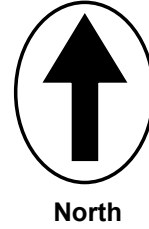


Date : 05/25/21

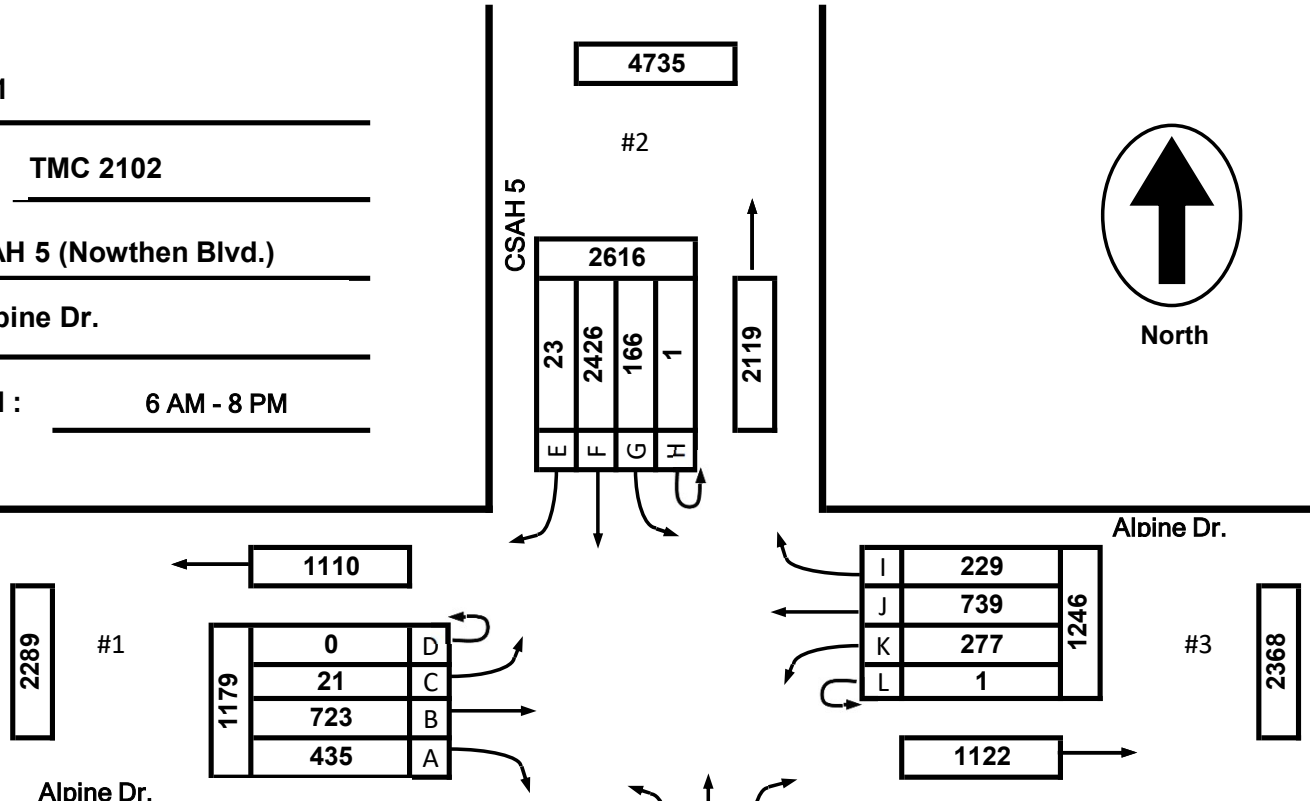
Count Number : TMC 2102

Location : CSAH 5 (Nowthen Blvd.)  
@ Alpine Dr.

Collection Period : 6 AM - 8 PM



North



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

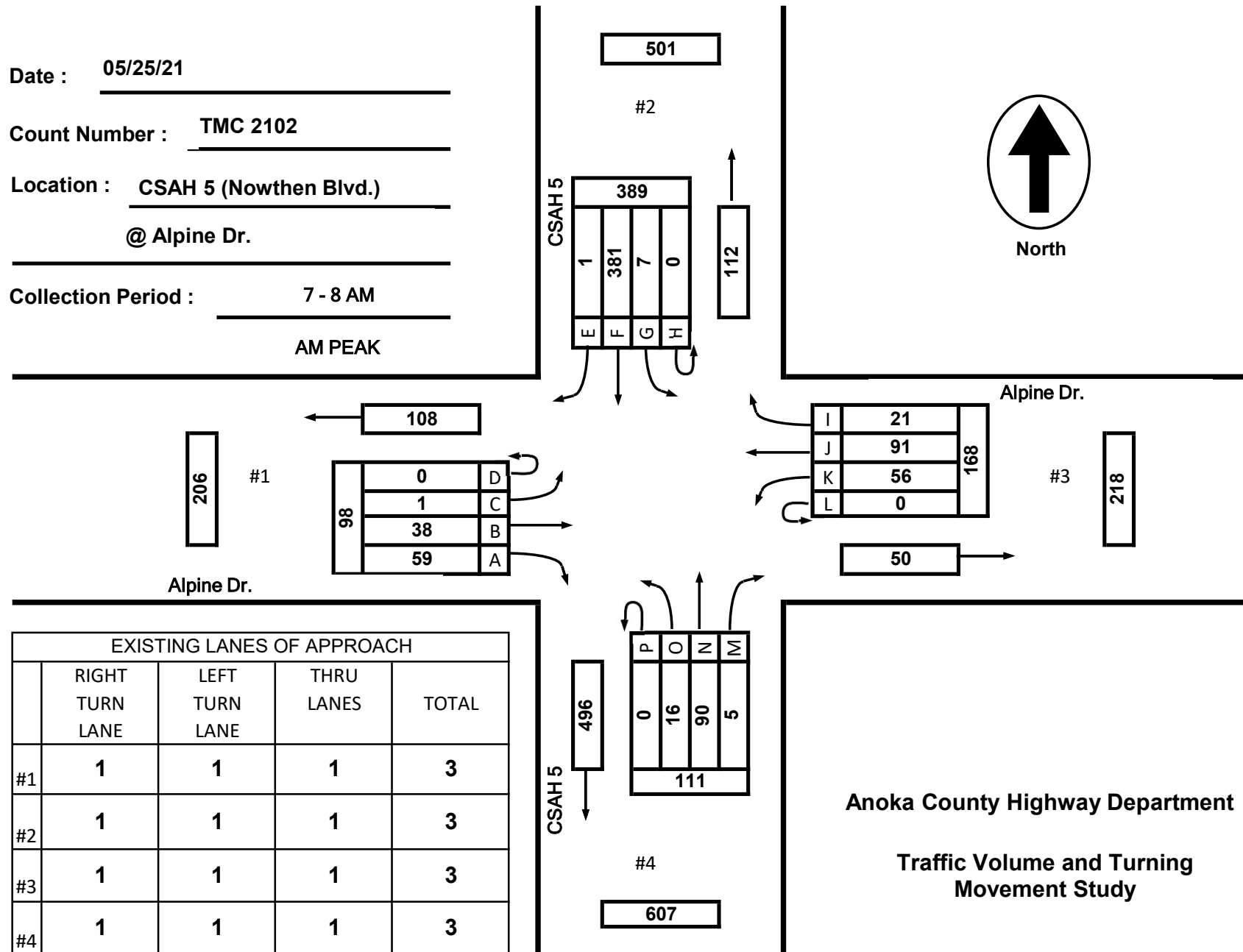
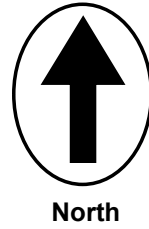
Anoka County Highway Department  
 Traffic Volume and Turning Movement Study

Date : 05/25/21

Count Number : TMC 2102

Location : CSAH 5 (Nowthen Blvd.)  
@ Alpine Dr.

Collection Period : 7 - 8 AM  
AM PEAK



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

Anoka County Highway Department  
 Traffic Volume and Turning Movement Study

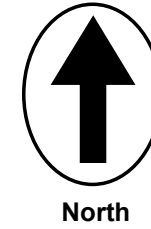
Date : 05/25/21

Count Number : TMC 2102

Location : CSAH 5 (Nowthen Blvd.)  
@ Alpine Dr.

Collection Period : 11:15 AM - 12:15 PM

MIDDAY PEAK



Alpine Dr.

Alpine Dr.

CSAH 5

CSAH 5

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

132 #1

66		
0	D	66
2	C	
38	B	
26	A	

239

#2

141			
1	135	5	0
E	F	G	H

98

I	14	67
J	42	
K	11	
L	0	

#3

128

61

173

P	O	N	M
1	23	82	18
124			

#4

297

Anoka County Highway Department

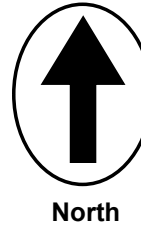
Traffic Volume and Turning Movement Study

Date : 05/25/21

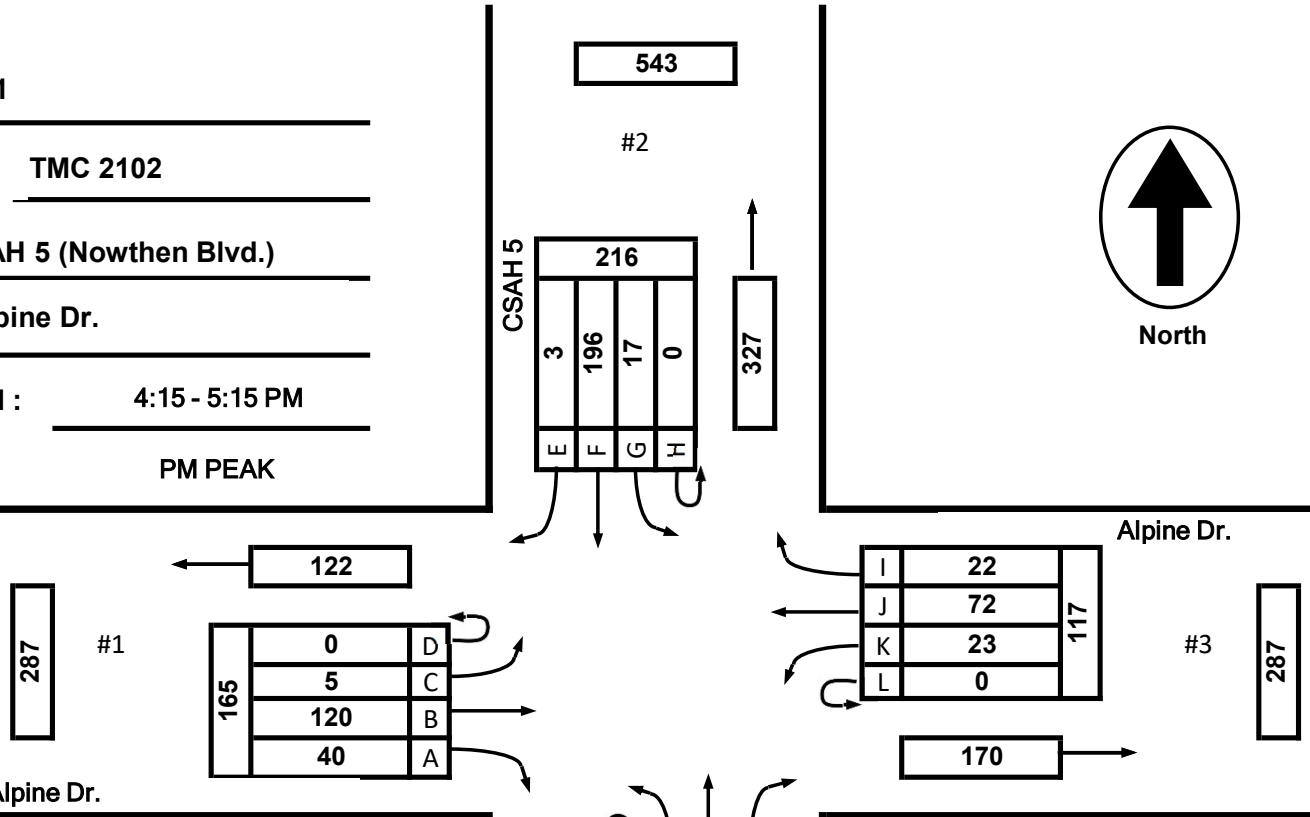
Count Number : TMC 2102

Location : CSAH 5 (Nowthen Blvd.)  
@ Alpine Dr.

Collection Period : 4:15 - 5:15 PM  
**PM PEAK**



North



Alpine Dr.

Alpine Dr.

CSAH 5

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

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 2102-csah 5 @ alpine dr. new  
 Site Code :  
 Start Date : 05/25/2021  
 Page No : 1

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

Groups Printed- Cars + - Trucks

Start Time	CSAH 5 (Nowthen Blvd.) Southbound						Alpine Dr. Westbound						CSAH 5 (Nowthen Blvd.) Northbound						Alpine Dr. Eastbound						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
06:00	0	0	56	0	0	56	0	2	10	1	0	13	0	2	8	0	0	10	0	0	2	6	0	8	0	87	87
06:15	0	2	67	0	0	69	0	5	10	2	0	17	0	0	10	1	0	11	0	0	3	6	0	9	0	106	106
06:30	0	5	86	0	0	91	0	6	12	6	0	24	0	0	14	1	0	15	0	0	2	5	0	7	0	137	137
06:45	0	4	83	0	1	87	0	8	20	6	1	34	0	1	17	3	2	21	0	0	2	5	0	7	4	149	153
Total	0	11	292	0	1	303	0	21	52	15	1	88	0	3	49	5	2	57	0	0	9	22	0	31	4	479	483
07:00	0	0	116	0	0	116	0	9	18	4	0	31	0	3	18	1	2	22	0	0	7	13	0	20	2	189	191
07:15	0	4	106	0	0	110	0	30	22	3	0	55	0	7	26	1	0	34	0	0	11	23	0	34	0	233	233
07:30	0	1	82	0	1	83	0	8	29	8	0	45	0	2	24	2	0	28	0	1	13	13	0	27	1	183	184
07:45	0	2	77	1	0	80	0	9	22	6	1	37	0	4	22	1	0	27	0	0	7	10	0	17	1	161	162
Total	0	7	381	1	1	389	0	56	91	21	1	168	0	16	90	5	2	111	0	1	38	59	0	98	4	766	770
08:00	0	4	60	0	0	64	0	9	15	8	1	32	0	2	23	1	0	26	0	1	5	9	0	15	1	137	138
08:15	0	4	56	1	1	61	0	5	5	4	1	14	0	2	25	1	0	28	0	1	5	5	0	11	2	114	116
08:30	0	3	42	1	0	46	0	6	8	5	0	19	0	5	23	3	0	31	0	1	6	7	0	14	0	110	110
08:45	0	1	54	0	0	55	0	7	11	1	0	19	0	3	15	5	0	23	0	0	7	6	0	13	0	110	110
Total	0	12	212	2	1	226	0	27	39	18	2	84	0	12	86	10	0	108	0	3	23	27	0	53	3	471	474
09:00	0	2	43	1	0	46	0	9	9	12	0	30	0	6	29	5	0	40	0	0	7	18	0	25	0	141	141
09:15	0	10	65	1	0	76	0	10	6	2	0	18	0	4	28	5	0	37	0	0	10	15	2	25	2	156	158
09:30	0	4	48	0	0	52	0	4	13	4	1	21	0	5	12	3	2	20	0	0	6	5	0	11	3	104	107
09:45	0	7	36	2	2	45	0	2	10	4	0	16	1	6	18	3	0	28	0	0	8	10	0	18	2	107	109
Total	0	23	192	4	2	219	0	25	38	22	1	85	1	21	87	16	2	125	0	0	31	48	2	79	7	508	515
10:00	0	0	29	0	1	29	1	3	9	1	1	14	0	8	12	1	0	21	0	0	5	5	1	10	3	74	77
10:15	0	3	26	0	0	29	0	0	11	2	0	13	0	1	10	3	2	14	0	1	8	5	0	14	2	70	72
10:30	0	1	34	0	0	35	0	4	10	1	1	15	0	7	19	1	7	27	0	0	12	8	6	20	14	97	111
10:45	0	0	25	0	0	25	0	0	10	0	0	10	0	7	22	3	1	32	0	1	8	1	0	10	1	77	78
Total	0	4	114	0	1	118	1	7	40	4	2	52	0	23	63	8	10	94	0	2	33	19	7	54	20	318	338
11:00	0	1	23	0	1	24	0	2	4	2	1	8	0	2	17	7	0	26	0	0	6	4	0	10	2	68	70
11:15	0	0	29	0	0	29	0	4	12	3	0	19	0	6	25	9	0	40	0	0	8	9	0	17	0	105	105
11:30	0	1	36	0	1	37	0	4	10	2	0	16	0	6	20	4	1	30	0	0	7	7	0	14	2	97	99
11:45	0	2	33	0	0	35	0	1	12	6	0	19	0	4	16	4	0	24	0	2	10	4	0	16	0	94	94
Total	0	4	121	0	2	125	0	11	38	13	1	62	0	18	78	24	1	120	0	2	31	24	0	57	4	364	368



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : tmc 2102-csah 5 @ alpine dr. new  
 Site Code :  
 Start Date : 05/25/2021  
 Page No : 2

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

Groups Printed- Cars + - Trucks

Start Time	CSAH 5 (Nowthen Blvd.) Southbound						Alpine Dr. Westbound						CSAH 5 (Nowthen Blvd.) Northbound						Alpine Dr. Eastbound						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
12:00	0	2	37	1	1	40	0	2	8	3	1	13	1	7	21	1	1	30	0	0	13	6	1	19	4	102	106
12:15	0	4	23	0	0	27	0	4	13	1	0	18	0	5	34	3	0	42	0	0	9	3	0	12	0	99	99
12:30	0	2	29	1	0	32	0	1	16	3	0	20	0	5	25	1	1	31	0	1	11	4	0	16	1	99	100
12:45	0	0	33	0	0	33	0	2	17	1	0	20	0	2	31	2	1	35	0	0	4	6	1	10	2	98	100
<b>Total</b>	<b>0</b>	<b>8</b>	<b>122</b>	<b>2</b>	<b>1</b>	<b>132</b>	<b>0</b>	<b>9</b>	<b>54</b>	<b>8</b>	<b>1</b>	<b>71</b>	<b>1</b>	<b>19</b>	<b>111</b>	<b>7</b>	<b>3</b>	<b>138</b>	<b>0</b>	<b>1</b>	<b>37</b>	<b>19</b>	<b>2</b>	<b>57</b>	<b>7</b>	<b>398</b>	<b>405</b>
13:00	0	1	26	0	0	27	0	2	11	2	0	15	0	5	20	1	0	26	0	0	14	5	0	19	0	87	87
13:15	0	1	34	1	1	36	0	4	5	10	0	19	0	6	21	2	0	29	0	0	7	2	0	9	1	93	94
13:30	0	1	31	0	0	32	0	2	10	1	0	13	0	3	23	4	0	30	0	0	8	5	0	13	0	88	88
13:45	0	3	27	1	0	31	0	1	8	3	0	12	0	6	34	2	1	42	0	0	8	8	2	16	3	101	104
<b>Total</b>	<b>0</b>	<b>6</b>	<b>118</b>	<b>2</b>	<b>1</b>	<b>126</b>	<b>0</b>	<b>9</b>	<b>34</b>	<b>16</b>	<b>0</b>	<b>59</b>	<b>0</b>	<b>20</b>	<b>98</b>	<b>9</b>	<b>1</b>	<b>127</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>20</b>	<b>2</b>	<b>57</b>	<b>4</b>	<b>369</b>	<b>373</b>
14:00	0	0	41	0	0	41	0	0	12	2	0	14	0	5	27	3	0	35	0	0	12	6	0	18	0	108	108
14:15	0	2	37	0	0	39	0	3	8	5	0	16	0	3	50	1	0	54	0	1	17	5	0	23	0	132	132
14:30	0	1	35	0	0	36	0	4	21	5	2	30	0	10	38	2	0	50	0	1	20	1	0	22	2	138	140
14:45	1	5	36	2	0	44	0	5	7	4	0	16	0	11	40	8	0	59	0	0	15	3	0	18	0	137	137
<b>Total</b>	<b>1</b>	<b>8</b>	<b>149</b>	<b>2</b>	<b>0</b>	<b>160</b>	<b>0</b>	<b>12</b>	<b>48</b>	<b>16</b>	<b>2</b>	<b>76</b>	<b>0</b>	<b>29</b>	<b>155</b>	<b>14</b>	<b>0</b>	<b>198</b>	<b>0</b>	<b>2</b>	<b>64</b>	<b>15</b>	<b>0</b>	<b>81</b>	<b>2</b>	<b>515</b>	<b>517</b>
15:00	0	6	37	1	0	44	0	4	12	5	0	21	0	10	58	5	1	73	0	0	18	12	1	30	2	168	170
15:15	0	5	39	1	1	45	0	5	8	2	1	15	0	7	54	8	0	69	0	0	21	11	0	32	2	161	163
15:30	0	3	38	2	0	43	0	11	16	6	0	33	0	8	57	2	1	67	0	0	29	13	0	42	1	185	186
15:45	0	3	33	1	1	37	0	15	17	10	1	42	0	9	48	10	0	67	0	1	32	21	0	54	2	200	202
<b>Total</b>	<b>0</b>	<b>17</b>	<b>147</b>	<b>5</b>	<b>2</b>	<b>169</b>	<b>0</b>	<b>35</b>	<b>53</b>	<b>23</b>	<b>2</b>	<b>111</b>	<b>0</b>	<b>34</b>	<b>217</b>	<b>25</b>	<b>2</b>	<b>276</b>	<b>0</b>	<b>1</b>	<b>100</b>	<b>57</b>	<b>1</b>	<b>158</b>	<b>7</b>	<b>714</b>	<b>721</b>
16:00	0	9	38	0	1	47	0	3	9	4	1	16	0	10	75	9	0	94	0	1	23	8	1	32	3	189	192
16:15	0	8	46	0	0	54	0	5	7	6	0	18	0	16	91	7	2	114	0	0	29	5	1	34	3	220	223
16:30	0	2	48	2	1	52	0	9	21	6	1	36	0	10	64	12	2	86	0	3	31	11	2	45	6	219	225
16:45	0	1	52	1	1	54	0	7	23	9	0	39	0	10	73	5	1	88	0	2	28	12	2	42	4	223	227
<b>Total</b>	<b>0</b>	<b>20</b>	<b>184</b>	<b>3</b>	<b>3</b>	<b>207</b>	<b>0</b>	<b>24</b>	<b>60</b>	<b>25</b>	<b>2</b>	<b>109</b>	<b>0</b>	<b>46</b>	<b>303</b>	<b>33</b>	<b>5</b>	<b>382</b>	<b>0</b>	<b>6</b>	<b>111</b>	<b>36</b>	<b>6</b>	<b>153</b>	<b>16</b>	<b>851</b>	<b>867</b>
17:00	0	6	50	0	0	56	0	2	21	1	0	24	0	11	72	9	0	92	0	0	32	12	1	44	1	216	217
17:15	0	8	40	0	0	48	0	1	26	4	0	31	0	17	68	9	0	94	0	1	25	11	0	37	0	210	210
17:30	0	3	40	1	2	44	0	3	19	9	1	31	0	4	46	8	0	58	0	0	16	10	1	26	4	159	163
17:45	0	6	46	0	0	52	0	7	23	3	0	33	0	10	61	13	0	84	0	0	18	5	1	23	1	192	193
<b>Total</b>	<b>0</b>	<b>23</b>	<b>176</b>	<b>1</b>	<b>2</b>	<b>200</b>	<b>0</b>	<b>13</b>	<b>89</b>	<b>17</b>	<b>1</b>	<b>119</b>	<b>0</b>	<b>42</b>	<b>247</b>	<b>39</b>	<b>0</b>	<b>328</b>	<b>0</b>	<b>1</b>	<b>91</b>	<b>38</b>	<b>3</b>	<b>130</b>	<b>6</b>	<b>777</b>	<b>783</b>
18:00	0	4	28	0	0	32	0	5	18	3	0	26	0	11	34	12	0	57	0	0	26	7	0	33	0	148	148



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : tmc 2102-csah 5 @ alpine dr. new  
 Site Code :  
 Start Date : 05/25/2021  
 Page No : 3

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

Groups Printed- Cars + - Trucks

Start Time	CSAH 5 (Nowthen Blvd.) Southbound						Alpine Dr. Westbound						CSAH 5 (Nowthen Blvd.) Northbound						Alpine Dr. Eastbound						Exclu. Total	Inclu. Total	Int. Total
	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total	UTrn	Left	Thru	Right	Peds	App. Total			
18:15	0	3	41	1	5	45	0	1	14	2	2	17	0	7	40	1	0	48	0	0	19	8	3	27	10	137	147
18:30	0	5	34	0	1	39	0	5	18	6	0	29	0	13	48	3	0	64	0	0	11	8	1	19	2	151	153
18:45	0	0	22	0	2	22	0	4	14	7	0	25	0	8	34	2	0	44	0	1	8	4	1	13	3	104	107
<b>Total</b>	<b>0</b>	<b>12</b>	<b>125</b>	<b>1</b>	<b>8</b>	<b>138</b>	<b>0</b>	<b>15</b>	<b>64</b>	<b>18</b>	<b>2</b>	<b>97</b>	<b>0</b>	<b>39</b>	<b>156</b>	<b>18</b>	<b>0</b>	<b>213</b>	<b>0</b>	<b>1</b>	<b>64</b>	<b>27</b>	<b>5</b>	<b>92</b>	<b>15</b>	<b>540</b>	<b>555</b>
19:00	0	2	25	0	0	27	0	6	10	2	0	18	0	5	35	9	0	49	0	0	18	3	1	21	1	115	116
19:15	0	2	27	0	0	29	0	1	10	3	0	14	0	6	30	3	0	39	0	0	9	6	1	15	1	97	98
19:30	0	4	23	0	0	27	0	3	13	5	0	21	1	7	34	6	1	48	0	0	10	10	1	20	2	116	118
19:45	0	3	18	0	2	21	0	3	6	3	0	12	0	8	29	1	0	38	0	1	17	5	0	23	2	94	96
<b>Total</b>	<b>0</b>	<b>11</b>	<b>93</b>	<b>0</b>	<b>2</b>	<b>104</b>	<b>0</b>	<b>13</b>	<b>39</b>	<b>13</b>	<b>0</b>	<b>65</b>	<b>1</b>	<b>26</b>	<b>128</b>	<b>19</b>	<b>1</b>	<b>174</b>	<b>0</b>	<b>1</b>	<b>54</b>	<b>24</b>	<b>3</b>	<b>79</b>	<b>6</b>	<b>422</b>	<b>428</b>
Grand Total	1	166	2426	23	27	2616	1	277	739	229	18	1246	3	348	1868	232	29	2451	0	21	723	435	31	1179	105	7492	7597
Apprch %	0	6.3	92.7	0.9			0.1	22.2	59.3	18.4			0.1	14.2	76.2	9.5			0	1.8	61.3	36.9					
Total %	0	2.2	32.4	0.3		34.9	0	3.7	9.9	3.1		16.6	0	4.6	24.9	3.1		32.7	0	0.3	9.7	5.8		15.7	1.4	98.6	
Cars +	1	163	2316	22		2529	1	260	712	212		1203	3	339	1778	223		2372	0	20	700	420		1171	0	0	7275
% Cars +	100	98.2	95.5	95.7	100	95.7	100	93.9	96.3	92.6	100	95.2	100	97.4	95.2	96.1	100	95.6	0	95.2	96.8	96.6	100	96.8	0	0	95.8
Trucks	0	3	110	1		114	0	17	27	17		61	0	9	90	9		108	0	1	23	15		39	0	0	322
% Trucks	0	1.8	4.5	4.3	0	4.3	0	6.1	3.7	7.4	0	4.8	0	2.6	4.8	3.9	0	4.4	0	4.8	3.2	3.4	0	3.2	0	0	4.2

Start Time	CSAH 5 (Nowthen Blvd.) Southbound					Alpine Dr. Westbound					CSAH 5 (Nowthen Blvd.) Northbound					Alpine Dr. Eastbound					Int. Total						
	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total							
Peak Hour Analysis From 06:00 to 09:45 - Peak 1 of 1																											
Peak Hour for Entire Intersection Begins at 07:00																											
07:00	0	0	<b>116</b>	0	<b>116</b>	0	9	18	4	31	0	3	18	1	22	0	0	7	13	20	189						
07:15	0	<b>4</b>	106	0	110	0	<b>30</b>	22	3	<b>55</b>	0	<b>7</b>	<b>26</b>	1	<b>34</b>	0	0	11	<b>23</b>	<b>34</b>	<b>233</b>						
07:30	0	1	82	0	83	0	8	<b>29</b>	<b>8</b>	45	0	2	24	<b>2</b>	28	0	1	<b>13</b>	13	27	183						
07:45	0	2	77	<b>1</b>	80	0	9	22	6	37	0	4	22	1	27	0	0	7	10	17	161						
<b>Total Volume</b>	<b>0</b>	<b>7</b>	<b>381</b>	<b>1</b>	<b>389</b>	<b>0</b>	<b>56</b>	<b>91</b>	<b>21</b>	<b>168</b>	<b>0</b>	<b>16</b>	<b>90</b>	<b>5</b>	<b>111</b>	<b>0</b>	<b>1</b>	<b>38</b>	<b>59</b>	<b>98</b>	<b>766</b>						
% App. Total	0	1.8	97.9	0.3		0	33.3	54.2	12.5		0	14.4	81.1	4.5		0	1	38.8	60.2								
PHF	.000	.438	.821	.250	.838	.000	.467	.784	.656	.764	.000	.571	.865	.625	.816	.000	.250	.731	.641	.721	.822						



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

File Name : tmc 2102-csah 5 @ alpine dr. new  
 Site Code :  
 Start Date : 05/25/2021  
 Page No : 4

Start Time	CSAH 5 (Nowthen Blvd.) Southbound					Alpine Dr. Westbound					CSAH 5 (Nowthen Blvd.) Northbound					Alpine Dr. Eastbound					Int. Total
	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	
Peak Hour Analysis From 10:00 to 13:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:15																					
11:15	0	0	29	0	29	0	4	12	3	19	0	6	25	9	40	0	0	8	9	17	105
11:30	0	1	36	0	37	0	4	10	2	16	0	6	20	4	30	0	0	7	7	14	97
11:45	0	2	33	0	35	0	1	12	6	19	0	4	16	4	24	0	2	10	4	16	94
12:00	0	2	37	1	40	0	2	8	3	13	1	7	21	1	30	0	0	13	6	19	102
Total Volume	0	5	135	1	141	0	11	42	14	67	1	23	82	18	124	0	2	38	26	66	398
% App. Total	0	3.5	95.7	0.7		0	16.4	62.7	20.9		0.8	18.5	66.1	14.5		0	3	57.6	39.4		
PHF	.000	.625	.912	.250	.881	.000	.688	.875	.583	.882	.250	.821	.820	.500	.775	.000	.250	.731	.722	.868	.948

Peak Hour Analysis From 14:00 to 19:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	0	8	46	0	54	0	5	7	6	18	0	16	91	7	114	0	0	29	5	34	220
16:30	0	2	48	2	52	0	9	21	6	36	0	10	64	12	86	0	3	31	11	45	219
16:45	0	1	52	1	54	0	7	23	9	39	0	10	73	5	88	0	2	28	12	42	223
17:00	0	6	50	0	56	0	2	21	1	24	0	11	72	9	92	0	0	32	12	44	216
Total Volume	0	17	196	3	216	0	23	72	22	117	0	47	300	33	380	0	5	120	40	165	878
% App. Total	0	7.9	90.7	1.4		0	19.7	61.5	18.8		0	12.4	78.9	8.7		0	3	72.7	24.2		
PHF	.000	.531	.942	.375	.964	.000	.639	.783	.611	.750	.000	.734	.824	.688	.833	.000	.417	.938	.833	.917	.984





# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

File Name : tmc 2102-csah 5 @ alpine dr. new

Site Code :

Start Date : 05/25/2021

Page No : 1

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

Groups Printed- Trucks

Start Time	CSAH 5 (Nowthen Blvd.) Southbound					Alpine Dr. Westbound					CSAH 5 (Nowthen Blvd.) Northbound					Alpine Dr. Eastbound					Int. Total	
	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total		
06:00	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
06:15	0	0	8	0	8	0	0	1	0	1	0	0	6	0	6	0	0	0	0	0	0	15
06:30	0	0	3	0	3	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	5
06:45	0	0	2	0	2	0	1	0	1	2	0	0	2	0	2	0	0	0	0	0	0	6
Total	0	0	17	0	17	0	1	1	1	3	0	0	9	0	9	0	0	1	0	1	1	30
07:00	0	0	13	0	13	0	0	1	0	1	0	0	3	0	3	0	0	1	0	1	1	18
07:15	0	0	8	0	8	0	0	0	0	0	0	0	1	0	1	0	0	1	0	0	1	10
07:30	0	0	5	0	5	0	0	0	1	1	0	0	1	1	2	0	0	0	0	0	0	8
07:45	0	0	4	0	4	0	1	0	0	1	0	0	0	0	0	0	0	1	1	2	7	7
Total	0	0	30	0	30	0	1	1	1	3	0	0	5	1	6	0	0	3	1	4	4	43
08:00	0	0	4	0	4	0	0	1	1	2	0	1	2	0	3	0	0	0	0	0	0	9
08:15	0	0	1	0	1	0	0	0	1	1	0	0	2	0	2	0	0	1	0	1	1	5
08:30	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	1	4
08:45	0	0	0	0	0	0	0	1	1	2	0	1	2	0	3	0	0	0	0	0	0	5
Total	0	0	6	0	6	0	0	3	3	6	0	2	7	0	9	0	1	1	0	2	2	23
09:00	0	0	3	0	3	0	3	2	2	7	0	0	2	1	3	0	0	0	2	2	2	15
09:15	0	0	12	0	12	0	0	0	0	0	0	0	2	0	2	0	0	1	4	5	5	19
09:30	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
09:45	0	0	0	0	0	0	0	0	1	1	0	0	2	1	3	0	0	0	0	0	0	4
Total	0	0	18	0	18	0	3	2	3	8	0	0	6	2	8	0	0	1	6	7	7	41
10:00	0	0	1	0	1	0	0	2	0	2	0	0	1	0	1	0	0	0	0	0	0	4
10:15	0	0	2	0	2	0	0	0	1	1	0	0	2	0	2	0	0	0	0	0	0	5
10:30	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	3
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
Total	0	0	4	0	4	0	0	2	1	3	0	0	4	0	4	0	0	2	0	2	2	13
11:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	2
11:15	0	0	2	0	2	0	0	1	0	1	0	0	5	1	6	0	0	0	1	1	1	10
11:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
11:45	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	3
Total	0	0	4	0	4	0	1	1	0	2	0	0	5	2	7	0	0	2	1	3	3	16
12:00	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	0	1	0	1	1	4
12:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30	0	1	0	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	1	4
12:45	0	0	2	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	4
Total	0	1	3	0	4	0	0	2	0	2	0	1	4	0	5	0	0	2	0	2	2	13
13:00	0	0	3	0	3	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	5
13:15	0	0	1	0	1	0	2	1	2	5	0	1	3	0	4	0	0	0	0	0	0	10
13:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
13:45	0	0	1	0	1	0	0	1	0	1	0	0	4	0	4	0	0	0	0	0	0	6
Total	0	0	5	0	5	0	2	3	2	7	0	1	9	0	10	0	0	0	0	0	0	22
14:00	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	3
14:15	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	3
14:30	0	0	1	0	1	0	0	1	0	1	0	0	2	0	2	0	0	1	0	1	1	5
14:45	0	0	4	0	4	0	0	2	2	4	0	0	2	1	3	0	0	0	0	0	0	11
Total	0	0	7	0	7	0	0	3	2	5	0	0	8	1	9	0	0	1	0	1	1	22



# Anoka County Highway Department

## Traffic Engineering Section

### Traffic Volume and Turning Movement Study

Weather: Hot & Sunny  
 CountCAM 2  
 Study Conducted By: Matt

File Name : tmc 2102-csah 5 @ alpine dr. new  
 Site Code :  
 Start Date : 05/25/2021  
 Page No : 2

Groups Printed- Trucks

Start Time	CSAH 5 (Nowthen Blvd.) Southbound					Alpine Dr. Westbound					CSAH 5 (Nowthen Blvd.) Northbound					Alpine Dr. Eastbound					Int. Total
	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	UTrn	Left	Thru	Right	App. Total	
15:00	0	1	3	0	4	0	0	1	0	1	0	0	2	0	2	0	0	2	1	3	10
15:15	0	0	1	0	1	0	2	0	0	2	0	0	4	1	5	0	0	0	0	0	8
15:30	0	0	0	0	0	0	2	0	0	2	0	0	6	0	6	0	0	1	0	1	9
15:45	0	0	2	0	2	0	3	3	2	8	0	0	3	0	3	0	0	1	3	4	17
Total	0	1	6	0	7	0	7	4	2	13	0	0	15	1	16	0	0	4	4	8	44
16:00	0	0	1	0	1	0	0	0	1	1	0	3	2	0	5	0	0	2	0	2	9
16:15	0	0	1	0	1	0	0	0	0	0	0	0	2	0	2	0	0	1	0	1	4
16:30	0	0	1	1	2	0	1	2	1	4	0	1	1	1	3	0	0	0	0	0	9
16:45	0	0	0	0	0	0	1	1	0	2	0	0	1	0	1	0	0	0	0	0	3
Total	0	0	3	1	4	0	2	3	2	7	0	4	6	1	11	0	0	3	0	3	25
17:00	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3
17:15	0	0	0	0	0	0	0	0	0	0	0	1	3	1	5	0	0	1	0	1	6
17:30	0	0	2	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	4
17:45	0	1	1	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
Total	0	1	4	0	5	0	0	0	0	0	0	1	6	1	8	0	0	2	1	3	16
18:00	0	0	2	0	2	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	5
18:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
18:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	1	2
18:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	0	0	3	0	3	0	0	1	0	1	0	0	4	0	4	0	0	1	1	2	10
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19:15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	2
19:30	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
19:45	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	0	1	0	0	2	0	2	0	0	0	1	1	4
Grand Total	0	3	110	1	114	0	17	27	17	61	0	9	90	9	108	0	1	23	15	39	322
Apprch %	0	2.6	96.5	0.9		0	27.9	44.3	27.9		0	8.3	83.3	8.3		0	2.6	59	38.5		
Total %	0	0.9	34.2	0.3	35.4	0	5.3	8.4	5.3	18.9	0	2.8	28	2.8	33.5	0	0.3	7.1	4.7	12.1	

# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **1**

## Signal Warrants - Summary

### Major Street Approaches

**Northbound: CSAH 5 (Nowthen Blvd.)**

Number of Lanes : 1

Total Approach Volume: 2,451

**Southbound: CSAH 5 (Nowthen Blvd.)**

Number of Lanes : 1

Total Approach Volume: 2,616

### Minor Street Approaches

**Eastbound: Alpine Dr.**

Number of Lanes : 1

Total Approach Volume: 1,179

**Westbound: Alpine Dr.**

Number of Lanes : 1

Total Approach Volume: 1,246

### Warrant Summary (Rural Values Apply)

**Warrant 1 - Eight Hour Vehicular Volumes.....Not Satisfied**

**Warrant 1A - Minimum Vehicular Volume.....Not Satisfied**

Required volumes reached for 6 hours, 8 are needed

**Warrant 1B - Interruption of Continuous Traffic.....Not Satisfied**

Required volumes reached for 2 hours, 8 are needed

**Warrant 1C - Combination of Warrants.....Not Satisfied**

Required 1A volumes reached for 9 hours, 8 are needed

Required 1B volumes reached for 6 hours, 8 are needed

**Warrant 2 - Four Hour Volumes.....Satisfied**

Number of hours (4) volumes exceed minimum  $\geq$  minimum required (4).

**Warrant 3 - Peak Hour.....Not Satisfied**

**Warrant 3A - Peak Hour Delay.....Not Satisfied**

Approach volumes on minor street don't exceed minimums for any hour. Delay data not evaluated.

**Warrant 3B - Peak Hour Volumes.....Not Satisfied**

Volumes do not exceed minimums for any hour.

**Warrant 4 - Pedestrian Volumes.....Not Evaluated**

**Warrant 5 - School Crossing.....Not Evaluated**

**Warrant 6 - Coordinated Signal System.....Not Evaluated**

**Warrant 7 - Crash Experience.....Not Evaluated**

**Warrant 8 - Roadway Network.....Not Evaluated**

**Warrant 9 - Intersection Near a Grade Crossing.....Not Evaluated**

# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **2**

## Warrant 1A - Minimum Volumes

### Description

Intended for sites where the volume of intersecting traffic is the principal reason for consideration of a signal installation.

### Summary

Only 6 hours meet minimums.  
Warrant is NOT met.

### Site Data Required

Rural Settings Apply = **True**  
Number of Major Lanes = **1**  
Number of Minor Lanes = **1**

### Volume Requirements

Rural Factor of 70 % applied  
Veh/Hr Major = **350**

Veh/Hr Minor = **105**

Time	Major Road				Total	Minor Road		Met?
	Major NB	+	Major SB	=		Minor EB	Minor WB	
15:45 - 16:45	361	+	190	=	551	165	112	Yes
16:45 - 17:45	332	+	202	=	534	149	125	Yes
07:15 - 08:15	115	+	337	=	452	93	169	Yes
14:45 - 15:45	268	+	176	=	444	122	85	Yes
06:15 - 07:15	69	+	363	=	432	43	106	Yes
17:45 - 18:45	253	+	168	=	421	102	105	Yes
14:30 - 15:30	251	+	169	=	420	102	82	No
14:15 - 15:15	236	+	163	=	399	93	83	No
06:00 - 07:00	57	+	303	=	360	31	88	No
14:00 - 15:00	198	+	160	=	358	81	76	No
08:30 - 09:30	131	+	223	=	354	77	86	No
08:45 - 09:45	120	+	229	=	349	74	88	No
09:00 - 10:00	125	+	219	=	344	79	85	No
08:15 - 09:15	122	+	208	=	330	63	82	No
13:45 - 14:45	181	+	147	=	328	79	72	No
09:15 - 10:15	106	+	202	=	308	64	69	No
13:30 - 14:30	161	+	143	=	304	70	55	No
18:45 - 19:45	180	+	105	=	285	69	78	No
19:00 - 20:00	174	+	104	=	278	79	65	No
13:15 - 14:15	136	+	140	=	276	56	58	No
12:00 - 13:00	138	+	132	=	270	57	71	No
11:30 - 12:30	126	+	139	=	265	61	66	No
11:15 - 12:15	124	+	141	=	265	66	67	No
11:45 - 12:45	127	+	134	=	261	63	70	No
12:15 - 13:15	134		119		253	57	73	No

# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **3**

## Warrant 1B - Interruption of Continuous Traffic

### Description

Intended for sites where the volume of the major street is so heavy that traffic on the minor street suffers excessive delay or hazard.

### Summary

Only 2 hours meet minimums.  
Warrant is NOT met.

### Site Data Required

Rural Settings Apply = **True**  
Number of Major Lanes = **1**  
Number of Minor Lanes = **1**

### Volume Requirements

Rural Factor of 70 % applied  
Veh/Hr Major = **525**

Veh/Hr Minor = **53**

Time	Major Road				Total	Minor Road		Met?
	Major NB	+	Major SB	=		Minor EB	Minor WB	
15:45 - 16:45	361	+	190	=	551	165	112	Yes
16:45 - 17:45	332	+	202	=	534	149	125	Yes
15:30 - 16:30	342	+	181	=	523	162	109	No
06:45 - 07:45	105	+	396	=	501	88	165	No
07:00 - 08:00	111	+	389	=	500	98	168	No
06:30 - 07:30	92	+	404	=	496	68	144	No
15:15 - 16:15	297	+	172	=	469	160	106	No
07:15 - 08:15	115	+	337	=	452	93	169	No
15:00 - 16:00	276	+	169	=	445	158	111	No
14:45 - 15:45	268	+	176	=	444	122	85	No
06:15 - 07:15	69	+	363	=	432	43	106	No
17:45 - 18:45	253	+	168	=	421	102	105	No
14:30 - 15:30	251	+	169	=	420	102	82	No
14:15 - 15:15	236	+	163	=	399	93	83	No
07:30 - 08:30	109	+	288	=	397	70	128	No
07:45 - 08:45	112	+	251	=	363	57	102	No
06:00 - 07:00	57	+	303	=	360	31	88	No
14:00 - 15:00	198	+	160	=	358	81	76	No
08:30 - 09:30	131	+	223	=	354	77	86	No
18:00 - 19:00	213	+	138	=	351	92	97	No
08:45 - 09:45	120	+	229	=	349	74	88	No
09:00 - 10:00	125	+	219	=	344	79	85	No
18:15 - 19:15	205	+	133	=	338	80	89	No
08:00 - 09:00	108	+	226	=	334	53	84	No
08:15 - 09:15	122		208		330	63	82	No

# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **4**

## Warrant 1C Combination of Warrants

### Description

Intended for sites where the traffic volumes don't meet individual warrants but where Warrants 1A and 1B are both met to 80% of their stated values.

### Summary

9 hours meet 1A minimums.  
Only 6 hours meet 1B minimums.  
Warrant is NOT met.

### Site Data Required

Rural Settings Apply = **True**  
Number of Major Lanes = **1**  
Number of Minor Lanes = **1**

### Volume Requirements

Rural Factor of 70% applied  
Warrant 1A 1B  
Veh/Hr Major = **280 420**

Veh/Hr Minor = **84 42**

#### Major Road CSAH 5 (Nowthen Blvd.)

#### Minor Road Alpine Dr.

Time	Major NB	+	Major SB	=	Total	Minor EB	Minor WB	Met1A?
16:15 - 17:15	380	+	216	=	596	165	117	Yes
07:00 - 08:00	111	+	389	=	500	98	168	Yes
15:15 - 16:15	297	+	172	=	469	160	106	Yes
17:15 - 18:15	293	+	176	=	469	119	121	Yes
14:15 - 15:15	236	+	163	=	399	93	83	Yes
06:00 - 07:00	57	+	303	=	360	31	88	Yes
09:00 - 10:00	125	+	219	=	344	79	85	Yes
18:15 - 19:15	205	+	133	=	338	80	89	Yes
08:00 - 09:00	108	+	226	=	334	53	84	Yes
14:00 - 15:00	198	+	160	=	358	81	76	No
13:45 - 14:45	181	+	147	=	328	79	72	No
13:30 - 14:30	161	+	143	=	304	70	55	No

Time	Major NB	+	Major SB	=	Total	Minor EB	Minor WB	Met1B?
16:30 - 17:30	360	+	210	=	570	168	130	Yes
15:30 - 16:30	342	+	181	=	523	162	109	Yes
07:15 - 08:15	115	+	337	=	452	93	169	Yes
06:15 - 07:15	69	+	363	=	432	43	106	Yes
17:30 - 18:30	247	+	173	=	420	109	107	Yes
14:30 - 15:30	251	+	169	=	420	102	82	Yes
14:15 - 15:15	236	+	163	=	399	93	83	No
06:00 - 07:00	57	+	303	=	360	31	88	No
14:00 - 15:00	198	+	160	=	358	81	76	No
08:30 - 09:30	131	+	223	=	354	77	86	No
08:45 - 09:45	120	+	229	=	349	74	88	No
09:00 - 10:00	125	+	219	=	344	79	85	No

# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **5**

## Warrant 2 - Four Hour Volumes

### Description

Intended for sites where the volume of intersecting traffic during any four hours of the day is the principal reason for consideration of a signal installation.

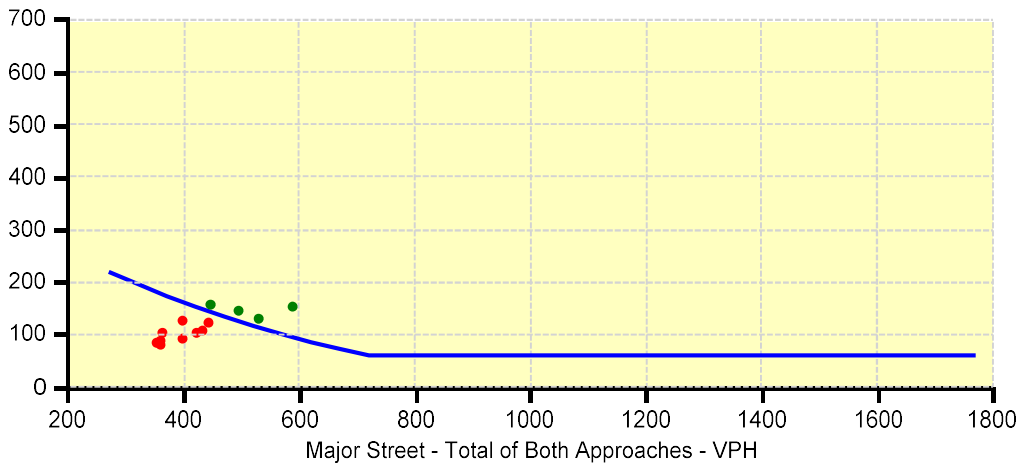
### Summary

4 hours meet minimums.  
Warrant IS met.

### Site Data Required

Rural Settings Apply = **True**  
 Number of Major Lanes = **1**  
 Number of Minor Lanes = **1**

Time	Major Road CSAH 5 (Nowthen Blvd.)				Total	Minor Road Alpine Dr.		Met?
	Major NB	+	Major SB	=		Minor EB	Minor WB	
16:00 - 17:00	382	+	207	=	589	153	109	Yes
17:00 - 18:00	328	+	200	=	528	130	119	Yes
06:30 - 07:30	92	+	404	=	496	68	144	Yes
15:00 - 16:00	276	+	169	=	445	158	111	Yes
14:45 - 15:45	268	+	176	=	444	122	85	No
06:15 - 07:15	69	+	363	=	432	43	106	No
14:30 - 15:30	251	+	169	=	420	102	82	No
14:15 - 15:15	236	+	163	=	399	93	83	No
07:30 - 08:30	109	+	288	=	397	70	128	No
07:45 - 08:45	112	+	251	=	363	57	102	No
06:00 - 07:00	57	+	303	=	360	31	88	No
							76	No



# ANOKA COUNTY HIGHWAY DEPARTMENT

## PC-WARRANTS

### TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 2102**

Study Date: **07/16/2021**

Page No: **6**

## Warrant 3B - Peak Hour Volumes

### Description

Intended for sites where the volume of intersecting traffic during one hour of the day is the principal reason for consideration of a signal installation.

### Summary

Only 0 hours meet minimums.  
Warrant is NOT met.

### Site Data Required

Rural Settings Apply = **True**  
 Number of Major Lanes = **1**  
 Number of Minor Lanes = **1**

Time	Major Road CSAH 5 (Nowthen Blvd.)				Total	Minor Road Alpine Dr.		Met?
	Major NB	+	Major SB	=		Minor EB	Minor WB	
16:15 - 17:15	380	+	216	=	596	165	117	No
16:00 - 17:00	382	+	207	=	589	153	109	No
16:30 - 17:30	360	+	210	=	570	168	130	No
15:45 - 16:45	361	+	190	=	551	165	112	No
16:45 - 17:45	332	+	202	=	534	149	125	No
17:00 - 18:00	328	+	200	=	528	130	119	No
15:30 - 16:30	342	+	181	=	523	162	109	No
06:45 - 07:45	105	+	396	=	501	88	165	No
07:00 - 08:00	111	+	389	=	500	98	168	No
06:30 - 07:30	92	+	404	=	496	68	144	No
15:15 - 16:15	297	+	172	=	469	160	106	No
							121	No

