

Date : 11/19/13

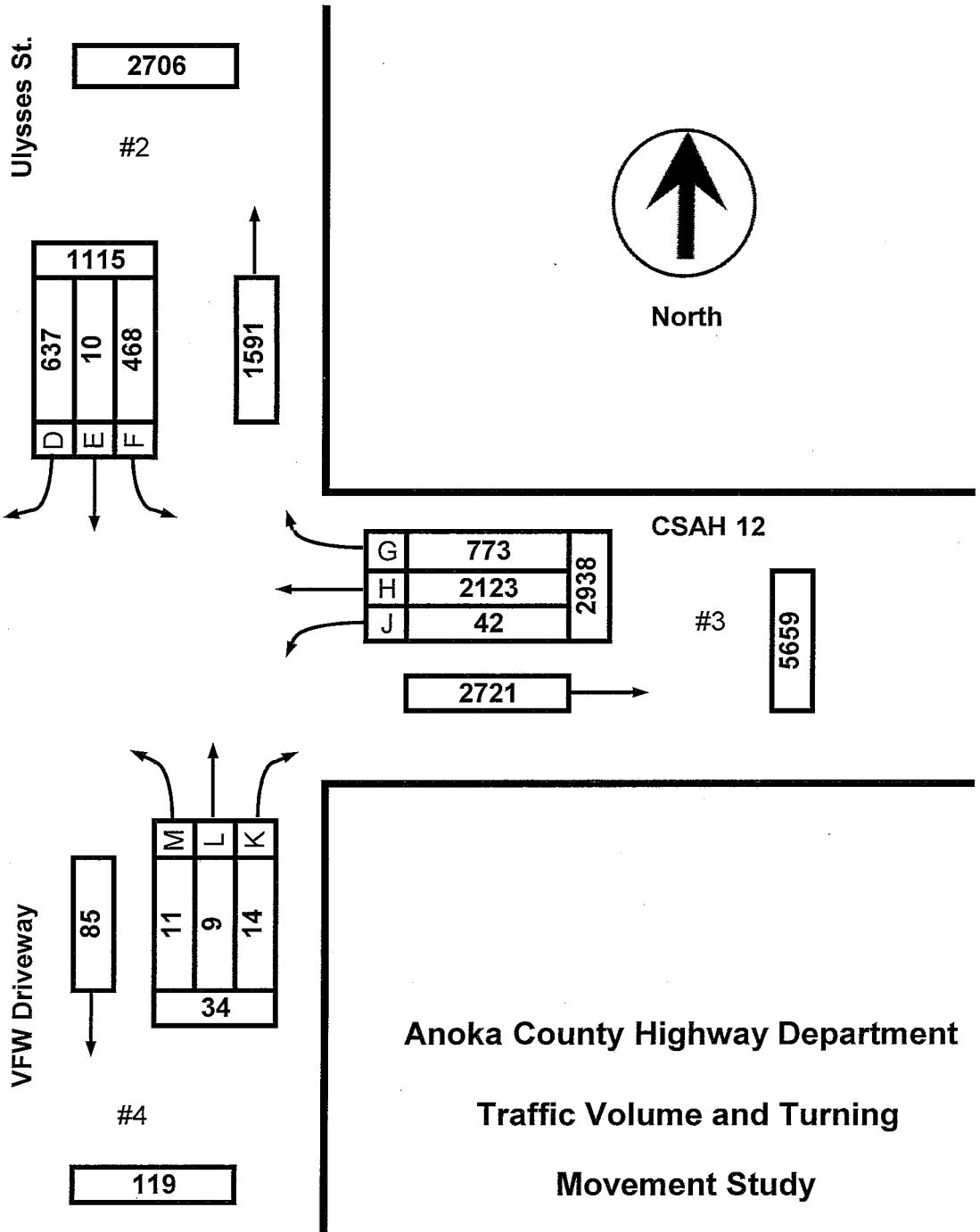
Count Number : TMC1347

Location : CSAH 12 (109th Ave.)

@ Ulysses St.

Collection Period : PEAK HOURS

6-9 AM, 4-7 PM



CSAH 12

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

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 11/19/13

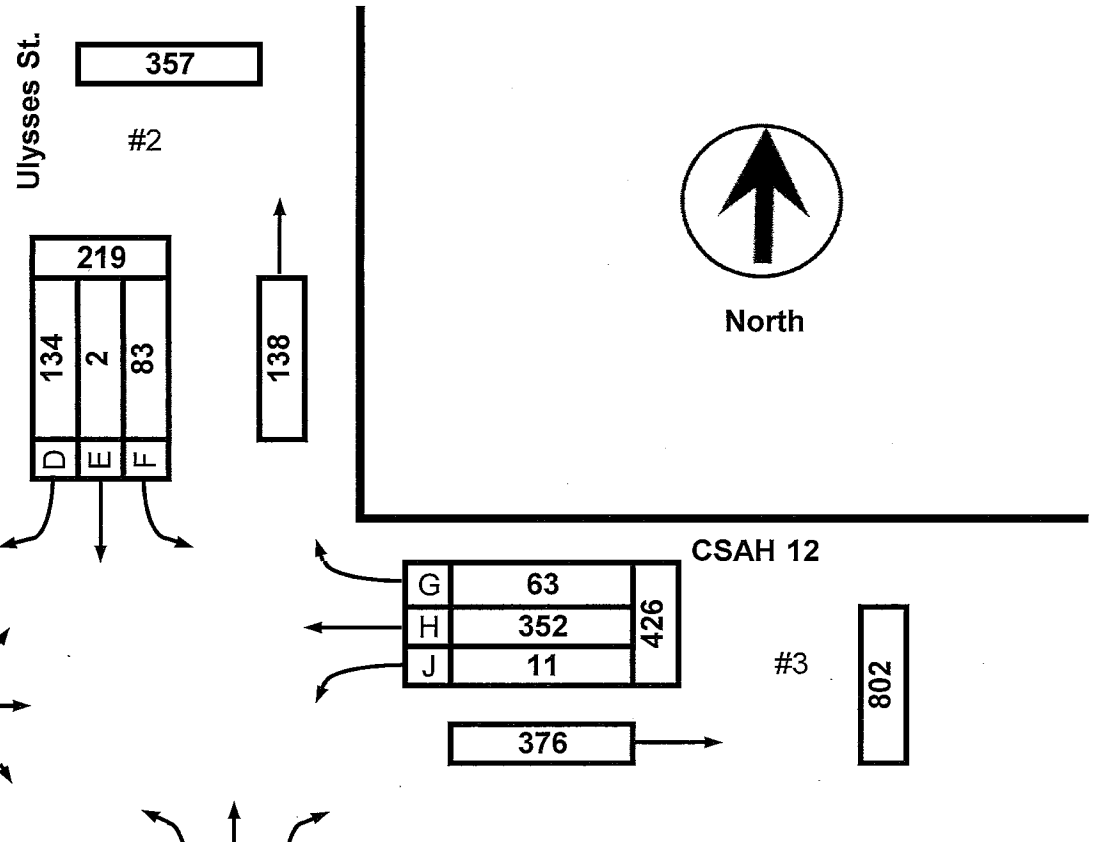
Count Number : TMC1347

Location : CSAH 12 (109th Ave.)

@ Ulysses St.

Collection Period : AM PEAK

Hour : 7:15 - 8:15 AM



CSAH 12

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

VFW Driveway

Anoka County Highway Department  
 Traffic Volume and Turning  
 Movement Study

Date : 11/19/13

Count Number : TMC1347

Location : CSAH 12 (109th Ave.)

@ Ulysses St.

Collection Period : PM PEAK

Hour : 4:30 PM - 5:30 PM

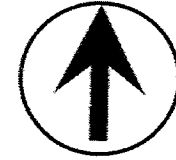
Ulysses St.

667

#2

199		
120	1	78
D	E	F

468



North

1457

#1

642

815	239	C
	570	B
	6	A

CSAH 12

G	228	757
H	522	
J	7	

CSAH 12

#3

1406

649

M	L	K
0	1	1
2		

14

VFW Driveway

#4

16

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

Anoka County Highway Department

Traffic Volume and Turning

Movement Study



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : tmc 1347  
 Site Code : 13470202  
 Start Date : 11/19/2013  
 Page No : 1

Weather: Cool and Cloudy  
 Counter: DB-400  
 study conducted by: Randy/Matt

Groups Printed- Unshifted

Start Time	Ulysses St. Southbound					CSAH 12 Westbound					VFW Driveway Northbound					CSAH 12 Eastbound					Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total	Left	Thru	Right	Heavy	App. Total			
06:00	11	0	9	0	20	1	28	6	2	35	0	0	0	0	0	2	39	0	0	41	2	96	98
06:15	15	0	14	0	29	0	37	4	2	41	0	0	0	0	0	13	52	0	0	65	2	135	137
06:30	20	0	20	0	40	1	47	5	1	53	0	0	0	0	0	12	74	0	1	86	2	179	181
06:45	20	0	22	0	42	0	42	19	0	61	0	0	0	0	0	19	91	0	4	110	4	213	217
<b>Total</b>	<b>66</b>	<b>0</b>	<b>65</b>	<b>0</b>	<b>131</b>	<b>2</b>	<b>154</b>	<b>34</b>	<b>5</b>	<b>190</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>46</b>	<b>256</b>	<b>0</b>	<b>5</b>	<b>302</b>	<b>10</b>	<b>623</b>	<b>633</b>
07:00	12	0	34	4	46	0	65	4	1	69	0	0	0	0	0	16	71	1	0	88	5	203	208
07:15	21	0	39	0	60	2	114	18	6	134	0	0	0	0	0	19	65	0	3	84	9	278	287
07:30	15	1	46	0	62	0	85	9	4	94	0	0	0	0	0	18	98	2	2	118	6	274	280
07:45	20	0	29	0	49	5	84	28	2	117	0	1	0	0	1	24	70	5	1	99	3	266	269
<b>Total</b>	<b>68</b>	<b>1</b>	<b>148</b>	<b>4</b>	<b>217</b>	<b>7</b>	<b>348</b>	<b>59</b>	<b>13</b>	<b>414</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>77</b>	<b>304</b>	<b>8</b>	<b>6</b>	<b>389</b>	<b>23</b>	<b>1021</b>	<b>1044</b>
08:00	27	1	20	1	48	4	69	8	2	81	0	0	0	0	0	13	60	4	1	77	4	206	210
08:15	24	0	18	3	42	5	72	21	2	98	0	1	0	0	1	22	45	4	1	71	6	212	218
08:30	17	2	24	0	43	2	72	20	5	94	0	0	0	0	0	21	66	0	4	87	9	224	233
08:45	12	1	19	3	32	2	68	25	3	95	1	0	0	0	1	31	74	1	4	106	10	234	244
<b>Total</b>	<b>80</b>	<b>4</b>	<b>81</b>	<b>7</b>	<b>165</b>	<b>13</b>	<b>281</b>	<b>74</b>	<b>12</b>	<b>368</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>87</b>	<b>245</b>	<b>9</b>	<b>10</b>	<b>341</b>	<b>29</b>	<b>876</b>	<b>905</b>

\*\*\* BREAK \*\*\*

16:00	22	1	26	1	49	0	118	52	2	170	0	1	0	0	1	53	127	1	8	181	11	401	412
16:15	24	0	37	1	61	1	99	57	3	157	0	0	0	0	0	70	122	1	5	193	9	411	420
16:30	21	0	24	0	45	1	134	77	0	212	0	0	1	0	1	68	129	0	2	197	2	455	457
16:45	24	1	29	1	54	2	140	56	2	198	0	0	0	0	0	62	151	5	0	218	3	470	473
<b>Total</b>	<b>91</b>	<b>2</b>	<b>116</b>	<b>3</b>	<b>209</b>	<b>4</b>	<b>491</b>	<b>242</b>	<b>7</b>	<b>737</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>253</b>	<b>529</b>	<b>7</b>	<b>15</b>	<b>789</b>	<b>25</b>	<b>1737</b>	<b>1762</b>
17:00	23	0	41	0	64	2	115	41	1	158	0	0	0	0	0	64	147	1	0	212	1	434	435
17:15	10	0	26	1	36	2	133	54	0	189	0	1	0	0	1	45	143	0	2	188	3	414	417
17:30	22	0	24	1	46	0	90	39	1	129	0	0	1	0	1	60	138	1	2	199	4	375	379
17:45	17	2	28	0	47	3	119	54	2	176	0	0	0	0	0	28	120	3	0	151	2	374	376
<b>Total</b>	<b>72</b>	<b>2</b>	<b>119</b>	<b>2</b>	<b>193</b>	<b>7</b>	<b>457</b>	<b>188</b>	<b>4</b>	<b>652</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>197</b>	<b>548</b>	<b>5</b>	<b>4</b>	<b>750</b>	<b>10</b>	<b>1597</b>	<b>1607</b>
18:00	28	0	28	1	56	2	130	43	0	175	1	2	1	0	4	49	93	2	1	144	2	379	381
18:15	20	1	29	1	50	5	87	44	1	136	4	0	1	1	5	37	95	1	0	133	3	324	327
18:30	19	0	21	0	40	1	93	41	1	135	5	1	2	0	8	36	88	1	1	125	2	308	310
18:45	24	0	30	0	54	1	82	48	1	131	0	2	8	0	10	27	81	0	1	108	2	303	305
<b>Total</b>	<b>91</b>	<b>1</b>	<b>108</b>	<b>2</b>	<b>200</b>	<b>9</b>	<b>392</b>	<b>176</b>	<b>3</b>	<b>577</b>	<b>10</b>	<b>5</b>	<b>12</b>	<b>1</b>	<b>27</b>	<b>149</b>	<b>357</b>	<b>4</b>	<b>3</b>	<b>510</b>	<b>9</b>	<b>1314</b>	<b>1323</b>
<b>Grand Total</b>	<b>468</b>	<b>10</b>	<b>637</b>	<b>18</b>	<b>1115</b>	<b>42</b>	<b>2123</b>	<b>773</b>	<b>44</b>	<b>2938</b>	<b>11</b>	<b>9</b>	<b>14</b>	<b>1</b>	<b>34</b>	<b>809</b>	<b>2239</b>	<b>33</b>	<b>43</b>	<b>3081</b>	<b>106</b>	<b>7168</b>	<b>7274</b>
<b>Apprch %</b>	<b>42</b>	<b>0.9</b>	<b>57.1</b>			<b>1.4</b>	<b>72.3</b>	<b>26.3</b>			<b>32.4</b>	<b>26.5</b>	<b>41.2</b>			<b>26.3</b>	<b>72.7</b>	<b>1.1</b>					
<b>Total %</b>	<b>6.5</b>	<b>0.1</b>	<b>8.9</b>		<b>15.6</b>	<b>0.6</b>	<b>29.6</b>	<b>10.8</b>		<b>41</b>	<b>0.2</b>	<b>0.1</b>	<b>0.2</b>		<b>0.5</b>	<b>11.3</b>	<b>31.2</b>	<b>0.5</b>		<b>43</b>	<b>1.5</b>	<b>98.5</b>	

Start Time	Ulysses St. Southbound				CSAH 12 Westbound				VFW Driveway Northbound				CSAH 12 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 07:15																	
07:15	21	0	39	60	2	114	18	134	0	0	0	0	19	65	0	84	278
07:30	15	1	46	62	0	85	9	94	0	0	0	0	18	98	2	118	274
07:45	20	0	29	49	5	84	28	117	0	1	0	1	24	70	5	99	266
08:00	27	1	20	48	4	69	8	81	0	0	0	0	13	60	4	77	206
<b>Total Volume</b>	<b>83</b>	<b>2</b>	<b>134</b>	<b>219</b>	<b>11</b>	<b>352</b>	<b>63</b>	<b>426</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>74</b>	<b>293</b>	<b>11</b>	<b>378</b>	<b>1024</b>
<b>% App. Total</b>	<b>37.9</b>	<b>0.9</b>	<b>61.2</b>		<b>2.6</b>	<b>82.6</b>	<b>14.8</b>		<b>0</b>	<b>100</b>	<b>0</b>		<b>19.6</b>	<b>77.5</b>	<b>2.9</b>		
<b>PHF</b>	<b>.769</b>	<b>.500</b>	<b>.728</b>	<b>.883</b>	<b>.550</b>	<b>.772</b>	<b>.563</b>	<b>.795</b>	<b>.000</b>	<b>.250</b>	<b>.000</b>	<b>.250</b>	<b>.771</b>	<b>.747</b>	<b>.550</b>	<b>.801</b>	<b>.921</b>

Peak Hour Analysis From 12:00 to 18:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	21	0	24	45	1	134	77	212	0	0	1	1	68	129	0	197	455
16:45	24	1	29	54	2	140	56	198	0	0	0	0	62	151	5	218	470
17:00	23	0	41	64	2	115	41	158	0	0	0	0	64	147	1	212	434
17:15	10	0	26	36	2	133	54	189	0	1	0	1	45	143	0	188	414
<b>Total Volume</b>	<b>78</b>	<b>1</b>	<b>120</b>	<b>199</b>	<b>7</b>	<b>522</b>	<b>228</b>	<b>757</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>239</b>	<b>570</b>	<b>6</b>	<b>815</b>	<b>1773</b>
<b>% App. Total</b>	<b>39.2</b>	<b>0.5</b>	<b>60.3</b>		<b>0.9</b>	<b>69</b>	<b>30.1</b>		<b>0</b>	<b>50</b>	<b>50</b>		<b>29.3</b>	<b>69.9</b>	<b>0.7</b>		
<b>PHF</b>	<b>.813</b>	<b>.250</b>	<b>.732</b>	<b>.777</b>	<b>.875</b>	<b>.932</b>	<b>.740</b>	<b>.893</b>	<b>.000</b>	<b>.250</b>	<b>.250</b>	<b>.500</b>	<b>.879</b>	<b>.944</b>	<b>.300</b>	<b>.935</b>	<b>.943</b>



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

Study Name : TMC 1347  
Study Date : 11/25/13  
Page No. : 1

**Signal Warrants - Summary**

**Major Street Approaches**

**Eastbound: CSAH 12**

Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 3,083

**Westbound: CSAH 12**

Number of Lanes: 2  
85% Speed > 40 MPH.  
Total Approach Volume: 2,940

**Minor Street Approaches**

**Northbound: VFW Driveway**

Number of Lanes: 1  
  
Total Approach Volume: 34

**Southbound: Ulysses St.**

Number of Lanes: 2  
  
Total Approach Volume: 1,117

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

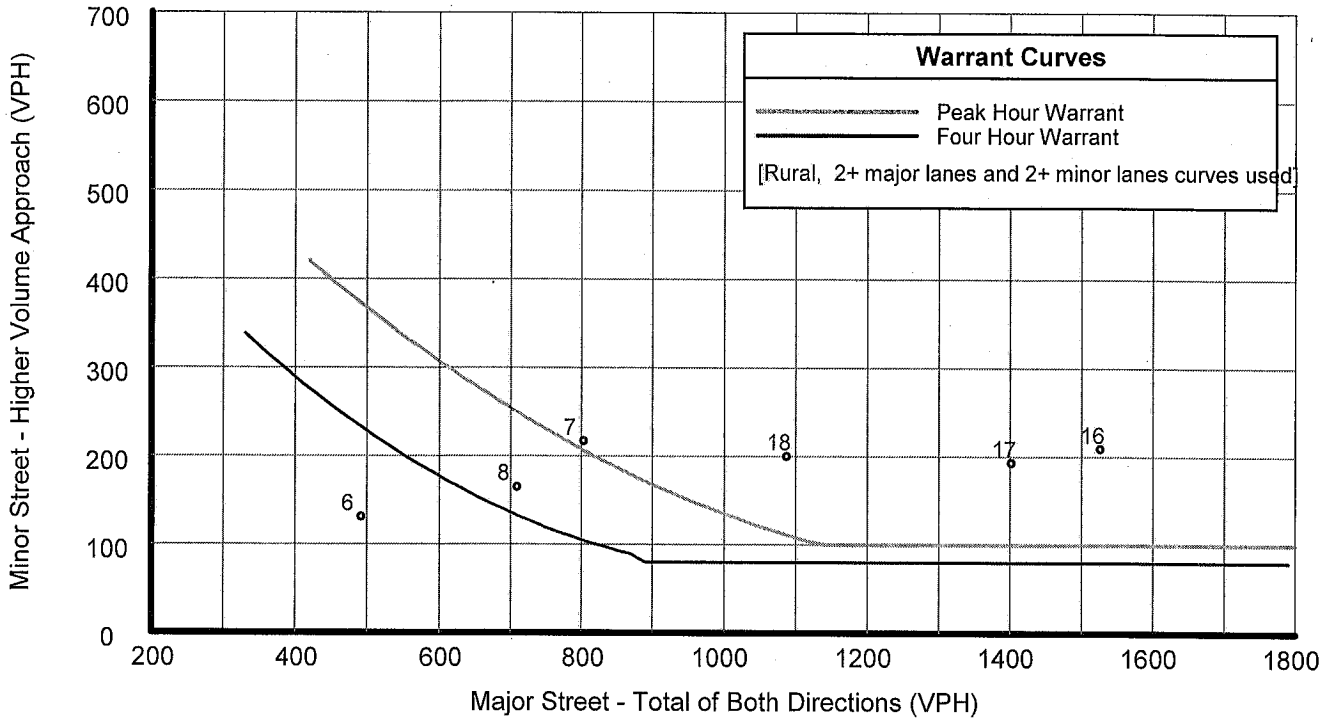
<b>Warrant 1 - Eight Hour Vehicular Volumes</b> .....	<b>Not Satisfied</b>
<b>Warrant 1A - Minimum Vehicular Volume</b> .....	<b>Not Satisfied</b>
Required volumes reached for 7 hours, 8 are needed	
<b>Warrant 1B - Interruption of Continuous Traffic</b> .....	<b>Not Satisfied</b>
Required volumes reached for 5 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 (17) 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 1347  
Study Date : 11/25/13  
Page No. : 2

## Signal Warrants - Summary



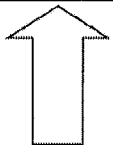
### Analysis of 8-Hour Volume Warrants:

#### War 1A-Minimum Volume

#### War 1B-Interruption of Traffic

#### War 1C-Combination of Warrants

Hour Begin	Major Total	Minor Vol Dir	Maj 420	Min 0	Hour Begin	Major Total	Minor Vol Dir	Maj 630	Min 0	Hour Begin	Major Total	Minor Vol Dir	Maj 504	Min 0
16:30	1,572	199 SB	Yes	Yes	16:30	1,572	199 SB	Yes	Yes	16:30	1,572	199 SB	Yes	Yes
17:30	1,243	199 SB	Yes	Yes	17:30	1,243	199 SB	Yes	Yes	17:30	1,243	199 SB	Yes	Yes
07:00	803	217 SB	Yes	Yes	07:30	755	201 SB	Yes	Yes	07:15	804	219 SB	Yes	Yes
08:00	709	165 SB	Yes	Yes	15:30	703	110 SB	Yes	Yes	15:30	703	110 SB	Yes	Yes
15:30	703	110 SB	Yes	Yes	06:30	685	188 SB	Yes	Yes	06:15	573	157 SB	Yes	Yes
18:30	499	94 SB	Yes	Yes	06:15	573	157 SB	No	Yes	08:15	551	118 SB	Yes	Yes
06:00	492	131 SB	Yes	Yes	18:30	499	94 SB	No	Yes	18:30	499	94 SB	No	Yes
15:15	353	50 SB	No	Yes	06:00	492	131 SB	No	Yes	06:00	492	131 SB	No	Yes
05:45	321	89 SB	No	Yes	08:30	383	76 SB	No	Yes	15:15	353	50 SB	No	Yes
05:30	182	49 SB	No	Yes	15:15	353	50 SB	No	Yes	05:45	321	89 SB	No	Yes
05:15	76	20 SB	No	Yes	05:45	321	89 SB	No	Yes	18:45	239	54 SB	No	Yes
15:00	2	1 SB	No	Yes	18:45	239	54 SB	No	Yes	05:30	182	49 SB	No	Yes
09:15	2	0 SB	No	Yes	08:45	203	33 SB	No	Yes	05:15	76	20 SB	No	Yes
09:00	2	1 SB	No	Yes	05:30	182	49 SB	No	Yes	15:00	2	1 SB	No	Yes
14:45	1	1 SB	No	Yes	05:15	76	20 SB	No	Yes	09:15	2	0 SB	No	Yes
09:30	1	0 SB	No	Yes	15:00	2	1 SB	No	Yes	14:45	1	1 SB	No	Yes
22:45	0	0 SB	No	Yes	09:15	2	0 SB	No	Yes	09:30	1	0 SB	No	Yes
22:30	0	0 SB	No	Yes	09:00	2	1 SB	No	Yes	22:45	0	0 SB	No	Yes
22:15	0	0 SB	No	Yes	14:45	1	1 SB	No	Yes	22:30	0	0 SB	No	Yes
22:00	0	0 SB	No	Yes	09:30	1	0 SB	No	Yes	22:15	0	0 SB	No	Yes
21:45	0	0 SB	No	Yes	22:45	0	0 SB	No	Yes	22:00	0	0 SB	No	Yes
21:30	0	0 SB	No	Yes	22:30	0	0 SB	No	Yes	21:45	0	0 SB	No	Yes
21:15	0	0 SB	No	Yes	22:15	0	0 SB	No	Yes	21:30	0	0 SB	No	Yes
21:00	0	0 SB	No	Yes	22:00	0	0 SB	No	Yes	21:15	0	0 SB	No	Yes



**NORTH**

**COUNT LOCATION:**

CSAH 12 (109th Ave.)

**DATE:**

11/19/2013

@ Ulysses St.

APP. #1 = CSAH 12

APP. #2 = Ulysses St.

APP. #3 = CSAH 12

APP. #4 = VFW Driveway

APP. #2

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						2		
6:15-6:30						2		
6:30-6:45				1	1	1		
6:45-7:00						2		2
<b>HOURLY TOTAL</b>					<b>1</b>	<b>HOURLY TOTAL</b>		<b>9</b>
7:00-7:15AM						3		2
7:15-7:30				1	1	4		5
7:30-7:45				1	1	4		2
7:45-8:00						2		1
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>23</b>
8:00-8:15AM				1	1	1		3
8:15-8:30				1	1	2		3
8:30-8:45		1			1	5		4
8:45-9:00				1	1	3		7
<b>HOURLY TOTAL</b>					<b>4</b>	<b>HOURLY TOTAL</b>		<b>28</b>
					<b>TOTAL</b>		<b>TOTAL</b>	<b>60</b>
					<b>7</b>			<b>60</b>

TIME	PEDESTRIANS					HEAVY VEHICLES		
	APP. #1	APP. #2	APP. #3	APP. #4	15 MIN TOT	TRUCKS	RV	BUS
4:00-4:15PM						5		6
4:15-4:30	1			1	2	4		4
4:30-4:45						2		
4:45-5:00						2		
<b>HOURLY TOTAL</b>					<b>2</b>	<b>HOURLY TOTAL</b>		<b>23</b>
5:00-5:15PM						2		
5:15-5:30								2
5:30-5:45						2		3
5:45-6:00						2		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>11</b>
6:00-6:15PM						2		
6:15-6:30						3		
6:30-6:45						2		
6:45-7:00						2		
<b>HOURLY TOTAL</b>						<b>HOURLY TOTAL</b>		<b>9</b>
					<b>TOTAL</b>		<b>TOTAL</b>	<b>43</b>
					<b>2</b>			<b>43</b>