOURLY TOTAL</b>					<b>17</b>	<b>HOURLY TOTAL</b>		<b>4</b>
8:00-8:15	1			4	5			
8:15-8:30	3	14		2	19	3		
8:30-8:45	2	3	1	3	9			
8:45-9:00						1		1
<b>HOURLY TOTAL</b>					<b>33</b>	<b>HOURLY TOTAL</b>		<b>5</b>
9:00-9:15				3	3	1		
9:15-9:30								
9:30-9:45	2	1			3	1		
9:45-10:00								
<b>HOURLY TOTAL</b>					<b>6</b>	<b>HOURLY TOTAL</b>		<b>2</b>
				<b>TOTAL</b>	<b>180</b>		<b>TOTAL</b>	<b>295</b>

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