

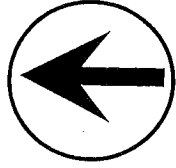
Date : 07/30/14

Count Number : TMC1417

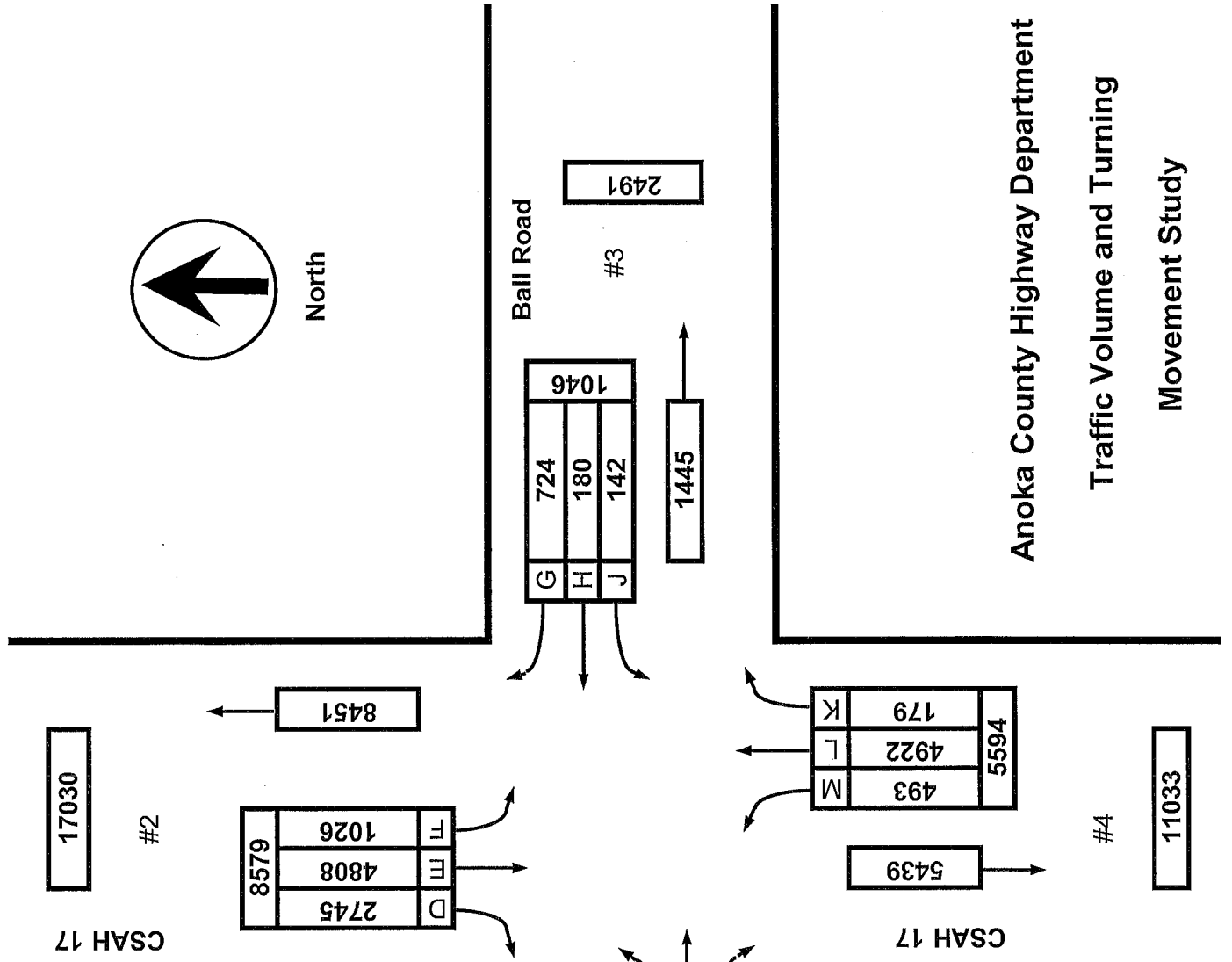
Location : CSAH 17 (Lexington Ave.)

@ Ball Road

Collection Period : 6 AM - 10 PM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 07/30/14

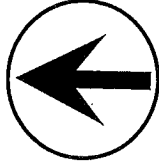
Count Number : TMC1417

Location : CSAH 17 (Lexington Ave.)

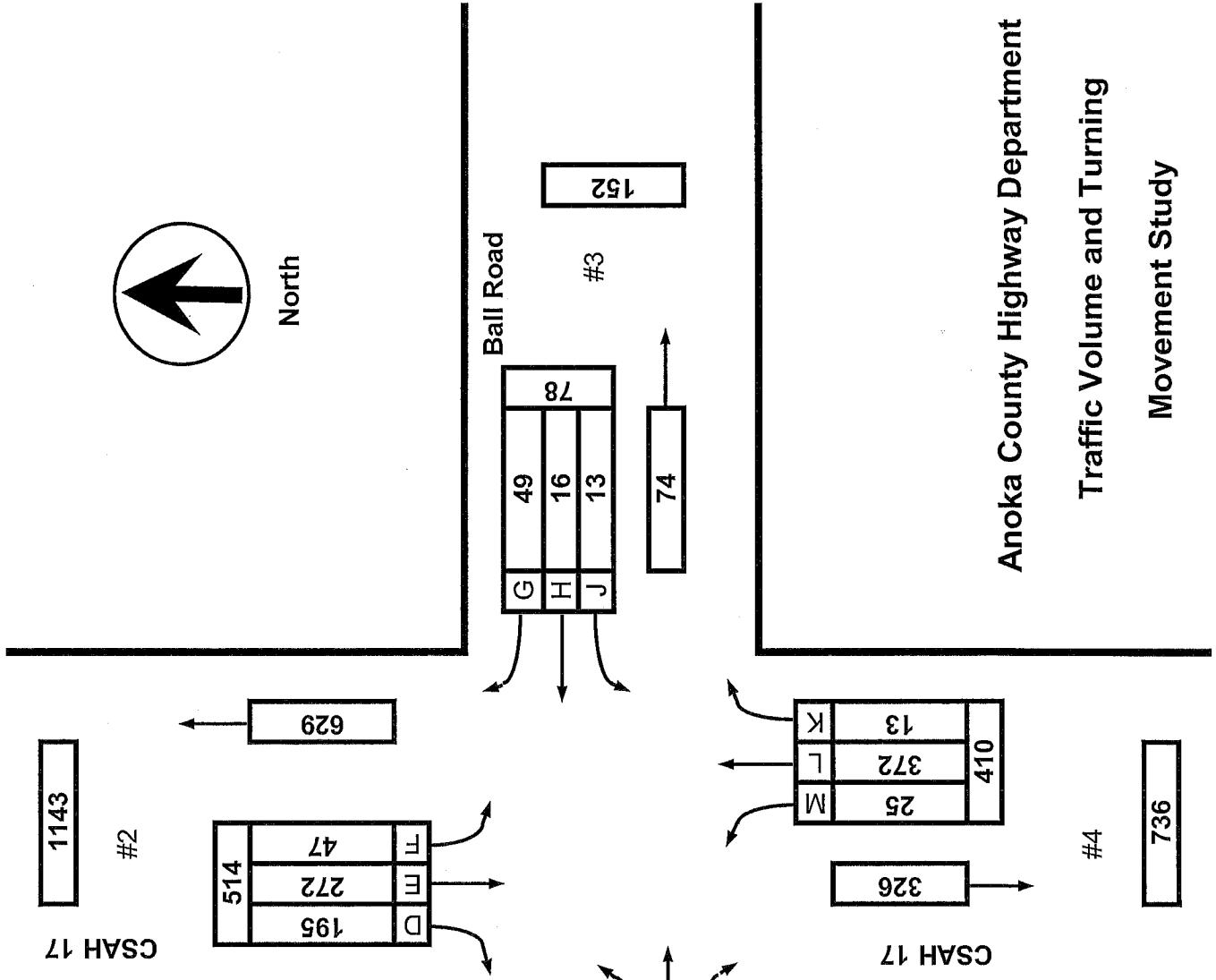
@ Ball Road

Collection Period : AM PEAK

Hour : 11:00 - 12:00 PM



North



Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

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

Date : 07/21/14

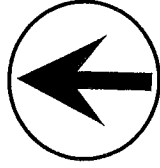
Count Number : TMC1417

Location : CSAH 17 (Lexington Ave.)

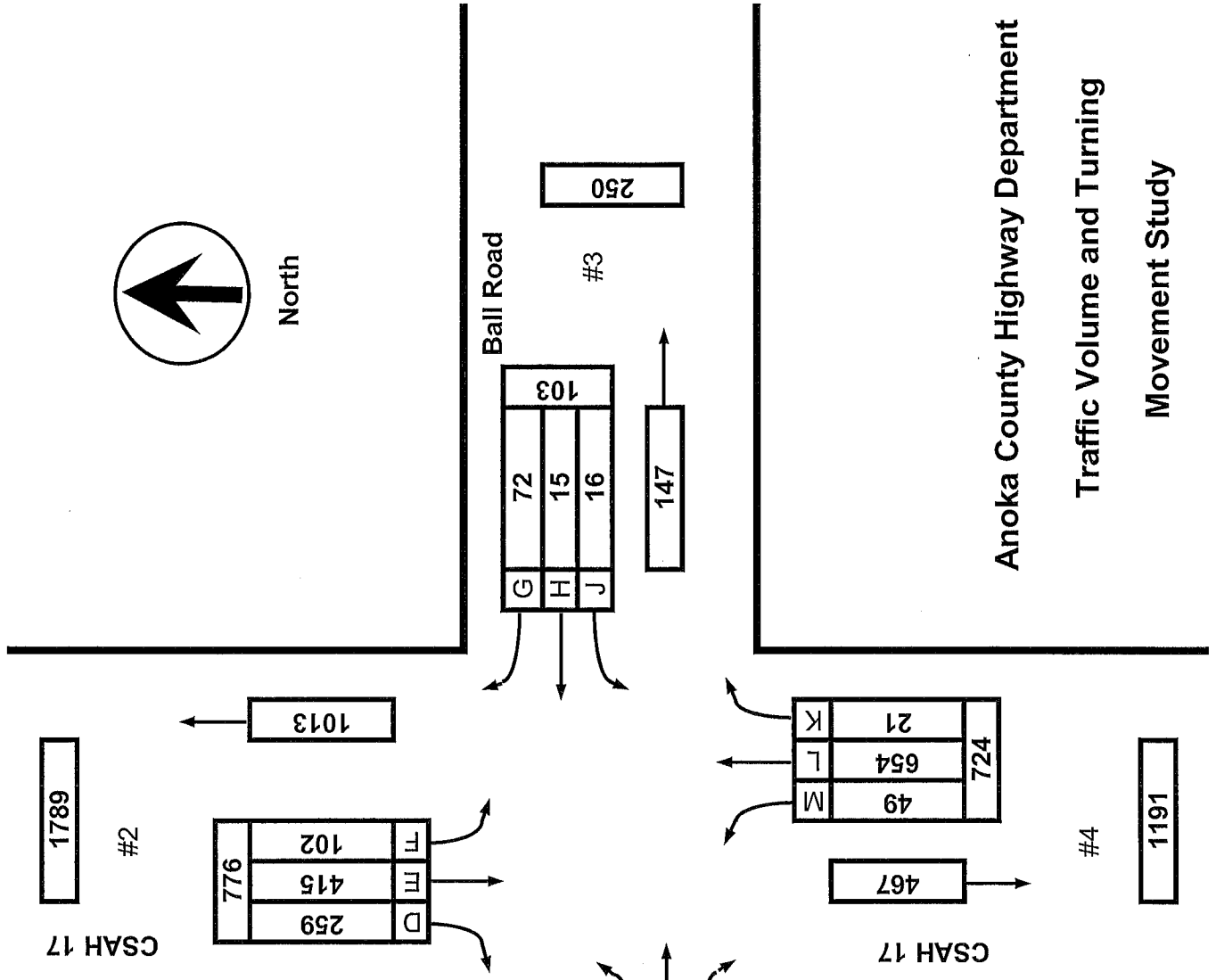
@ Ball Road

Collection Period : PM PEAK

Hour : 4:15 - 5:15 PM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

1789

1013

#2

776	T	102
259	F	415
	D	

CSAH 17

670	#1
323	
347	C
287	B
24	A
36	

Ball Road

250

#3

103	G
72	H
15	J
16	

Ball Road

147

724	K
21	L
654	M
49	

CSAH 17

467

#4

1191



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Default Comments  
 Weather: Hot and Humid  
 Counter: DB-400  
 Study Conducted By: Jack and Steven

File Name : TMC 1417  
 Site Code : 14170202  
 Start Date : 07/21/2014  
 Page No : 1

#### Groups Printed- Unshifted

Start Time	CSAH 17 Southbound					Ball Road Westbound					CSAH 17 Northbound					Ball Road Eastbound					Exclu. Total	Inclu. Total	Inl. 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	15	35	23	2	73	3	3	13	0	19	7	20	1	0	28	15	2	6	0	23	2	143	145	
06:15	14	50	30	2	94	3	2	12	0	17	6	17	3	0	26	21	1	3	2	25	4	162	166	
06:30	17	138	27	2	182	5	3	6	0	14	8	32	2	2	42	19	10	5	0	34	4	272	276	
06:45	31	124	18	2	173	5	1	11	1	17	5	19	4	2	28	15	4	6	1	25	6	243	249	
<b>Total</b>	<b>77</b>	<b>347</b>	<b>98</b>	<b>8</b>	<b>522</b>	<b>16</b>	<b>9</b>	<b>42</b>	<b>1</b>	<b>67</b>	<b>26</b>	<b>88</b>	<b>10</b>	<b>4</b>	<b>124</b>	<b>70</b>	<b>17</b>	<b>20</b>	<b>3</b>	<b>107</b>	<b>16</b>	<b>820</b>	<b>836</b>	
07:00	18	115	34	2	167	10	0	22	1	32	6	26	0	1	32	16	2	9	1	27	5	258	263	
07:15	14	108	25	5	147	7	6	13	1	26	8	28	4	1	40	24	3	10	1	37	8	250	258	
07:30	16	115	38	6	169	3	4	11	0	18	4	46	4	1	54	27	4	20	1	51	8	292	300	
07:45	9	105	32	7	146	5	2	6	1	13	6	48	0	1	54	28	1	8	3	37	12	250	262	
<b>Total</b>	<b>57</b>	<b>443</b>	<b>129</b>	<b>20</b>	<b>629</b>	<b>25</b>	<b>12</b>	<b>52</b>	<b>3</b>	<b>89</b>	<b>24</b>	<b>148</b>	<b>8</b>	<b>4</b>	<b>180</b>	<b>95</b>	<b>10</b>	<b>47</b>	<b>6</b>	<b>152</b>	<b>33</b>	<b>1050</b>	<b>1083</b>	
08:00	11	58	32	6	101	1	2	6	1	9	6	39	1	1	46	17	2	4	2	23	10	179	189	
08:15	15	75	32	8	122	5	5	16	4	26	15	68	2	10	85	26	3	11	2	40	24	273	297	
08:30	8	74	29	5	111	5	3	12	1	20	2	51	2	5	55	32	2	2	3	36	14	222	236	
08:45	9	73	27	3	109	1	3	14	1	18	3	46	2	2	51	14	3	2	1	19	7	197	204	
<b>Total</b>	<b>43</b>	<b>280</b>	<b>120</b>	<b>22</b>	<b>443</b>	<b>12</b>	<b>13</b>	<b>48</b>	<b>7</b>	<b>73</b>	<b>26</b>	<b>204</b>	<b>7</b>	<b>18</b>	<b>237</b>	<b>89</b>	<b>10</b>	<b>19</b>	<b>8</b>	<b>118</b>	<b>55</b>	<b>871</b>	<b>926</b>	
09:00	10	49	28	8	87	1	6	15	0	22	7	55	4	2	66	29	2	9	4	40	14	215	229	
09:15	7	53	33	8	93	1	2	9	3	12	3	48	0	1	51	30	2	5	4	37	16	193	209	
09:30	6	52	22	2	80	1	4	14	0	19	6	75	2	2	83	31	5	2	2	38	6	220	226	
09:45	18	57	48	4	123	1	1	9	1	11	5	64	4	6	73	38	3	9	3	50	14	257	271	
<b>Total</b>	<b>41</b>	<b>211</b>	<b>131</b>	<b>22</b>	<b>383</b>	<b>4</b>	<b>13</b>	<b>47</b>	<b>4</b>	<b>64</b>	<b>21</b>	<b>242</b>	<b>10</b>	<b>11</b>	<b>273</b>	<b>128</b>	<b>12</b>	<b>25</b>	<b>13</b>	<b>165</b>	<b>50</b>	<b>885</b>	<b>935</b>	
10:00	10	43	30	1	83	2	4	11	1	17	3	75	1	5	79	36	2	4	1	42	8	221	229	
10:15	9	54	49	3	112	0	1	6	1	7	3	46	1	0	50	31	0	2	0	33	4	202	206	
10:30	6	38	47	5	91	0	0	10	1	10	10	76	2	4	88	36	1	6	1	43	11	232	243	
10:45	17	68	61	4	146	2	2	7	1	11	5	82	2	3	89	49	0	3	0	52	8	298	306	
<b>Total</b>	<b>42</b>	<b>203</b>	<b>187</b>	<b>13</b>	<b>432</b>	<b>4</b>	<b>7</b>	<b>34</b>	<b>4</b>	<b>45</b>	<b>21</b>	<b>279</b>	<b>6</b>	<b>12</b>	<b>306</b>	<b>152</b>	<b>3</b>	<b>15</b>	<b>2</b>	<b>170</b>	<b>31</b>	<b>953</b>	<b>984</b>	
11:00	11	60	46	3	117	0	4	12	2	16	4	77	0	2	81	51	0	6	4	57	11	271	282	
11:15	10	74	42	6	126	2	5	13	3	20	8	92	5	2	105	40	2	12	2	54	13	305	318	
11:30	13	64	50	4	127	9	6	17	1	32	10	98	4	3	112	65	7	12	4	84	12	355	367	
11:45	13	74	57	5	144	2	1	7	1	10	3	105	4	3	112	52	5	11	2	68	11	334	345	
<b>Total</b>	<b>47</b>	<b>272</b>	<b>195</b>	<b>18</b>	<b>514</b>	<b>13</b>	<b>16</b>	<b>49</b>	<b>7</b>	<b>78</b>	<b>25</b>	<b>372</b>	<b>13</b>	<b>10</b>	<b>410</b>	<b>208</b>	<b>14</b>	<b>41</b>	<b>12</b>	<b>263</b>	<b>47</b>	<b>1265</b>	<b>1312</b>	
12:00	15	62	54	5	131	1	5	14	1	20	7	67	2	1	76	65	4	6	5	75	12	302	314	
12:15	13	69	57	7	139	4	4	12	2	20	10	130	5	3	145	67	0	9	3	76	15	380	395	
12:30	13	57	69	8	139	3	2	12	0	17	10	87	4	1	101	61	6	11	2	78	11	335	346	
12:45	11	70	50	9	131	2	3	8	2	13	10	88	6	4	104	42	3	8	1	53	16	301	317	
<b>Total</b>	<b>52</b>	<b>258</b>	<b>230</b>	<b>29</b>	<b>540</b>	<b>10</b>	<b>14</b>	<b>46</b>	<b>5</b>	<b>70</b>	<b>37</b>	<b>372</b>	<b>17</b>	<b>9</b>	<b>426</b>	<b>235</b>	<b>13</b>	<b>34</b>	<b>11</b>	<b>282</b>	<b>54</b>	<b>1318</b>	<b>1372</b>	
13:00	6	71	49	4	126	1	2	14	3	17	6	64	3	0	73	76	2	9	3	87	10	303	313	
13:15	18	89	34	6	139	1	1	12	2	14	4	58	3	1	65	53	1	6	2	60	11	278	289	
13:30	8	58	57	2	123	0	3	8	2	11	7	66	2	3	75	59	4	4	2	67	9	276	285	
13:45	16	75	42	3	133	0	1	5	1	6	13	69	1	4	83	50	8	9	2	67	10	289	299	
<b>Total</b>	<b>46</b>	<b>293</b>	<b>182</b>	<b>15</b>	<b>521</b>	<b>2</b>	<b>7</b>	<b>39</b>	<b>8</b>	<b>48</b>	<b>30</b>	<b>257</b>	<b>9</b>	<b>8</b>	<b>296</b>	<b>238</b>	<b>15</b>	<b>28</b>	<b>9</b>	<b>281</b>	<b>40</b>	<b>1146</b>	<b>1186</b>	
*** BREAK ***																								
14:15	24	87	54	8	165	2	10	22	3	34	17	90	4	2	111	26	11	9	2	46	15	356	371	
14:30	19	71	66	5	156	5	0	14	5	19	4	97	1	6	102	74	9	6	4	89	20	366	386	
14:45	30	85	76	5	191	1	6	13	2	20	10	92	4	2	106	53	5	6	3	64	12	381	393	
<b>Total</b>	<b>73</b>	<b>243</b>	<b>196</b>	<b>18</b>	<b>512</b>	<b>8</b>	<b>16</b>	<b>49</b>	<b>10</b>	<b>73</b>	<b>31</b>	<b>279</b>	<b>9</b>	<b>10</b>	<b>319</b>	<b>153</b>	<b>25</b>	<b>21</b>	<b>9</b>	<b>199</b>	<b>47</b>	<b>1103</b>	<b>1150</b>	
15:00	17	73	54	3	144	1	3	37	1	41	6	97	3	2	106	59	5	9	1	73	7	364	371	
15:15	27	72	69	5	168	1	4	24	2	29	5	86	7	5	98	59	5	5	2	69	14	364	378	
15:30	11	86	60	5	157	3	2	25	1	30	7	101	0	1	108	62	1	9	2	72	9	367	376	
15:45	26	108	62	4	196	1	4	20	0	25	14	100	0	2	114	65	5	7	1	77	7	412	419	
<b>Total</b>	<b>81</b>	<b>339</b>	<b>245</b>	<b>17</b>	<b>665</b>	<b>6</b>	<b>13</b>	<b>106</b>	<b>4</b>	<b>125</b>	<b>32</b>	<b>384</b>	<b>10</b>	<b>10</b>	<b>426</b>	<b>245</b>	<b>16</b>	<b>30</b>	<b>6</b>	<b>291</b>	<b>37</b>	<b>1507</b>	<b>1544</b>	
16:00	23	87	84	5	194	5	0	11	4	16	8	144	4	1	156	62	1	9	2	72	12	438	450	
16:15	26	90	64	4	180	2	4	12	1	18	10	159	5	4	174	85	6	10	3	101	12	473	485	
16:30	23	114	79	3	216	7	2	33	1	42	15	149	2	2	166	64	9	8	2	81	8	505	513	
16:45	31	94	57	4	182	1	3	5	0	9	9	181	3	1	193	62	6	9	0	77	5	461	466	
<b>Total</b>	<b>103</b>	<b>385</b>	<b>284</b>	<b>16</b>	<b>772</b>	<b>15</b>	<b>9</b>	<b>61</b>	<b>6</b>	<b>85</b>	<b>42</b>	<b>633</b>	<b>14</b>	<b>8</b>	<b>689</b>	<b>273</b>	<b>22</b>	<b>36</b>	<b>7</b>	<b>331</b>	<b>37</b>	<b>1877</b>	<b>1914</b>	
17:00	22	117	59	1	198	6	6	22	0	34	15	165	11	2	191	76	3	9	2	88	5	511	516	
17:15	28	94	47	2	169	2	4	12	0	18	9	184	3	5	196	71	6	10	0	87	7	470	477	
17:30	23	127	69	1	219	2	5	13	0	20	17	147	6	0	170	71	8	8	3	87	4	496	500	



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Default Comments  
 Weather: Hot and Humid  
 Counter: DB-400  
 Study Conducted By: Jack and Steven

File Name : TMC 1417  
 Site Code : 14170202  
 Start Date : 07/21/2014  
 Page No : 2

#### Groups Printed- Unshifted

Start Time	CSAH 17 Southbound					Ball Road Westbound					CSAH 17 Northbound					Ball Road 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			
17:45	34	113	73	3	220	1	4	9	0	14	17	127	3	1	147	70	6	14	1	90	5	471	476
Total	107	451	248	7	806	11	19	56	0	86	58	623	23	8	704	288	23	41	6	352	21	1948	1969
18:00	14	110	46	6	170	1	5	12	1	18	14	136	4	1	154	65	1	12	1	78	9	420	429
18:15	16	93	45	0	154	2	0	8	0	10	9	94	5	0	108	54	5	9	3	68	3	340	343
18:30	19	108	40	0	167	2	0	5	0	7	8	76	3	0	87	40	7	16	2	63	2	324	326
18:45	22	68	50	2	140	1	1	8	0	10	14	80	1	0	95	47	4	11	1	62	3	307	310
Total	71	379	181	8	631	6	6	33	1	45	45	386	13	1	444	206	17	48	7	271	17	1391	1408
19:00	15	54	36	1	105	3	2	8	0	13	3	74	3	1	80	48	6	8	0	62	2	260	262
19:15	30	97	30	0	157	1	4	9	0	14	14	79	2	1	95	46	3	6	0	55	1	321	322
19:30	29	84	46	4	159	2	4	8	0	14	4	75	2	0	81	54	3	5	2	62	6	316	322
19:45	8	46	36	1	90	0	4	7	0	11	8	64	2	0	74	41	5	14	1	60	2	235	237
Total	82	281	148	6	511	6	14	32	0	52	29	292	9	2	330	189	17	33	3	239	11	1132	1143
20:00	15	71	42	0	128	0	5	2	0	7	8	63	2	1	73	35	4	9	0	48	1	256	257
20:15	13	56	30	1	99	0	0	3	0	3	7	56	0	0	63	42	4	5	0	51	1	216	217
20:30	15	70	30	0	115	0	4	7	0	11	5	56	2	0	63	36	3	5	2	44	2	233	235
20:45	11	40	24	0	75	1	1	4	0	6	2	26	3	0	31	40	3	5	0	48	0	160	160
Total	54	237	126	1	417	1	10	16	0	27	22	201	7	1	230	153	14	24	2	191	4	865	869
21:00	13	35	15	0	63	2	0	3	0	5	3	47	3	0	53	18	4	12	0	34	0	155	155
21:15	9	43	6	1	58	0	0	5	0	5	8	38	3	0	49	19	2	3	0	24	1	136	137
21:30	12	44	11	0	67	0	0	2	0	2	2	33	3	3	38	23	4	6	0	33	3	140	143
21:45	3	33	8	2	44	0	0	2	0	2	3	22	3	1	28	7	1	3	0	11	3	85	88
Total	37	155	40	3	232	2	0	12	0	14	16	140	12	4	168	67	11	24	0	102	7	516	523
22:00	13	31	5	0	49	1	2	2	0	5	8	22	2	0	32	16	1	3	0	20	0	106	106
Grand Total	1026	4808	2745	223	8579	142	180	724	60	1046	493	4922	179	120	5594	2805	240	489	104	3534	507	18753	19260
Apprch %	12	56	32			13.6	17.2	69.2			8.8	88	3.2			79.4	6.8	13.8					
Total %	5.5	25.6	14.6		45.7	0.8	1	3.9		5.6	2.6	26.2	1		29.8	15	1.3	2.6		18.8	2.6	97.4	

Start Time	CSAH 17 Southbound				Ball Road Westbound				CSAH 17 Northbound				Ball Road 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	11	60	46	117	0	4	12	16	4	77	0	81	51	0	6	57	271
11:15	10	74	42	126	2	5	13	20	8	92	5	105	40	2	12	54	305
11:30	13	64	50	127	9	6	17	32	10	98	4	112	65	7	12	84	355
11:45	13	74	57	144	2	1	7	10	3	105	4	112	52	5	11	68	334
Total Volume	47	272	195	514	13	16	49	78	25	372	13	410	208	14	41	263	1265
% App. Total	9.1	52.9	37.9		16.7	20.5	62.8		6.1	90.7	3.2		79.1	5.3	15.6		
PHF	.904	.919	.855	.892	.361	.667	.721	.609	.625	.886	.650	.915	.800	.500	.854	.783	.891

Peak Hour Analysis From 12:00 to 22:00 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:15																	
16:15	26	90	64	180	2	4	12	18	10	159	5	174	85	6	10	101	473
16:30	23	114	79	216	7	2	33	42	15	149	2	166	64	9	8	81	505
16:45	31	94	57	182	1	3	5	9	9	181	3	193	62	6	9	77	461
17:00	22	117	59	198	6	6	22	34	15	165	11	191	76	3	9	88	511
Total Volume	102	415	259	776	16	15	72	103	49	654	21	724	287	24	36	347	1950
% App. Total	13.1	53.5	33.4		15.5	14.6	69.9		6.8	90.3	2.9		82.7	6.9	10.4		
PHF	.823	.887	.820	.898	.571	.625	.545	.613	.817	.903	.477	.938	.844	.667	.900	.859	.954



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

Study Name : TMC 1417  
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: **5,594**

**Southbound: CSAH 17**

Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: **8,579**

**Minor Street Approaches**

**Eastbound: Ball Road**

Number of Lanes: 2  
  
Total Approach Volume: **3,534**

**Westbound: Ball Road**

Number of Lanes: 2  
  
Total Approach Volume: **1,046**

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

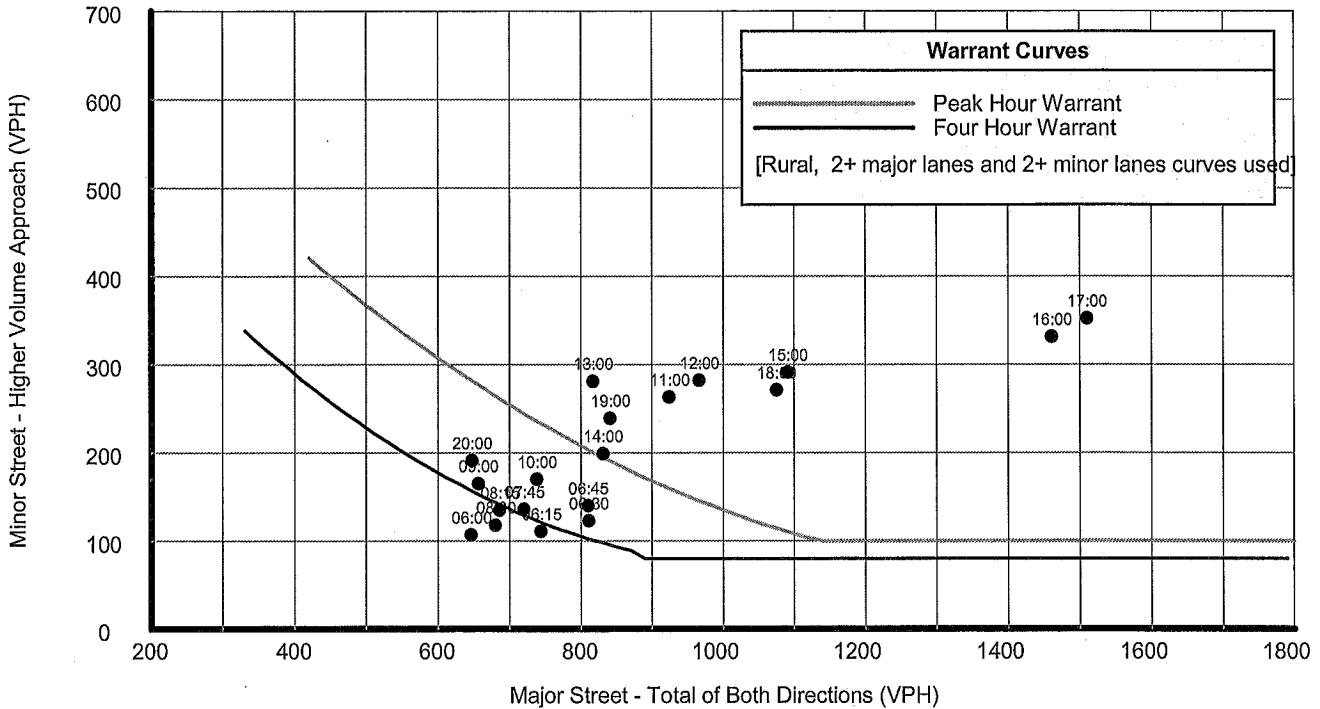
<b>Warrant 1 - Eight Hour Vehicular Volumes</b> .....	<b>Satisfied</b>
<b>Warrant 1A - Minimum Vehicular Volume</b> .....	<b>Satisfied</b>
Required volumes reached for 13 hours, 8 are needed	
<b>Warrant 1B - Interruption of Continuous Traffic</b> .....	<b>Satisfied</b>
Required volumes reached for 15 hours, 8 are needed	
<b>Warrant 1 A&amp;B - Combination of Warrants</b> .....	<b>Satisfied</b>
Required volumes reached for 15 hours, 8 are needed	
<b>Warrant 2 - Four Hour Volumes</b> .....	<b>Satisfied</b>
Number of hours (14) volumes exceed minimum >= 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 (47) volumes exceed minimum >= 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 1417  
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
17:00	1,510	352 EB	Yes	Yes	17:00	1,510	352 EB	Yes	Yes	16:30	1,511	333 EB	Yes	Yes
16:00	1,461	331 EB	Yes	Yes	16:00	1,461	331 EB	Yes	Yes	17:30	1,342	323 EB	Yes	Yes
15:00	1,091	291 EB	Yes	Yes	15:00	1,091	291 EB	Yes	Yes	15:30	1,279	322 EB	Yes	Yes
18:00	1,075	271 EB	Yes	Yes	18:00	1,075	271 EB	Yes	Yes	14:30	1,071	295 EB	Yes	Yes
12:00	966	282 EB	Yes	Yes	12:00	966	282 EB	Yes	Yes	11:30	986	303 EB	Yes	Yes
11:00	924	263 EB	Yes	Yes	11:00	924	263 EB	Yes	Yes	18:30	926	242 EB	Yes	Yes
19:00	841	239 EB	Yes	Yes	19:00	841	239 EB	Yes	Yes	12:30	878	278 EB	Yes	Yes
14:00	831	199 EB	Yes	Yes	14:00	831	199 EB	Yes	Yes	10:30	843	206 EB	Yes	Yes
13:00	817	281 EB	Yes	Yes	13:00	817	281 EB	Yes	Yes	06:30	811	123 EB	Yes	Yes
06:45	810	140 EB	Yes	Yes	07:00	809	152 EB	Yes	Yes	07:30	777	151 EB	Yes	Yes
10:00	738	170 EB	Yes	Yes	10:00	738	170 EB	Yes	Yes	19:30	767	221 EB	Yes	Yes
09:00	656	165 EB	Yes	Yes	08:00	680	118 EB	Yes	Yes	13:30	690	180 EB	Yes	Yes
20:00	647	191 EB	Yes	Yes	09:00	656	165 EB	Yes	Yes	09:30	683	163 EB	Yes	Yes
06:30	811	123 EB	Yes	No	20:00	647	191 EB	Yes	Yes	08:30	623	132 EB	Yes	Yes
06:15	744	111 EB	Yes	No	06:00	646	107 EB	Yes	Yes	20:30	507	150 EB	Yes	Yes
07:45	720	136 EB	Yes	No	05:45	445	82 EB	No	Yes	06:15	744	111 EB	Yes	No
08:15	686	135 EB	Yes	No	21:00	400	102 EB	No	Yes	06:00	646	107 EB	Yes	No
08:00	680	118 EB	Yes	No	21:15	365	88 EB	No	Yes	05:45	445	82 EB	No	No
06:00	646	107 EB	Yes	No	21:30	258	64 EB	No	No	21:30	258	64 EB	No	No
08:30	623	132 EB	Yes	No	05:30	221	48 EB	No	No	05:30	221	48 EB	No	No
08:45	620	134 EB	Yes	No	21:45	153	31 EB	No	No	21:45	153	31 EB	No	No
05:45	445	82 EB	Yes	No	05:15	101	23 EB	No	No	05:15	101	23 EB	No	No
21:00	400	102 EB	No	No	22:00	81	20 EB	No	No	22:00	81	20 EB	No	No
21:15	365	88 EB	No	No	22:45	0	0 W	No	No	22:45	0	0 W	No	No



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

Study Name : TMC 1417  
Study Date : 08/01/14  
Page No. : 1

**Multi-Way Stop Warrant Report**

**Major Street Approaches**

**Northbound: CSAH 17**  
Total Approach Volume: 5,594  
85% Speed > 40 MPH.

**Southbound: CSAH 17**  
Total Approach Volume: 8,579  
85% Speed > 40 MPH.

**Minor Street Approaches**

**Eastbound: Ball Road**  
Total Approach Volume: 3,534

**Westbound: Ball Road**  
Total Approach Volume: 1,046

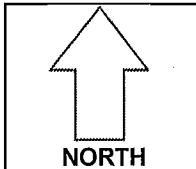
**Warrant Summary**

- 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 15 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 5 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?
06:00 - 07:00	646	174	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
07:00 - 08:00	809	241	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
08:00 - 09:00	680	191	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
09:00 - 10:00	656	229	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
10:00 - 11:00	738	215	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
11:00 - 12:00	924	341	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
12:00 - 13:00	966	352	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
13:00 - 14:00	817	329	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
14:00 - 15:00	831	272	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
15:00 - 16:00	1,091	416	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
16:00 - 17:00	1,461	416	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
17:00 - 18:00	1,510	438	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
18:00 - 19:00	1,075	316	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
19:00 - 20:00	841	291	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
20:00 - 21:00	647	218	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
05:30 - 06:30	221	84	210-Yes	140-No	Major	240-No	160-No	No
05:45 - 06:45	445	132	210-Yes	140-No	Major	240-Yes	160-No	Major
21:00 - 22:00	400	116	210-Yes	140-No	Major	240-Yes	160-No	Major
21:15 - 22:15	365	102	210-Yes	140-No	Major	240-Yes	160-No	Major
21:30 - 22:30	258	73	210-Yes	140-No	Major	240-Yes	160-No	Major
00:00 - 01:00	0	0	210-No	140-No	No	240-No	160-No	No
00:15 - 01:15	0	0	210-No	140-No	No	240-No	160-No	No
00:30 - 01:30	0	0	210-No	140-No	No	240-No	160-No	No
00:45 - 01:45	0	0	210-No	140-No	No	240-No	160-No	No





**COUNT LOCATION:**

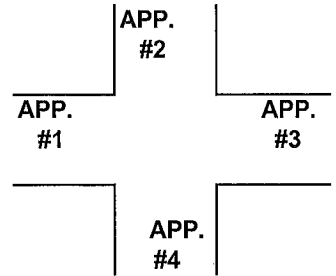
CSAH 17 (Lexington Ave.)

**DATE:**

07/30/2014

@ Ball Road

APP. #1 = Ball Road
APP. #2 = CSAH 17
APP. #3 = Ball Road
APP. #4 = CSAH 17



HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT

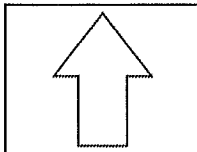
A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.

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						2		
6:15-6:30						4		
6:30-6:45	2	1			3	4		
6:45-7:00						6		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>16</b>
7:00-7:15						4		
7:15-7:30	1				1	7		1
7:30-7:45						8	1	
7:45-8:00	2				2	10		1
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>32</b>
8:00-8:15						9		
8:15-8:30	1				1	24		
8:30-8:45						14		
8:45-9:00						6		
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>53</b>
9:00-9:15						14		
9:15-9:30						14	2	1
9:30-9:45						7		
9:45-10:00						13	1	
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>52</b>
10:00-10:15	1				1	7		
10:15-10:30						5		
10:30-10:45						11		1
10:45-11:00						8		
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>32</b>
11:00-11:15						10		
11:15-11:30						13		
11:30-11:45						11		1
11:45-12:00	3				3	11		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>46</b>
12:00-12:15						11		1
12:15-12:30	1				1	13		1
12:30-12:45						11		
12:45-1:00	2				2	16		
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>53</b>
1:00-1:15						10		
1:15-1:30	4				4	10	1	
1:30-1:45	1				1	9		
1:45-2:00	3			1	4	10		
<b>HOURLY TOTAL</b>					<b>9</b>	<b>HOURLY TOTAL</b>		<b>40</b>
					<b>TOTAL</b>	<b>23</b>	<b>TOTAL</b>	<b>324</b>

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**COUNT LOCATION:**

CSAH 17 (Lexington Ave.)

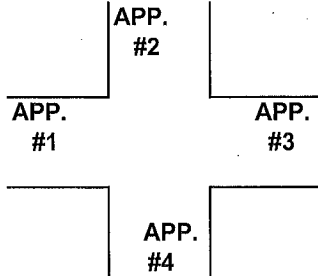
**DATE:**

07/21/2014

@ Ball Road

**NORTH**

APP. #1 = Ball Road
APP. #2 = CSAH 17
APP. #3 = Ball Road
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
2:00-2:15PM	1				1	14	1	
2:15-2:30						18		2
2:30-2:45						12	1	
2:45-3:00						7		
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>55</b>
3:00-3:15						7		1
3:15-3:30	1				1	10	1	
3:30-3:45	2				2	9		
3:45-4:00	1	1			2	11		
<b>HOURLY TOTAL</b>					<b>5</b>	<b>HOURLY TOTAL</b>		<b>39</b>
4:00-4:15						13		
4:15-4:30	1				1	12		
4:30-4:45	1				1	8		
4:45-5:00						5		
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>38</b>
5:00-5:15						5		
5:15-5:30	1			1	2	7	1	
5:30-5:45								2
5:45-6:00						8		1
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>24</b>
6:00-6:15						7		1
6:15-6:30						2		
6:30-6:45						3		
6:45-7:00						3		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>16</b>
7:00-7:15						2		
7:15-7:30						1		
7:30-7:45						6		
7:45-8:00						2		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>11</b>
8:00-8:15						1		
8:15-8:30	2				2	2		
8:30-8:45	1			3	4	1		
8:45-9:00	1	2			3			
<b>HOURLY TOTAL</b>					<b>9</b>	<b>HOURLY TOTAL</b>		<b>4</b>
9:00-9:15		2			2			
9:15-9:30		3			3	1		
9:30-9:45	3			3	6	3		
9:45-10:00						3		
<b>HOURLY TOTAL</b>					<b>11</b>	<b>HOURLY TOTAL</b>		<b>7</b>
					<b>TOTAL</b>		<b>TOTAL</b>	<b>518</b>
					<b>53</b>			<b>518</b>

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