

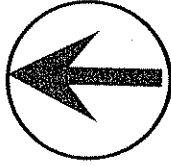
Date : 06/06/13

Count Number : TMC1315

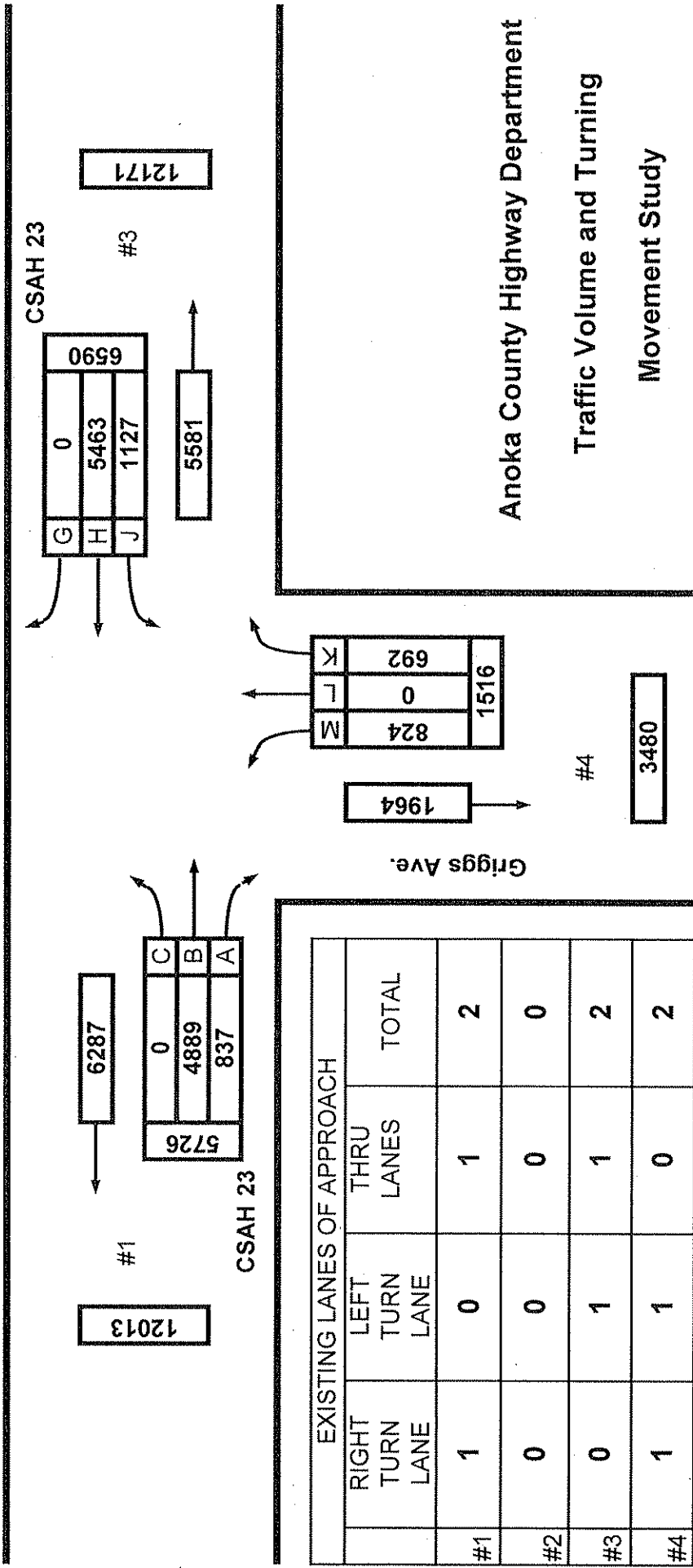
Location : CSAH 23 (Lake Drive)

@ Griggs Ave.

Collection Period : 6:00 AM - 10:00 PM



North



Date : 06/06/13

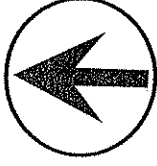
Count Number : TMC1315

Location : CSAH 23 (Lake Drive)

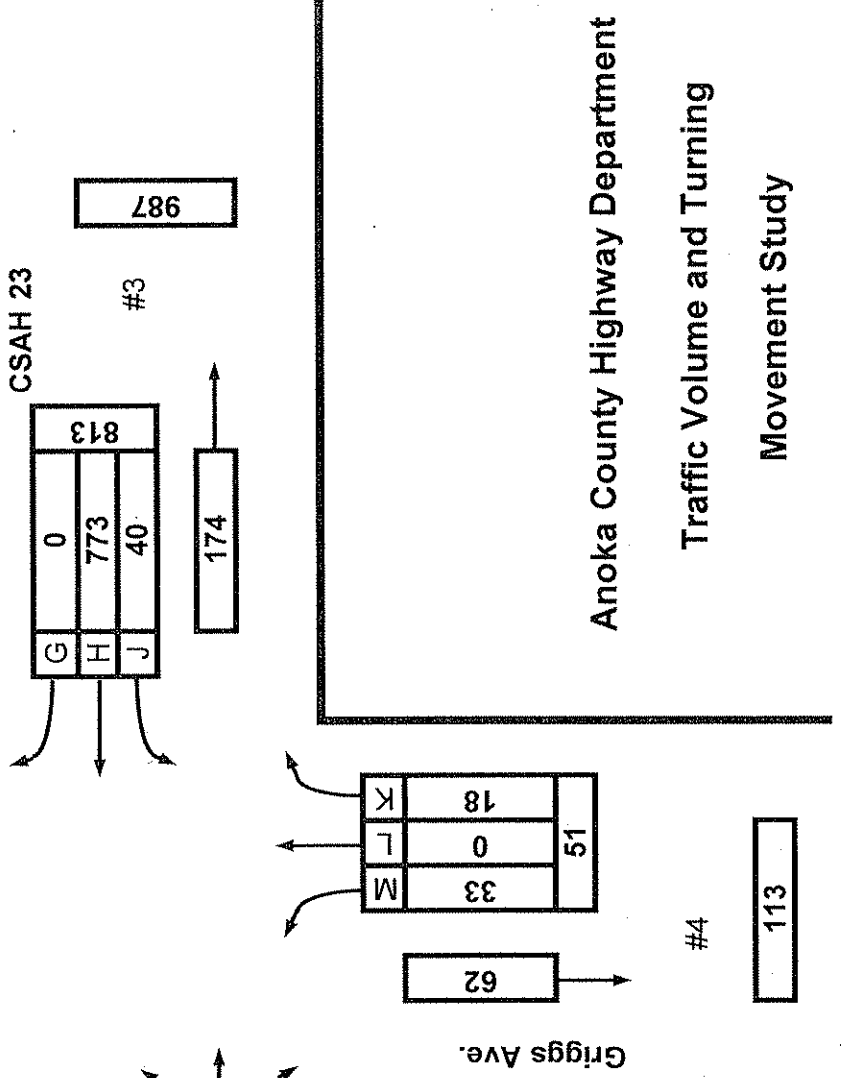
@ Griggs Ave.

Collection Period : AM PEAK

Hour : 7:00 AM - 8:00 AM



North



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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 06/04/13

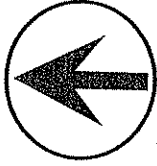
Count Number : TMC1315

Location : CSAH 23 (Lake Drive)

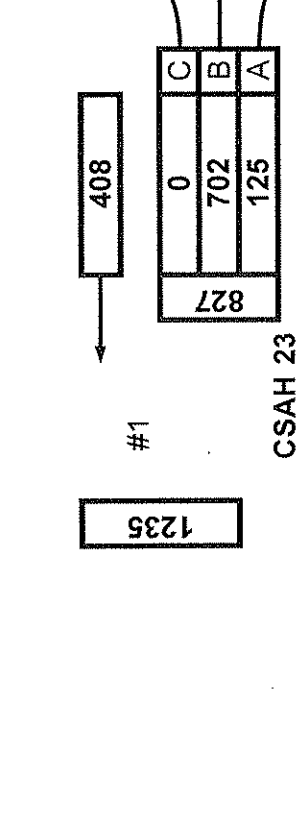
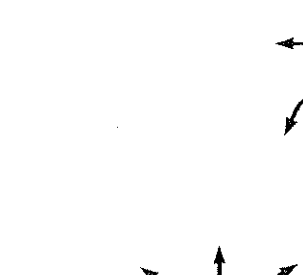
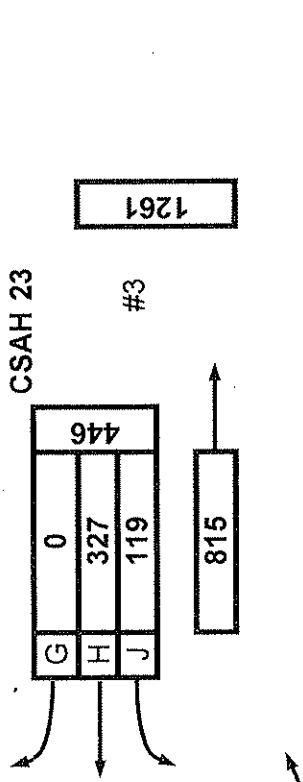
@ Griggs Ave.

Collection Period : PM PEAK

Hour : 4:45 PM - 5:45 PM



North



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

Griggs Ave.

Anoka County Highway Department

Traffic Volume and Turning

Movement Study

438



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : TMC 1315  
 Site Code : 13150202  
 Start Date : 06/04/2013  
 Page No : 1

Weather: Rain/ Cool  
 Counter: DB-400  
 Study Conducted By: Kate/ Katelyn

Groups Printed- Unshifted

Start Time	NONE Southbound					CSAH 23 Westbound					Griggs Ave Northbound					CSAH 23 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 AM	0	0	0	0	0	1	138	0	3	139	7	0	2	2	9	0	17	2	3	19	8	167	175
06:15 AM	0	0	0	0	0	7	163	0	3	170	3	0	4	0	7	0	23	4	4	27	7	204	211
06:30 AM	0	0	0	0	0	5	168	0	2	173	6	0	2	2	8	0	32	2	5	34	9	215	224
06:45 AM	0	0	0	0	0	9	182	0	6	191	7	0	3	1	10	0	40	5	5	45	12	246	258
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>22</b>	<b>651</b>	<b>0</b>	<b>14</b>	<b>673</b>	<b>23</b>	<b>0</b>	<b>11</b>	<b>5</b>	<b>34</b>	<b>0</b>	<b>112</b>	<b>13</b>	<b>17</b>	<b>125</b>	<b>36</b>	<b>832</b>	<b>868</b>
07:00 AM	0	0	0	0	0	7	205	0	2	212	10	0	2	2	12	0	32	6	3	38	7	262	269
07:15 AM	0	0	0	0	0	10	201	0	1	211	9	0	3	1	12	0	47	5	2	52	4	275	279
07:30 AM	0	0	0	0	0	12	184	0	1	196	9	0	1	0	10	0	31	3	2	34	3	240	243
07:45 AM	0	0	0	0	0	11	183	0	5	194	5	0	12	0	17	0	46	8	6	54	11	265	276
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>773</b>	<b>0</b>	<b>9</b>	<b>813</b>	<b>33</b>	<b>0</b>	<b>18</b>	<b>3</b>	<b>51</b>	<b>0</b>	<b>156</b>	<b>22</b>	<b>13</b>	<b>178</b>	<b>25</b>	<b>1042</b>	<b>1067</b>
08:00 AM	0	0	0	0	0	15	138	0	3	153	8	0	4	0	12	0	39	5	4	44	7	209	216
08:15 AM	0	0	0	0	0	13	128	0	2	141	9	0	3	2	12	0	38	7	3	45	7	198	205
08:30 AM	0	0	0	0	0	11	109	0	4	120	13	0	5	1	18	0	55	6	9	61	14	199	213
08:45 AM	0	0	0	0	0	13	105	0	5	118	6	0	0	0	6	0	38	2	1	40	6	164	170
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>480</b>	<b>0</b>	<b>14</b>	<b>532</b>	<b>36</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>48</b>	<b>0</b>	<b>170</b>	<b>20</b>	<b>17</b>	<b>190</b>	<b>34</b>	<b>770</b>	<b>804</b>
09:00 AM	0	0	0	0	0	24	74	0	0	98	7	0	3	0	10	0	39	6	3	45	3	153	156
09:15 AM	0	0	0	0	0	12	70	0	3	82	6	0	13	0	19	0	52	5	4	57	7	158	165
09:30 AM	0	0	0	0	0	16	82	0	0	98	6	0	8	1	14	0	45	13	3	58	4	170	174
09:45 AM	0	0	0	0	0	15	81	0	3	96	6	0	18	0	24	0	41	9	4	50	7	170	177
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>67</b>	<b>307</b>	<b>0</b>	<b>6</b>	<b>374</b>	<b>25</b>	<b>0</b>	<b>42</b>	<b>1</b>	<b>67</b>	<b>0</b>	<b>177</b>	<b>33</b>	<b>14</b>	<b>210</b>	<b>21</b>	<b>651</b>	<b>672</b>
10:00 AM	0	0	0	0	0	13	78	0	1	91	9	0	11	4	20	0	39	4	3	43	8	154	162
10:15 AM	0	0	0	0	0	12	77	0	1	89	13	0	8	1	21	0	47	13	1	60	3	170	173
10:30 AM	0	0	0	0	0	17	75	0	1	92	16	0	13	1	29	0	48	3	3	51	5	172	177
10:45 AM	0	0	0	0	0	13	75	0	2	88	11	0	8	0	19	0	43	8	2	51	4	158	162
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>55</b>	<b>305</b>	<b>0</b>	<b>5</b>	<b>360</b>	<b>49</b>	<b>0</b>	<b>40</b>	<b>6</b>	<b>89</b>	<b>0</b>	<b>177</b>	<b>28</b>	<b>9</b>	<b>205</b>	<b>20</b>	<b>654</b>	<b>674</b>
11:00 AM	0	0	0	0	0	24	71	0	1	95	7	0	7	1	14	0	56	15	3	71	5	180	185
11:15 AM	0	0	0	0	0	16	79	0	1	95	16	0	7	4	23	0	48	15	4	63	9	181	190
11:30 AM	0	0	0	0	0	23	74	0	7	97	9	0	12	1	21	0	55	10	2	65	10	183	193
11:45 AM	0	0	0	0	0	19	72	0	3	91	12	0	7	0	19	0	71	22	5	93	8	203	211
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>82</b>	<b>296</b>	<b>0</b>	<b>12</b>	<b>378</b>	<b>44</b>	<b>0</b>	<b>33</b>	<b>6</b>	<b>77</b>	<b>0</b>	<b>230</b>	<b>62</b>	<b>14</b>	<b>292</b>	<b>32</b>	<b>747</b>	<b>779</b>
12:00 PM	0	0	0	0	0	24	86	0	6	110	16	0	19	1	35	0	58	21	1	79	8	224	232
12:15 PM	0	0	0	0	0	26	77	0	1	103	16	0	12	1	28	0	84	14	5	98	7	229	236
12:30 PM	0	0	0	0	0	26	88	0	0	114	16	0	9	2	25	0	56	15	2	71	4	210	214
12:45 PM	0	0	0	0	0	22	62	0	2	84	21	0	8	1	29	0	65	7	2	72	5	185	190
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>98</b>	<b>313</b>	<b>0</b>	<b>9</b>	<b>411</b>	<b>69</b>	<b>0</b>	<b>48</b>	<b>5</b>	<b>117</b>	<b>0</b>	<b>263</b>	<b>57</b>	<b>10</b>	<b>320</b>	<b>24</b>	<b>848</b>	<b>872</b>
01:00 PM	0	0	0	0	0	17	78	0	3	95	14	0	18	1	32	0	55	14	4	69	8	196	204
01:15 PM	0	0	0	0	0	18	61	0	4	79	14	0	10	1	24	0	74	10	4	84	9	187	196
01:30 PM	0	0	0	0	0	33	75	0	2	108	16	0	12	0	28	0	82	13	0	95	2	231	233
01:45 PM	0	0	0	0	0	22	75	0	2	97	18	0	5	0	23	0	59	11	1	70	3	190	193
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>90</b>	<b>289</b>	<b>0</b>	<b>11</b>	<b>379</b>	<b>62</b>	<b>0</b>	<b>45</b>	<b>2</b>	<b>107</b>	<b>0</b>	<b>270</b>	<b>48</b>	<b>9</b>	<b>318</b>	<b>22</b>	<b>804</b>	<b>826</b>
02:00 PM	0	0	0	0	0	27	80	0	1	107	24	0	9	2	33	0	78	17	5	95	8	235	243
02:15 PM	0	0	0	0	0	16	51	0	2	87	17	0	11	1	28	0	102	16	1	118	4	213	217
02:30 PM	0	0	0	0	0	15	92	0	7	107	15	0	13	2	28	0	94	16	2	110	11	245	256
02:45 PM	0	0	0	0	0	16	57	0	4	73	16	0	11	0	27	0	121	17	5	138	9	238	247
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>74</b>	<b>280</b>	<b>0</b>	<b>14</b>	<b>354</b>	<b>72</b>	<b>0</b>	<b>44</b>	<b>5</b>	<b>116</b>	<b>0</b>	<b>395</b>	<b>66</b>	<b>13</b>	<b>461</b>	<b>32</b>	<b>931</b>	<b>963</b>
03:00 PM	0	0	0	0	0	26	82	0	3	108	15	0	17	1	32	0	108	20	2	128	6	268	274
03:15 PM	0	0	0	0	0	17	78	0	2	95	18	0	15	0	33	0	110	21	1	131	3	259	262
03:30 PM	0	0	0	0	0	31	87	0	0	118	14	0	14	0	28	0	98	22	1	120	1	266	267
03:45 PM	0	0	0	0	0	27	79	0	7	106	20	0	9	1	29	0	140	30	4	170	12	305	317
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>101</b>	<b>326</b>	<b>0</b>	<b>12</b>	<b>427</b>	<b>67</b>	<b>0</b>	<b>55</b>	<b>2</b>	<b>122</b>	<b>0</b>	<b>456</b>	<b>93</b>	<b>8</b>	<b>549</b>	<b>22</b>	<b>1098</b>	<b>1120</b>
04:00 PM	0	0	0	0	0	24	59	0	6	83	16	0	16	0	32	0	141	22	3	163	9	278	287
04:15 PM	0	0	0	0	0	24	77	0	3	101	19	0	21	2	40	0	136	26	2	162	7	303	310
04:30 PM	0	0	0	0	0	27	84	0	1	111	17	0	19	0	36	0	157	25	3	182	4	329	333
04:45 PM	0	0	0	0	0	30	77	0	1	107	22	0	28	0	50	0	180	32	1	212	2	369	371
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>105</b>	<b>297</b>	<b>0</b>	<b>11</b>	<b>402</b>	<b>74</b>	<b>0</b>	<b>84</b>	<b>2</b>	<b>158</b>	<b>0</b>	<b>614</b>	<b>105</b>	<b>9</b>	<b>719</b>	<b>22</b>	<b>1279</b>	<b>1301</b>
05:00 PM	0	0	0	0	0	36	77	0	0	113	14	0	27	1	41	0	156	29	1	185	2	339	341
05:15 PM	0	0	0	0	0	36	93	0	1	129	23	0	29	0	52	0	181	36	1	217	2	398	400
05:30 PM	0	0	0	0	0	17	80	0	1	97	22	0	29	0	51	0	185	28	2	213	3	361	364



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : TMC 1315  
 Site Code : 13150202  
 Start Date : 06/04/2013  
 Page No : 2

Weather: Rain/ Cool  
 Counter: DB-400  
 Study Conducted By: Kate/ Katelyn

**Groups Printed- Unshifted**

Start Time	NONE Southbound					CSAH 23 Westbound					Griggs Ave Northbound					CSAH 23 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								
05:45 PM	0	0	0	0	0	22	101	0	0	123	24	0	21	0	45	0	138	28	0	166	0	0	0	0	0	7	1432	1439
<b>Total</b>	0	0	0	0	0	111	351	0	2	462	83	0	106	1	189	0	660	121	4	781	0	0	0	0	0	7	1432	1439
06:00 PM	0	0	0	0	0	18	77	0	0	95	19	0	21	0	40	0	132	15	0	147	0	0	0	0	0	0	282	282
06:15 PM	0	0	0	0	0	24	64	0	0	88	22	0	14	0	36	0	124	23	1	147	1	0	0	0	0	1	271	272
06:30 PM	0	0	0	0	0	26	56	0	0	82	19	0	16	0	35	0	110	21	3	131	3	0	0	0	0	3	248	251
06:45 PM	0	0	0	0	0	16	65	0	0	81	11	0	19	1	30	0	77	12	0	89	1	0	0	0	0	1	200	201
<b>Total</b>	0	0	0	0	0	84	262	0	0	346	71	0	70	1	141	0	443	71	4	514	5	0	0	0	0	5	1001	1006
07:00 PM	0	0	0	0	0	28	54	0	1	82	10	0	14	0	24	0	75	11	0	86	1	0	0	0	0	1	192	193
07:15 PM	0	0	0	0	0	17	64	0	0	81	16	0	9	0	25	0	73	9	2	82	2	0	0	0	0	2	188	190
07:30 PM	0	0	0	0	0	16	36	0	0	52	15	0	4	0	19	0	70	16	0	86	0	0	0	0	0	0	157	157
07:45 PM	0	0	0	0	0	8	50	0	0	58	15	0	6	0	21	0	67	11	0	78	0	0	0	0	0	0	157	157
<b>Total</b>	0	0	0	0	0	69	204	0	1	273	56	0	33	0	89	0	285	47	2	332	3	0	0	0	0	3	694	697
08:00 PM	0	0	0	0	0	14	57	0	1	71	9	0	9	0	18	0	42	6	0	48	1	0	0	0	0	1	137	138
08:15 PM	0	0	0	0	0	6	66	0	1	72	8	0	7	0	15	0	83	10	1	93	2	0	0	0	0	2	180	182
08:30 PM	0	0	0	0	0	11	42	0	0	53	6	0	7	0	13	0	84	7	0	91	0	0	0	0	0	0	157	157
08:45 PM	0	0	0	0	0	6	38	0	0	44	7	0	3	0	10	0	50	5	1	55	1	0	0	0	0	1	109	110
<b>Total</b>	0	0	0	0	0	37	203	0	2	240	30	0	26	0	56	0	259	28	2	287	4	0	0	0	0	4	583	587
09:00 PM	0	0	0	0	0	15	40	0	0	55	8	0	7	0	15	0	51	6	0	57	0	0	0	0	0	0	127	127
09:15 PM	0	0	0	0	0	7	32	0	0	39	10	0	10	0	20	0	69	7	0	76	0	0	0	0	0	0	135	135
09:30 PM	0	0	0	0	0	8	27	0	0	35	9	0	2	0	11	0	41	7	0	48	0	0	0	0	0	0	94	94
09:45 PM	0	0	0	0	0	10	27	0	0	37	3	0	6	0	9	0	61	3	0	64	0	0	0	0	0	0	110	110
<b>Total</b>	0	0	0	0	0	40	126	0	0	166	30	0	25	0	55	0	222	23	0	245	0	0	0	0	0	0	466	466
<b>Grand Total</b>	0	0	0	0	0	1127	5463	0	122	6590	824	0	692	42	1516	0	4889	837	145	5726	309	0	0	0	0	309	13832	14141
Apprch %	0	0	0	0	0	17.1	82.9	0	0	47.6	54.4	0	45.6	0	11	0	85.4	14.6	0	41.4	2.2	0	0	0	0	2.2	97.8	97.8
Total %	0	0	0	0	0	8.1	39.5	0	0	47.6	6	0	5	0	11	0	35.3	6.1	0	41.4	2.2	0	0	0	0	2.2	97.8	97.8

Start Time	NONE Southbound				CSAH 23 Westbound				Griggs Ave Northbound				CSAH 23 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 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	7	205	0	212	10	0	2	12	0	32	6	38	262
07:15 AM	0	0	0	0	10	201	0	211	9	0	3	12	0	47	5	52	275
07:30 AM	0	0	0	0	12	184	0	196	9	0	1	10	0	31	3	34	240
07:45 AM	0	0	0	0	11	183	0	194	5	0	12	17	0	46	8	54	265
<b>Total Volume</b>	0	0	0	0	40	773	0	813	33	0	18	51	0	156	22	178	1042
<b>% App. Total</b>	0	0	0	0	4.9	95.1	0	47.6	64.7	0	35.3	11	0	87.6	12.4	41.4	97.8
PHF	.000	.000	.000	.000	.833	.943	.000	.959	.825	.000	.375	.750	.000	.830	.688	.824	.947

Start Time	NONE Southbound				CSAH 23 Westbound				Griggs Ave Northbound				CSAH 23 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 12:00 PM to 09:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	30	77	0	107	22	0	28	50	0	180	32	212	369
05:00 PM	0	0	0	0	36	77	0	113	14	0	27	41	0	156	29	185	339
05:15 PM	0	0	0	0	36	93	0	129	23	0	29	52	0	181	36	217	398
05:30 PM	0	0	0	0	17	80	0	97	22	0	29	51	0	185	28	213	361
<b>Total Volume</b>	0	0	0	0	119	327	0	446	81	0	113	194	0	702	125	827	1467
<b>% App. Total</b>	0	0	0	0	26.7	73.3	0	47.6	41.8	0	58.2	11	0	84.9	15.1	41.4	97.8
PHF	.000	.000	.000	.000	.826	.879	.000	.864	.880	.000	.974	.933	.000	.949	.868	.953	.921



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

Study Name : TMC 1315 Signal  
Study Date : 06/07/13  
Page No. : 1

**Signal Warrants - Summary**

**Major Street Approaches**

**Eastbound: CSAH 23**

Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 5,726

**Westbound: CSAH 23**

Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 6,590

**Minor Street Approaches**

**Northbound: Griggs Ave**

Number of Lanes: 2  
  
Total Approach Volume: 1,516

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

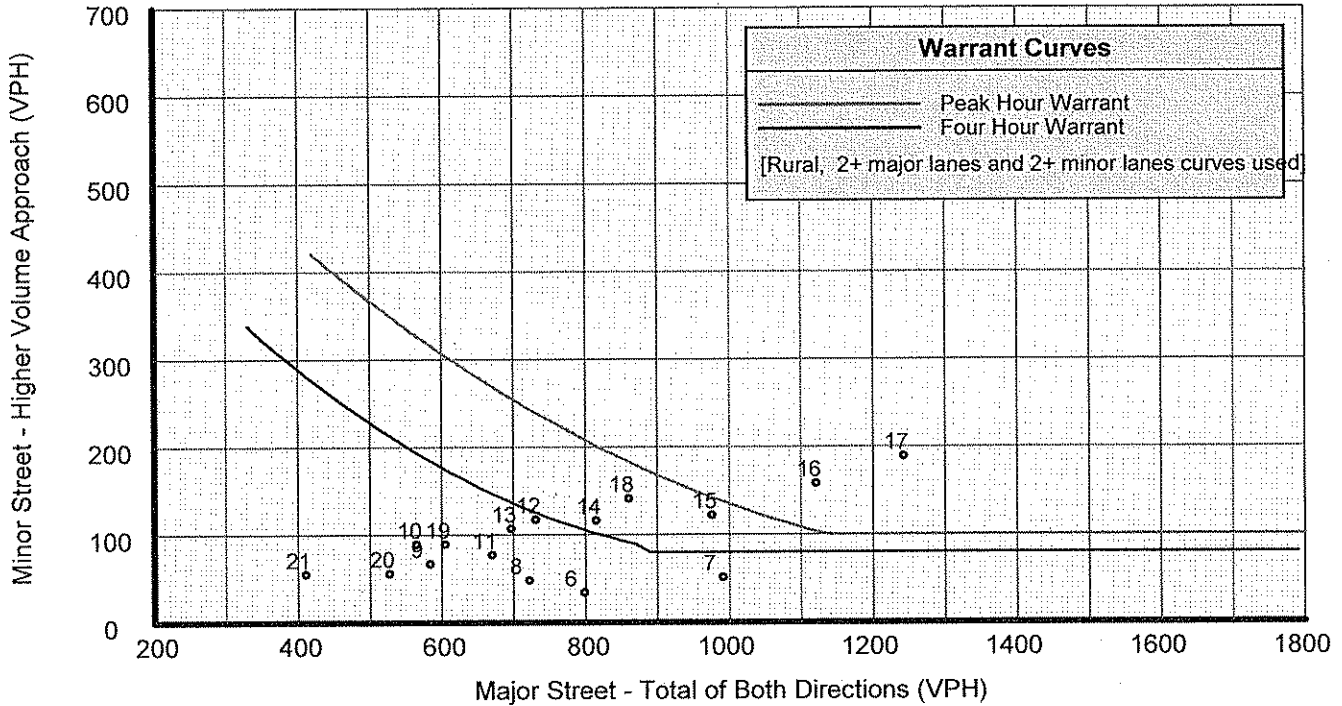
<b>Warrant 1 - Eight Hour Vehicular Volumes</b> .....	<b>Satisfied</b>
<b>Warrant 1A - Minimum Vehicular Volume</b> .....	<b>Not Satisfied</b>
Required volumes reached for 3 hours, 8 are needed	
<b>Warrant 1B - Interruption of Continuous Traffic</b> .....	<b>Satisfied</b>
Required volumes reached for 8 hours, 8 are needed	
<b>Warrant 1 A&amp;B - Combination of Warrants</b> .....	<b>Not Satisfied</b>
Required volumes reached for 6 hours, 8 are needed	
<b>Warrant 2 - Four Hour Volumes</b> .....	<b>Satisfied</b>
Number of hours (5) 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 (8) 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 1315 Signal  
Study Date : 06/07/13  
Page No. : 2

## Signal Warrants - Summary



### Analysis of 8-Hour Volume Warrants:

Hour Begin	Major Total	Higher Minor Vol	Dir	War 1A			War 1B			War 1A&B		
				Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?	Major Crit	Minor Crit	Meets?
00:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
01:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
02:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
03:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
04:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
05:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
06:00	798	34	NB	420-Yes	140-No	Major	630-Yes	70-No	Major	504-Yes	112-No	Major
07:00	991	51	NB	420-Yes	140-No	Major	630-Yes	70-No	Major	504-Yes	112-No	Major
08:00	722	48	NB	420-Yes	140-No	Major	630-Yes	70-No	Major	504-Yes	112-No	Major
09:00	584	67	NB	420-Yes	140-No	Major	630-No	70-No	---	504-Yes	112-No	Major
10:00	565	89	NB	420-Yes	140-No	Major	630-No	70-Yes	Minor	504-Yes	112-No	Major
11:00	670	77	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-No	Major
12:00	731	117	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
13:00	697	107	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-No	Major
14:00	815	116	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
15:00	976	122	NB	420-Yes	140-No	Major	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
16:00	1,121	158	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
17:00	1,243	189	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
18:00	860	141	NB	420-Yes	140-Yes	Both	630-Yes	70-Yes	Both	504-Yes	112-Yes	Both
19:00	605	89	NB	420-Yes	140-No	Major	630-No	70-Yes	Minor	504-Yes	112-No	Major
20:00	527	56	NB	420-Yes	140-No	Major	630-No	70-No	---	504-Yes	112-No	Major
21:00	411	55	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
22:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---
23:00	0	0	NB	420-No	140-No	---	630-No	70-No	---	504-No	112-No	---



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

Study Name : TMC 1315 MW  
Study Date : 06/07/13  
Page No. : 1

**Multi-Way Stop Warrant Report**

**Major Street Approaches**

**Eastbound: CSAH 23**  
Total Approach Volume: 5,726  
85% Speed > 40 MPH.

**Westbound: CSAH 23**  
Total Approach Volume: 6,590  
85% Speed > 40 MPH.

**Minor Street Approaches**

**Northbound: Griggs Ave**  
Total Approach Volume: 1,516

**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

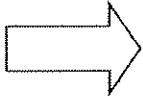
**Criteria C - Minimum Volumes and Delays** ..... Not Satisfied  
Delay data not evaluated  
Required volumes reached for 3 hours, 8 are needed

**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?
16:00 - 17:00	1,121	158	210-Yes	140-Yes	Both	240-Yes	160-No	Major
17:00 - 18:00	1,243	189	210-Yes	140-Yes	Both	240-Yes	160-Yes	Both
18:00 - 19:00	860	141	210-Yes	140-Yes	Both	240-Yes	160-No	Major
05:30 - 06:30	355	16	210-Yes	140-No	Major	240-Yes	160-No	Major
05:45 - 06:45	562	24	210-Yes	140-No	Major	240-Yes	160-No	Major
06:00 - 07:00	798	34	210-Yes	140-No	Major	240-Yes	160-No	Major
06:15 - 07:15	890	37	210-Yes	140-No	Major	240-Yes	160-No	Major
06:30 - 07:30	956	42	210-Yes	140-No	Major	240-Yes	160-No	Major
06:45 - 07:45	979	44	210-Yes	140-No	Major	240-Yes	160-No	Major
07:00 - 08:00	991	51	210-Yes	140-No	Major	240-Yes	160-No	Major
07:15 - 08:15	938	51	210-Yes	140-No	Major	240-Yes	160-No	Major
07:30 - 08:30	861	51	210-Yes	140-No	Major	240-Yes	160-No	Major
07:45 - 08:45	812	59	210-Yes	140-No	Major	240-Yes	160-No	Major
08:00 - 09:00	722	48	210-Yes	140-No	Major	240-Yes	160-No	Major
08:15 - 09:15	668	46	210-Yes	140-No	Major	240-Yes	160-No	Major
08:30 - 09:30	621	53	210-Yes	140-No	Major	240-Yes	160-No	Major
08:45 - 09:45	596	49	210-Yes	140-No	Major	240-Yes	160-No	Major
09:00 - 10:00	584	67	210-Yes	140-No	Major	240-Yes	160-No	Major
09:15 - 10:15	575	77	210-Yes	140-No	Major	240-Yes	160-No	Major
09:30 - 10:30	585	79	210-Yes	140-No	Major	240-Yes	160-No	Major
09:45 - 10:45	572	94	210-Yes	140-No	Major	240-Yes	160-No	Major
10:00 - 11:00	565	89	210-Yes	140-No	Major	240-Yes	160-No	Major
10:15 - 11:15	597	83	210-Yes	140-No	Major	240-Yes	160-No	Major
10:30 - 11:30	606	85	210-Yes	140-No	Major	240-Yes	160-No	Major





**NORTH**

**COUNT LOCATION:**

CSAH 23 (Lake Drive)

**DATE:**

06/06/2013

@ Griggs Ave.

APP. #1 = CSAH 23
APP. #2 =
APP. #3 = CSAH 23
APP. #4 = Griggs Ave.

APP.  
#1

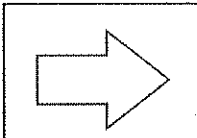
APP.  
#3

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						5		2
6:15-6:30		1		1	2	6		1
6:30-6:45			1		1	8		1
6:45-7:00						10		2
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>35</b>
7:00-7:15						7		1
7:15-7:30						3		
7:30-7:45			1		1	3		
7:45-8:00			2		2	6		4
<b>HOURLY TOTAL</b>					<b>3</b>	<b>HOURLY TOTAL</b>		<b>24</b>
8:00-8:15			1		1	7		
8:15-8:30			1		1	6		1
8:30-8:45			5	1	6	12		1
8:45-9:00						5		
<b>HOURLY TOTAL</b>					<b>8</b>	<b>HOURLY TOTAL</b>		<b>32</b>
9:00-9:15						4		
9:15-9:30						6		1
9:30-9:45		1			1	3		2
9:45-10:00		5		1	6	7		
<b>HOURLY TOTAL</b>					<b>7</b>	<b>HOURLY TOTAL</b>		<b>23</b>
10:00-10:15		4		7	11	7		1
10:15-10:30		2		1	3	3		
10:30-10:45						4		1
10:45-11:00		4		2	6	4		
<b>HOURLY TOTAL</b>					<b>20</b>	<b>HOURLY TOTAL</b>		<b>20</b>
11:00-11:15						5		
11:15-11:30				2	2	7		2
11:30-11:45		3		1	4	9	1	
11:45-12:00		1		1	2	8		
<b>HOURLY TOTAL</b>					<b>8</b>	<b>HOURLY TOTAL</b>		<b>32</b>
12:00-12:15		4		1	5	8		
12:15-12:30		1		2	3	7		
12:30-12:45						4		
12:45-1:00			1	2	3	5		
<b>HOURLY TOTAL</b>					<b>11</b>	<b>HOURLY TOTAL</b>		<b>24</b>
1:00-1:15			1	1	2	8		
1:15-1:30		1			1	8		1
1:30-1:45		1		1	2	2		
1:45-2:00				2	2	3		
<b>HOURLY TOTAL</b>					<b>7</b>	<b>HOURLY TOTAL</b>		<b>22</b>
					<b>TOTAL</b>		<b>TOTAL</b>	<b>212</b>
					<b>67</b>			

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COUNT LOCATION:

CSAH 23 (Lake Drive)

DATE:

06/04/2013

@ Griggs Ave.

NORTH

APP. #1 = CSAH 23
APP. #2 =
APP. #3 = CSAH 23
APP. #4 = Griggs Ave.

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		9		2	11	6		2
2:15-2:30		2		3	5	2		2
2:30-2:45				5	5	6		5
2:45-3:00		6		4	10	7		2
<b>HOURLY TOTAL</b>					<b>31</b>	<b>HOURLY TOTAL</b>		<b>32</b>
3:00-3:15	1			3	4	5		1
3:15-3:30		1		1	2	2		1
3:30-3:45		3		4	7	1		
3:45-4:00				2	2	7		5
<b>HOURLY TOTAL</b>					<b>15</b>	<b>HOURLY TOTAL</b>		<b>22</b>
4:00-4:15		2		2	4	3		6
4:15-4:30		3	1		4	5		2
4:30-4:45		1		3	4	3		
4:45-5:00		3		2	5	2		
<b>HOURLY TOTAL</b>					<b>17</b>	<b>HOURLY TOTAL</b>		<b>21</b>
5:00-5:15		6		4	10	2		
5:15-5:30				2	2	2		
5:30-5:45						3		
5:45-6:00		6		2	8			
<b>HOURLY TOTAL</b>					<b>20</b>	<b>HOURLY TOTAL</b>		<b>7</b>
6:00-6:15		3		3	6			
6:15-6:30		1			1	1		
6:30-6:45		1		5	6	2		1
6:45-7:00	2	2		1	5	1		
<b>HOURLY TOTAL</b>					<b>18</b>	<b>HOURLY TOTAL</b>		<b>5</b>
7:00-7:15		3		2	5	1		
7:15-7:30				1	1	2		
7:30-7:45		3		1	4			
7:45-8:00		1			1			
<b>HOURLY TOTAL</b>					<b>11</b>	<b>HOURLY TOTAL</b>		<b>3</b>
8:00-8:15				2		1		
8:15-8:30						2		
8:30-8:45		5		1	6			
8:45-9:00		3		8	11	1		
<b>HOURLY TOTAL</b>					<b>29</b>	<b>HOURLY TOTAL</b>		<b>4</b>
9:00-9:15				1				
9:15-9:30								
9:30-9:45		1		1	2			
9:45-10:00			1	1	2			
<b>HOURLY TOTAL</b>					<b>44</b>	<b>HOURLY TOTAL</b>		
				<b>TOTAL</b>	<b>252</b>		<b>TOTAL</b>	<b>303</b>

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