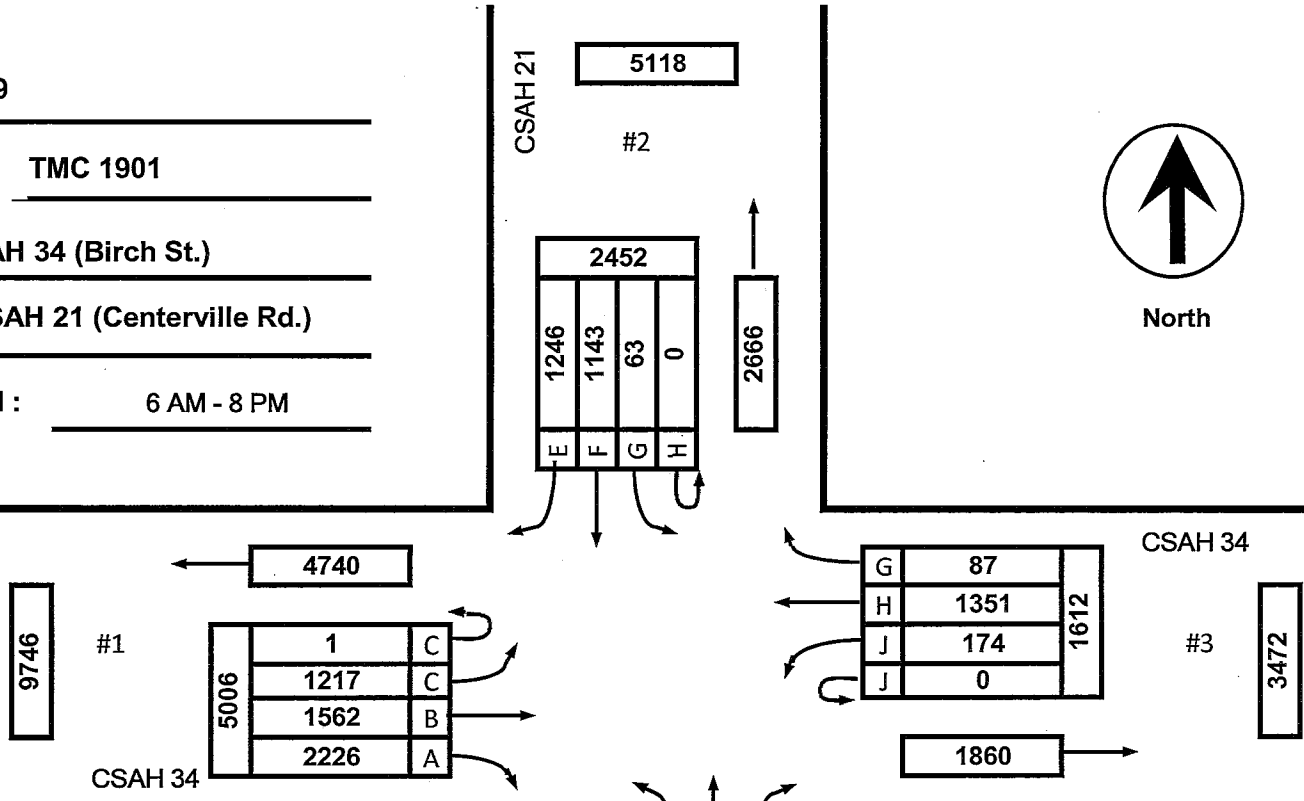
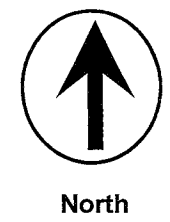


Date : 05/30/19

Count Number : TMC 1901

Location : CSAH 34 (Birch St.)
@ CSAH 21 (Centerville Rd.)

Collection Period : 6 AM - 8 PM



#1
CSAH 34

1	C
1217	C
1562	B
2226	A

CSAH 21

1246	1143	63	0
E	F	G	H

CSAH 34

87	1612		
1351			
174			
0			
G	H	J	J

CSAH 21

0	2142	1362	235
M	M	L	K
3739			

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

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Date : 05/30/19

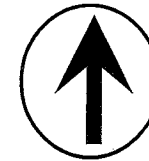
Count Number : TMC 1901

Location : CSAH 34 (Birch St.)

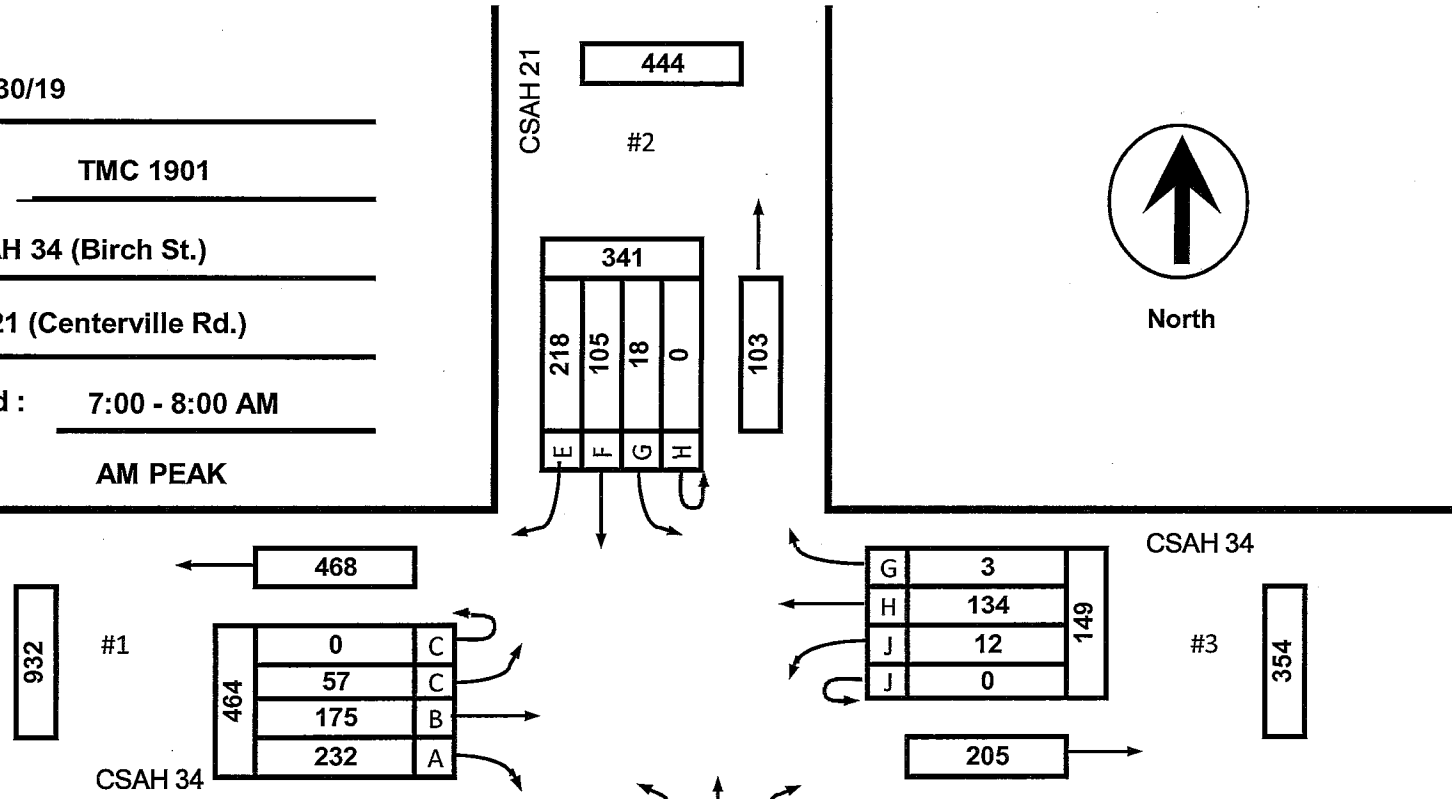
@ CSAH 21 (Centerville Rd.)

Collection Period : 7:00 - 8:00 AM

AM PEAK



North



932

#1

468

0	C
57	C
175	B
232	A

CSAH 34

CSAH 21

444

#2

218	E
105	F
18	G
0	H

103

CSAH 34

3	G
134	H
12	J
0	J

#3

354

205

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

CSAH 21

349

0	M
116	M
43	L
12	K

171

#4

520

Anoka County Highway Department
Traffic Volume and Turning
Movement Study

Date : 05/30/19

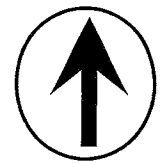
Count Number : TMC 1901

Location : CSAH 34 (Birch St.)

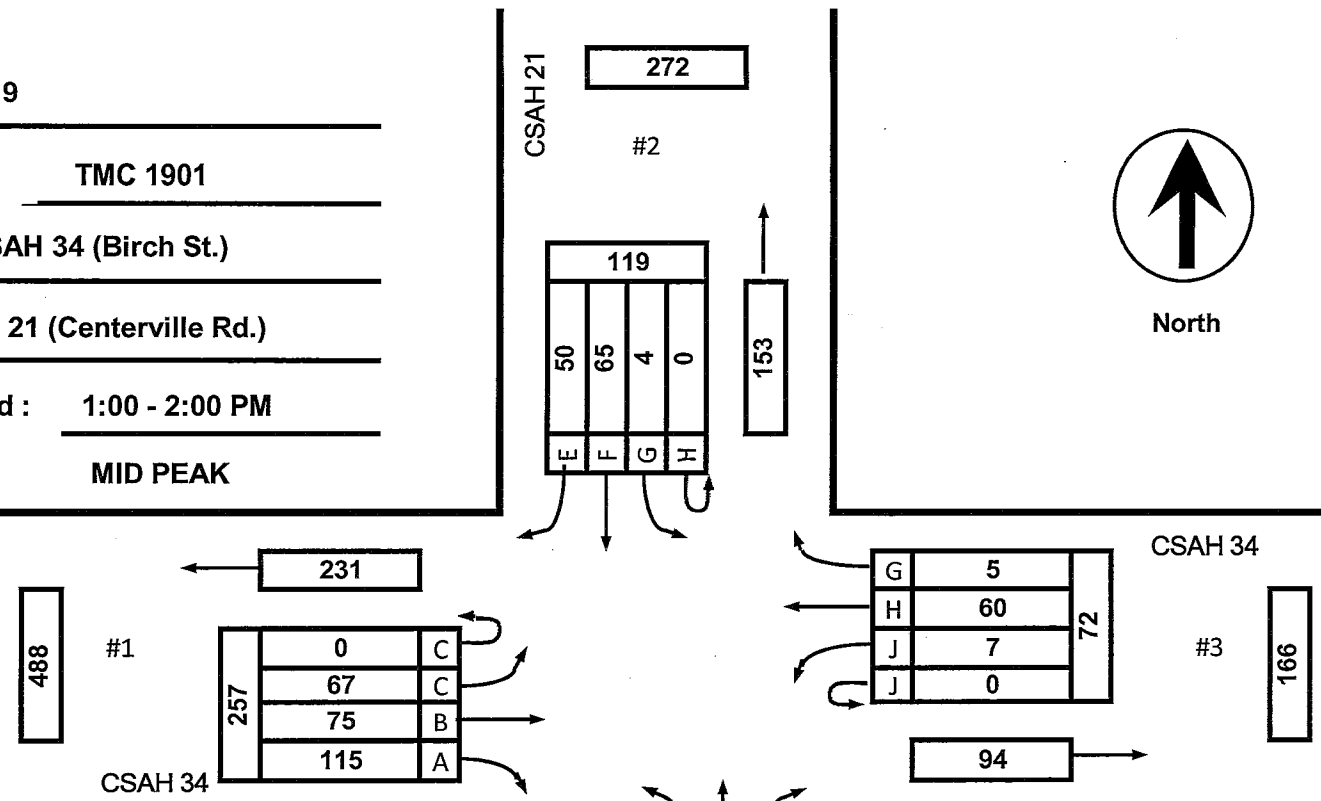
@ CSAH 21 (Centerville Rd.)

Collection Period : 1:00 - 2:00 PM

MID PEAK



North



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

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

Date : 05/30/19

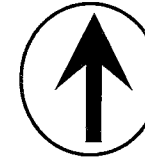
Count Number : TMC 1901

Location : CSAH 34 (Birch St.)

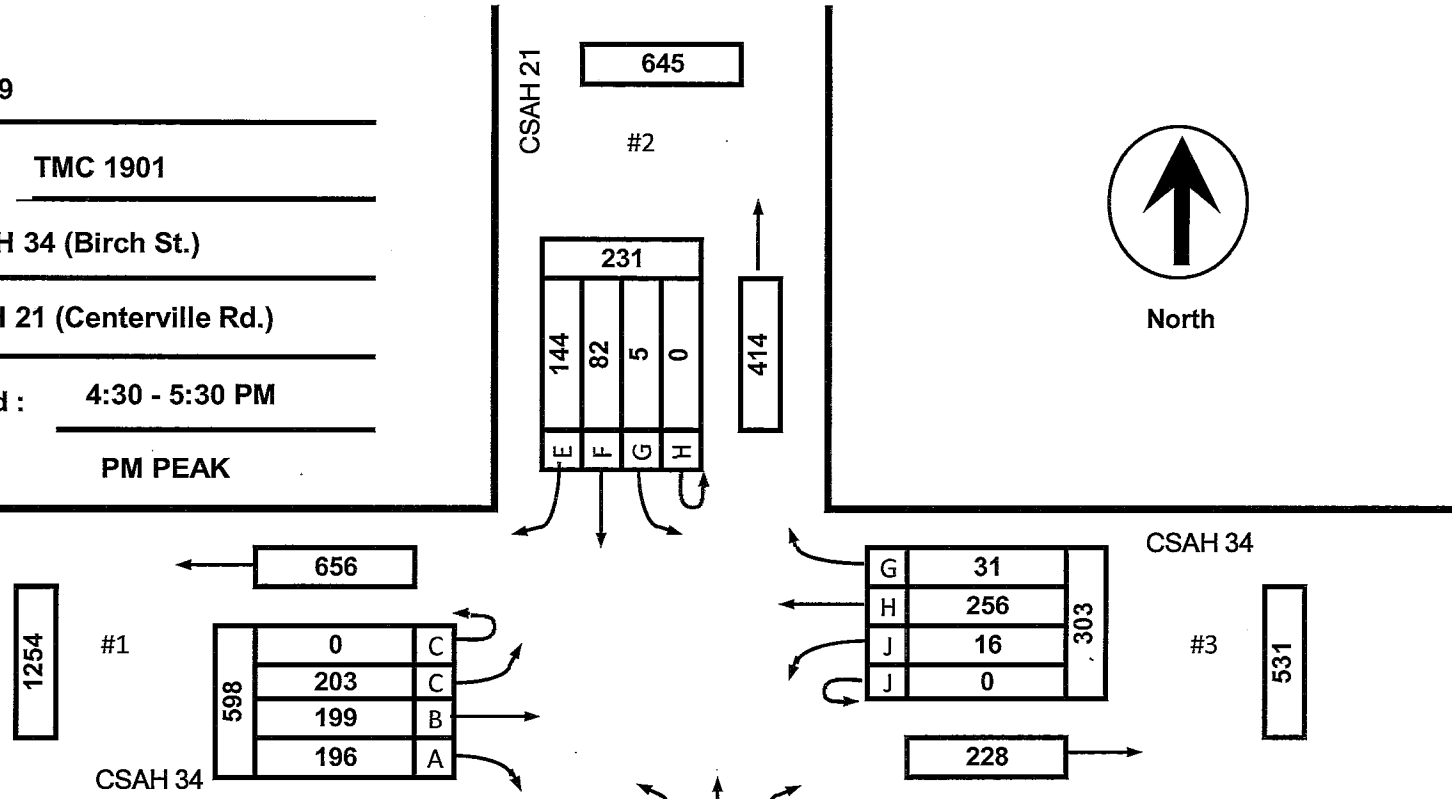
@ CSAH 21 (Centerville Rd.)

Collection Period : 4:30 - 5:30 PM

PM PEAK



North



EXISTING LANES OF APPROACH				
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	TOTAL
#1	1	0	1	2
#2	1	0	1	2
#3	1	0	1	2
#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 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 1

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

Groups Printed- Cars + - Trucks

Start Time	CSAH 21 Southbound						CSAH 34 Westbound						CSAH 21 Northbound						CSAH 34 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	1	29	9	0	39	0	1	9	0	0	10	0	10	3	3	0	16	0	1	15	54	0	70	0	135	135
06:15	0	1	41	16	0	58	0	6	17	0	0	23	0	7	5	5	0	17	0	4	26	77	0	107	0	205	205
06:30	0	2	45	27	0	74	0	9	27	2	0	38	0	14	2	2	0	18	0	6	27	85	0	118	0	248	248
06:45	0	2	44	28	0	74	0	3	20	1	0	24	0	23	5	3	0	31	0	7	31	54	0	92	0	221	221
Total	0	6	159	80	0	245	0	19	73	3	0	95	0	54	15	13	0	82	0	18	99	270	0	387	0	809	809
07:00	0	7	37	35	0	79	0	4	28	0	0	32	0	25	12	1	0	38	0	20	39	69	0	128	0	277	277
07:15	0	1	26	61	0	88	0	1	37	1	0	39	0	32	11	3	0	46	0	8	48	65	0	121	0	294	294
07:30	0	3	24	76	0	103	0	1	26	2	0	29	0	27	12	3	0	42	0	14	44	58	0	116	0	290	290
07:45	0	7	18	46	0	71	0	6	43	0	0	49	0	32	8	5	0	45	0	15	44	40	0	99	0	264	264
Total	0	18	105	218	0	341	0	12	134	3	0	149	0	116	43	12	0	171	0	57	175	232	0	464	0	1125	1125
08:00	0	3	19	20	0	42	0	7	20	0	0	27	0	24	8	2	0	34	0	17	40	54	0	111	0	214	214
08:15	0	4	29	9	0	42	0	5	10	0	0	15	0	23	8	2	0	33	0	18	17	68	0	103	0	193	193
08:30	0	2	36	15	0	53	0	5	22	0	0	27	0	18	22	4	0	44	0	11	23	56	0	90	0	214	214
08:45	0	0	24	18	0	42	0	1	15	1	1	17	0	22	15	3	0	40	0	16	17	49	0	82	1	181	182
Total	0	9	108	62	0	179	0	18	67	1	1	86	0	87	53	11	0	151	0	62	97	227	0	386	1	802	803
09:00	0	0	26	35	0	61	0	4	21	1	0	26	0	24	16	3	0	43	0	21	18	55	0	94	0	224	224
09:15	0	0	30	17	0	47	0	1	17	1	0	19	0	22	11	3	0	36	0	6	19	56	0	81	0	183	183
09:30	0	0	16	8	2	24	0	3	13	1	0	17	0	16	11	4	0	31	0	11	20	44	2	75	4	147	151
09:45	0	0	18	15	0	33	0	2	10	0	0	12	0	15	16	7	0	38	0	20	17	32	0	69	0	152	152
Total	0	0	90	75	2	165	0	10	61	3	0	74	0	77	54	17	0	148	0	58	74	187	2	319	4	706	710
10:00	0	0	16	8	0	24	0	0	8	0	0	8	0	17	18	2	0	37	0	5	28	23	0	56	0	125	125
10:15	0	0	21	18	0	39	0	3	16	0	0	19	0	26	14	2	0	42	0	10	22	31	0	63	0	163	163
10:30	0	0	27	12	0	39	0	3	14	0	0	17	0	27	15	5	0	47	0	13	17	20	0	50	0	153	153
10:45	0	0	14	7	0	21	0	2	8	0	0	10	0	17	18	2	0	37	0	9	20	23	0	52	0	120	120
Total	0	0	78	45	0	123	0	8	46	0	0	54	0	87	65	11	0	163	0	37	87	97	0	221	0	561	561
11:00	0	0	15	10	0	25	0	5	9	0	1	14	0	16	19	2	1	37	0	15	8	31	1	54	3	130	133
11:15	0	1	19	9	0	29	0	3	22	1	0	26	0	23	16	5	0	44	0	9	18	27	0	54	0	153	153
11:30	0	1	8	16	0	25	0	2	9	0	1	11	0	26	14	5	0	45	0	9	14	26	0	49	1	130	131
11:45	0	0	18	10	0	28	0	1	19	0	0	20	0	29	21	5	0	55	0	13	8	20	0	41	0	144	144
Total	0	2	60	45	0	107	0	11	59	1	2	71	0	94	70	17	1	181	0	46	48	104	1	198	4	557	561



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

File Name : TMC 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 2

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

Groups Printed- Cars + - Trucks

Start Time	CSAH 21 Southbound						CSAH 34 Westbound						CSAH 21 Northbound						CSAH 34 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	1	4	12	0	17	0	3	8	0	0	11	0	37	30	2	0	69	0	8	14	31	0	53	0	150	150
12:15	0	1	10	8	0	19	0	5	12	0	0	17	0	40	22	2	0	64	0	10	13	23	0	46	0	146	146
12:30	0	2	24	14	0	40	0	1	19	1	0	21	0	21	24	6	0	51	0	11	11	33	0	55	0	167	167
12:45	0	1	9	9	1	19	0	1	11	2	0	14	0	22	25	4	0	51	0	8	29	22	0	59	1	143	144
Total	0	5	47	43	1	95	0	10	50	3	0	63	0	120	101	14	0	235	0	37	67	109	0	213	1	606	607
13:00	0	2	20	14	0	36	0	0	19	2	0	21	0	22	21	5	0	48	0	14	22	24	0	60	0	165	165
13:15	0	1	17	8	0	26	0	2	19	0	0	21	0	20	19	6	0	45	0	15	22	31	0	68	0	160	160
13:30	0	0	14	15	0	29	0	2	11	2	0	15	0	33	20	1	0	54	0	19	14	30	1	63	1	161	162
13:45	0	1	14	13	0	28	0	3	11	1	0	15	0	46	21	3	0	70	0	19	17	30	0	66	0	179	179
Total	0	4	65	50	0	119	0	7	60	5	0	72	0	121	81	15	0	217	0	67	75	115	1	257	1	665	666
14:00	0	0	14	15	0	29	0	3	18	1	0	22	0	40	19	9	0	68	0	11	18	26	0	55	0	174	174
14:15	0	2	15	22	0	39	0	1	23	4	0	28	0	58	40	2	0	100	0	16	24	22	0	62	0	229	229
14:30	0	1	11	23	0	35	0	2	17	0	0	19	0	53	44	5	0	102	0	19	23	20	0	62	0	218	218
14:45	0	0	21	18	0	39	0	4	20	1	0	25	0	55	39	1	0	95	0	21	34	26	0	81	0	240	240
Total	0	3	61	78	0	142	0	10	78	6	0	94	0	206	142	17	0	365	0	67	99	94	0	260	0	861	861
15:00	0	0	19	24	0	43	0	7	24	3	0	34	0	58	33	7	0	98	0	40	31	29	0	100	0	275	275
15:15	0	1	15	19	0	35	0	2	22	0	0	24	0	58	38	7	0	103	0	43	36	37	0	116	0	278	278
15:30	0	0	22	21	0	43	0	5	46	0	0	51	0	61	41	10	0	112	0	50	57	53	0	160	0	366	366
15:45	0	0	29	35	1	64	0	3	41	3	0	47	0	70	49	7	0	126	0	34	45	37	0	116	1	353	354
Total	0	1	85	99	1	185	0	17	133	6	0	156	0	247	161	31	0	439	0	167	169	156	0	492	1	1272	1273
16:00	0	1	17	30	0	48	0	3	38	5	0	46	0	61	48	9	0	118	0	35	49	43	0	127	0	339	339
16:15	0	1	19	31	0	51	0	4	50	5	0	59	0	71	38	5	0	114	0	51	60	56	0	167	0	391	391
16:30	0	0	22	33	0	55	0	2	57	11	0	70	0	70	45	5	0	120	0	42	51	38	0	131	0	376	376
16:45	0	1	19	44	0	64	0	5	62	8	0	75	0	67	44	9	0	120	0	49	53	47	0	149	0	408	408
Total	0	3	77	138	0	218	0	14	207	29	0	250	0	269	175	28	0	472	0	177	213	184	0	574	0	1514	1514
17:00	0	0	22	34	0	56	0	3	61	5	1	69	0	57	46	8	1	111	0	60	41	67	1	168	3	404	407
17:15	0	4	19	33	0	56	0	6	76	7	0	89	0	62	45	2	0	109	0	52	54	44	0	150	0	404	404
17:30	0	1	21	33	0	55	0	3	44	3	0	50	0	77	44	4	0	125	0	44	49	46	0	139	0	369	369
17:45	0	2	18	32	0	52	0	4	34	3	0	41	0	76	50	8	0	134	0	50	40	41	0	131	0	358	358
Total	0	7	80	132	0	219	0	16	215	18	1	249	0	272	185	22	1	479	0	206	184	198	1	588	3	1535	1538
18:00	0	0	17	35	1	52	0	4	31	2	0	37	0	62	45	3	0	110	0	42	39	42	0	123	1	322	323
18:15	0	0	24	29	0	53	0	3	29	1	0	33	0	73	36	5	3	114	0	40	32	42	0	114	3	314	317
18:30	0	0	19	18	0	37	0	3	22	2	0	27	0	40	22	4	0	66	0	21	19	49	0	89	0	219	219



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

File Name : TMC 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 3

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

Groups Printed- Cars + - Trucks

Start Time	CSAH 21 Southbound						CSAH 34 Westbound					CSAH 21 Northbound					CSAH 34 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
18:45	0	2	18	17	0	37	0	3	24	1	0	28	0	29	22	1	0	52	0	36	22	28	0	86	0	203	203
Total	0	2	78	99	1	179	0	13	106	6	0	125	0	204	125	13	3	342	0	139	112	161	0	412	4	1058	1062
19:00	0	1	8	16	0	25	0	6	16	1	0	23	0	50	26	3	0	79	0	19	17	26	0	62	0	189	189
19:15	0	0	17	25	0	42	0	0	20	0	0	20	0	50	26	5	0	81	0	18	16	22	0	56	0	199	199
19:30	0	1	9	16	0	26	0	1	14	1	0	16	0	47	21	4	0	72	0	19	12	29	0	60	0	174	174
19:45	0	1	16	25	0	42	0	2	12	1	0	15	0	41	19	2	0	62	1	23	18	15	0	57	0	176	176
Total	0	3	50	82	0	135	0	9	62	3	0	74	0	188	92	14	0	294	1	79	63	92	0	235	0	738	738
Grand Total	0	63	1143	1246	5	2452	0	174	1351	87	4	1612	0	2142	1362	235	5	3739	1	1217	1562	2226	5	5006	19	12809	12828
Apprch %	0	2.6	46.6	50.8			0	10.8	83.8	5.4			0	57.3	36.4	6.3			0	24.3	31.2	44.5					
Total %	0	0.5	8.9	9.7		19.1	0	1.4	10.5	0.7		12.6	0	16.7	10.6	1.8		29.2	0	9.5	12.2	17.4		39.1	0.1	99.9	
Cars +	0	63	1111	1204		2383	0	161	1308	86		1559	0	2104	1326	224		3659	1	1169	1502	2192		4869	0	0	12470
% Cars +	0	100	97.2	96.6	100	97	0	92.5	96.8	98.9	100	96.5	0	98.2	97.4	95.3	100	97.7	100	96.1	96.2	98.5	100	97.2	0	0	97.2
Trucks	0	0	32	42		74	0	13	43	1		57	0	38	36	11		85	0	48	60	34		142	0	0	358
% Trucks	0	0	2.8	3.4	0	3	0	7.5	3.2	1.1	0	3.5	0	1.8	2.6	4.7	0	2.3	0	3.9	3.8	1.5	0	2.8	0	0	2.8

Start Time	CSAH 21 Southbound					CSAH 34 Westbound				CSAH 21 Northbound				CSAH 34 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	7	37	35	79	0	4	28	0	32	0	25	12	1	38	0	20	39	69	128	277
07:15	0	1	26	61	88	0	1	37	1	39	0	32	11	3	46	0	8	48	65	121	294
07:30	0	3	24	76	103	0	1	26	2	29	0	27	12	3	42	0	14	44	58	116	290
07:45	0	7	18	46	71	0	6	43	0	49	0	32	8	5	45	0	15	44	40	99	264
Total Volume	0	18	105	218	341	0	12	134	3	149	0	116	43	12	171	0	57	175	232	464	1125
% App. Total	0	5.3	30.8	63.9		0	8.1	89.9	2		0	67.8	25.1	7		0	12.3	37.7	50		
PHF	.000	.643	.709	.717	.828	.000	.500	.779	.375	.760	.000	.906	.896	.600	.929	.000	.713	.911	.841	.906	.957



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

File Name : TMC 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 4

Start Time	CSAH 21 Southbound					CSAH 34 Westbound					CSAH 21 Northbound					CSAH 34 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 13:00																					
13:00	0	2	20	14	36	0	0	19	2	21	0	22	21	5	48	0	14	22	24	60	165
13:15	0	1	17	8	26	0	2	19	0	21	0	20	19	6	45	0	15	22	31	68	160
13:30	0	0	14	15	29	0	2	11	2	15	0	33	20	1	54	0	19	14	30	63	161
13:45	0	1	14	13	28	0	3	11	1	15	0	46	21	3	70	0	19	17	30	66	179
Total Volume	0	4	65	50	119	0	7	60	5	72	0	121	81	15	217	0	67	75	115	257	665
% App. Total	0	3.4	54.6	42		0	9.7	83.3	6.9		0	55.8	37.3	6.9		0	26.1	29.2	44.7		
PHF	.000	.500	.813	.833	.826	.000	.583	.789	.625	.857	.000	.658	.964	.625	.775	.000	.882	.852	.927	.945	.929

Peak Hour Analysis From 14:00 to 19:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	0	0	22	33	55	0	2	57	11	70	0	70	45	5	120	0	42	51	38	131	376
16:45	0	1	19	44	64	0	5	62	8	75	0	67	44	9	120	0	49	53	47	149	408
17:00	0	0	22	34	56	0	3	61	5	69	0	57	46	8	111	0	60	41	67	168	404
17:15	0	4	19	33	56	0	6	76	7	89	0	62	45	2	109	0	52	54	44	150	404
Total Volume	0	5	82	144	231	0	16	256	31	303	0	256	180	24	460	0	203	199	196	598	1592
% App. Total	0	2.2	35.5	62.3		0	5.3	84.5	10.2		0	55.7	39.1	5.2		0	33.9	33.3	32.8		
PHF	.000	.313	.932	.818	.902	.000	.667	.842	.705	.851	.000	.914	.978	.667	.958	.000	.846	.921	.731	.890	.975



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

File Name : TMC 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 1

Groups Printed- Trucks

Start Time	CSAH 21 Southbound					CSAH 34 Westbound					CSAH 21 Northbound					CSAH 34 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	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1
06:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30	0	0	0	3	3	0	2	0	0	2	0	1	0	0	1	0	0	2	0	0	2	8
06:45	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2
Total	0	0	0	4	4	0	2	0	0	2	0	3	0	0	3	0	0	2	0	2	11	
07:00	0	0	1	0	1	0	1	1	0	2	0	0	0	0	0	0	7	5	1	13	16	
07:15	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	2	1	3	5	
07:30	0	0	1	4	5	0	1	3	0	4	0	0	0	1	1	0	0	3	0	3	13	
07:45	0	0	1	0	1	0	0	3	0	3	0	0	0	0	0	0	1	0	0	1	5	
Total	0	0	3	5	8	0	2	7	0	9	0	1	0	1	2	0	8	10	2	20	39	
08:00	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	1	1	3	5	
08:15	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	2	3	4	
08:30	0	0	0	1	1	0	0	1	0	1	0	0	1	0	1	0	0	2	2	4	7	
08:45	0	0	0	1	1	0	0	2	1	3	0	0	0	0	0	0	1	1	2	4	8	
Total	0	0	0	2	2	0	2	3	1	6	0	1	1	0	2	0	3	4	7	14	24	
09:00	0	0	3	8	11	0	0	1	0	1	0	3	1	0	4	0	3	3	1	7	23	
09:15	0	0	0	0	0	0	0	3	0	3	0	4	1	0	5	0	0	1	0	1	9	
09:30	0	0	2	1	3	0	0	1	0	1	0	1	0	1	2	0	1	0	0	1	7	
09:45	0	0	0	0	0	0	1	0	0	1	0	1	1	1	3	0	2	1	1	4	8	
Total	0	0	5	9	14	0	1	5	0	6	0	9	3	2	14	0	6	5	2	13	47	
10:00	0	0	1	0	1	0	0	3	0	3	0	2	3	1	6	0	0	4	0	4	14	
10:15	0	0	0	0	0	0	1	2	0	3	0	1	1	0	2	0	0	3	1	4	9	
10:30	0	0	3	0	3	0	0	1	0	1	0	0	0	1	1	0	0	2	3	5	10	
10:45	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	3	1	4	6	
Total	0	0	4	0	4	0	2	6	0	8	0	3	5	2	10	0	0	12	5	17	39	
11:00	0	0	1	0	1	0	0	1	0	1	0	1	1	1	3	0	2	0	0	2	7	
11:15	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	4	
11:30	0	0	2	0	2	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	4	
11:45	0	0	1	1	2	0	0	1	0	1	0	1	1	0	2	0	1	0	0	1	6	
Total	0	0	5	1	6	0	0	3	0	3	0	2	4	2	8	0	3	1	0	4	21	
12:00	0	0	1	1	2	0	0	1	0	1	0	0	3	0	3	0	0	2	2	4	10	
12:15	0	0	1	0	1	0	1	1	0	2	0	2	0	1	3	0	1	0	0	1	7	
12:30	0	0	1	2	3	0	0	2	0	2	0	0	3	0	3	0	0	0	0	0	8	
12:45	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	0	1	1	1	3	5	
Total	0	0	3	3	6	0	1	5	0	6	0	2	7	1	10	0	2	3	3	8	30	
13:00	0	0	0	2	2	0	0	0	0	0	0	1	0	0	1	0	0	3	0	3	6	
13:15	0	0	0	0	0	0	0	2	0	2	0	1	0	0	1	0	1	1	1	3	6	
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	5	5	
13:45	0	0	2	0	2	0	0	0	0	0	0	0	2	0	2	0	2	1	2	5	9	
Total	0	0	2	2	4	0	0	2	0	2	0	2	2	0	4	0	5	7	4	16	26	
14:00	0	0	1	3	4	0	1	2	0	3	0	0	2	1	3	0	0	0	0	0	10	
14:15	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	4	
14:30	0	0	0	0	0	0	0	1	0	1	0	2	0	0	2	0	1	1	0	2	5	
14:45	0	0	0	0	0	0	0	1	0	1	0	1	1	0	2	0	1	1	1	3	6	
Total	0	0	1	3	4	0	1	4	0	5	0	5	4	1	10	0	2	3	1	6	25	
15:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	2	4	1	7	8	



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Hot & Cloudy
 CountCam 200
 Study Conducted By: Ethan

File Name : TMC 1901
 Site Code :
 Start Date : 06/18/2019
 Page No : 2

Groups Printed- Trucks

Start Time	CSAH 21 Southbound					CSAH 34 Westbound					CSAH 21 Northbound					CSAH 34 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	
15:15	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	1	0	1	2	5
15:30	0	0	1	2	3	0	0	1	0	1	0	0	1	0	1	0	4	2	0	6	11
15:45	0	0	0	3	3	0	0	0	0	0	0	3	2	0	5	0	0	0	1	1	9
Total	0	0	3	5	8	0	0	2	0	2	0	3	4	0	7	0	7	6	3	16	33
16:00	0	0	1	3	4	0	0	1	0	1	0	0	0	0	0	0	0	3	2	5	10
16:15	0	0	1	1	2	0	1	4	0	5	0	1	0	1	2	0	1	2	1	4	13
16:30	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
16:45	0	0	0	1	1	0	0	0	0	0	0	1	2	0	3	0	1	0	0	1	5
Total	0	0	2	5	7	0	2	5	0	7	0	2	2	1	5	0	4	5	3	12	31
17:00	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3	0	2	0	1	3	6
17:15	0	0	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
17:30	0	0	3	1	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	3	1	1	5	6
Total	0	0	3	2	5	0	0	0	0	0	0	3	3	1	7	0	5	1	2	8	20
18:00	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	2	3
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	1	4	5
19:00	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
19:15	0	0	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
19:30	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	3
19:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	1	1	2	0	0	1	0	1	0	1	1	0	2	0	1	0	1	2	7
Grand Total	0	0	32	42	74	0	13	43	1	57	0	38	36	11	85	0	48	60	34	142	358
Apprch %	0	0	43.2	56.8		0	22.8	75.4	1.8		0	44.7	42.4	12.9		0	33.8	42.3	23.9		
Total %	0	0	8.9	11.7	20.7	0	3.6	12	0.3	15.9	0	10.6	10.1	3.1	23.7	0	13.4	16.8	9.5	39.7	

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 1901

Study Date: 06/26/2019

Page No: 1

Signal Warrants - Summary

Major Street Approaches

Eastbound: CSAH 34

Number of Lanes : 1

Total Approach Volume: 5,006

Westbound: CSAH 34

Number of Lanes : 1

Total Approach Volume: 1,612

Minor Street Approaches

Northbound: CSAH 21

Number of Lanes : 1

Total Approach Volume: 3,739

Southbound: CSAH 21

Number of Lanes : 1

Total Approach Volume: 2,452

Warrant Summary (Rural Values Apply)

Warrant 1 - Eight Hour Vehicular Volumes.....Satisfied

Warrant 1A - Minimum Vehicular Volume.....Satisfied

Required volumes reached for 9 hours, 8 are needed

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

Required volumes reached for 6 hours, 8 are needed

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

Required 1A volumes reached for 12 hours, 8 are needed

Required 1B volumes reached for 7 hours, 8 are needed

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

Number of hours (12) volumes exceed minimum >= minimum required (4).

Warrant 3 - Peak Hour.....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.....Satisfied

Volumes exceed minimums for at least one 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

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1901**

Study Date: **06/26/2019**

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

9 hours meet minimums.
Warrant IS 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 CSAH 34				=	Total	Minor Road CSAH 21		Met?
	Major EB	+	Major WB				Minor NB	Minor SB	
17:00 - 18:00	588	+	249	=	837	479	219	Yes	
16:00 - 17:00	574	+	250	=	824	472	218	Yes	
15:00 - 16:00	492	+	156	=	648	439	185	Yes	
06:45 - 07:45	457	+	124	=	581	157	344	Yes	
18:00 - 19:00	412	+	125	=	537	342	179	Yes	
07:45 - 08:45	403	+	118	=	521	156	208	Yes	
08:45 - 09:45	332	+	79	=	411	150	174	Yes	
05:45 - 06:45	295	+	71	=	366	51	171	Yes	
14:00 - 15:00	260	+	94	=	354	365	142	Yes	
13:00 - 14:00	257	+	72	=	329	217	119	No	
13:45 - 14:45	245	+	84	=	329	340	131	No	
13:30 - 14:30	246	+	80	=	326	292	125	No	
13:15 - 14:15	252	+	73	=	325	237	112	No	
12:45 - 13:45	250	+	71	=	321	198	110	No	
12:30 - 13:30	242	+	77	=	319	195	121	No	
19:00 - 20:00	235	+	74	=	309	294	135	No	
09:45 - 10:45	238	+	56	=	294	164	135	No	
12:15 - 13:15	220	+	73	=	293	214	114	No	
10:15 - 11:15	219	+	60	=	279	163	124	No	
10:30 - 11:30	210	+	67	=	277	165	114	No	
12:00 - 13:00	213	+	63	=	276	235	95	No	
10:00 - 11:00	221	+	54	=	275	163	123	No	
10:45 - 11:45	209	+	61	=	270	163	100	No	
11:00 - 12:00	198	+	71	=	269	181	107	No	
11:15 - 12:15	197		68		265	213	99	No	

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1901**

Study Date: **06/26/2019**

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 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 = **525**

Veh/Hr Minor = **53**

Time	Major Road CSAH 34				=	Total	Minor Road CSAH 21		Met?
	Major EB	+	Major WB				Minor NB	Minor SB	
16:45 - 17:45	606	+	283	=	889	465	231	Yes	
15:45 - 16:45	541	+	222	=	763	478	218	Yes	
17:45 - 18:45	457	+	138	=	595	424	194	Yes	
14:45 - 15:45	457	+	134	=	591	408	160	Yes	
07:15 - 08:15	447	+	144	=	591	167	304	Yes	
06:15 - 07:15	445	+	117	=	562	104	285	Yes	
06:00 - 07:00	387	+	95	=	482	82	245	No	
14:30 - 15:30	359	+	102	=	461	398	152	No	
08:15 - 09:15	369	+	85	=	454	160	198	No	
08:30 - 09:30	347	+	89	=	436	163	203	No	
08:45 - 09:45	332	+	79	=	411	150	174	No	
14:15 - 15:15	305	+	106	=	411	395	156	No	
09:00 - 10:00	319	+	74	=	393	148	165	No	
05:45 - 06:45	295	+	71	=	366	51	171	No	
14:00 - 15:00	260	+	94	=	354	365	142	No	
18:45 - 19:45	264	+	87	=	351	284	130	No	
09:15 - 10:15	281	+	56	=	337	142	128	No	
13:00 - 14:00	257	+	72	=	329	217	119	No	
13:45 - 14:45	245	+	84	=	329	340	131	No	
13:30 - 14:30	246	+	80	=	326	292	125	No	
13:15 - 14:15	252	+	73	=	325	237	112	No	
12:45 - 13:45	250	+	71	=	321	198	110	No	
09:30 - 10:30	263	+	56	=	319	148	120	No	
12:30 - 13:30	242	+	77	=	319	195	121	No	
19:00 - 20:00	235		74		309	294	135	No	

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1901**

Study Date: **06/26/2019**

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

12 hours meet 1A minimums.
Only 7 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 34

Minor Road CSAH 21

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1A?
16:15 - 17:15	615	+	273	=	888	465	226	Yes
17:15 - 18:15	543	+	217	=	760	478	215	Yes
15:15 - 16:15	519	+	168	=	687	459	190	Yes
06:45 - 07:45	457	+	124	=	581	157	344	Yes
07:45 - 08:45	403	+	118	=	521	156	208	Yes
18:15 - 19:15	351	+	111	=	462	311	152	Yes
14:15 - 15:15	305	+	106	=	411	395	156	Yes
08:45 - 09:45	332	+	79	=	411	150	174	Yes
05:45 - 06:45	295	+	71	=	366	51	171	Yes
13:15 - 14:15	252	+	73	=	325	237	112	Yes
09:45 - 10:45	238	+	56	=	294	164	135	Yes
12:15 - 13:15	220	+	73	=	293	214	114	Yes

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1B?
16:30 - 17:30	598	+	303	=	901	460	231	Yes
15:30 - 16:30	570	+	203	=	773	470	206	Yes
17:30 - 18:30	507	+	161	=	668	483	212	Yes
07:00 - 08:00	464	+	149	=	613	171	341	Yes
06:00 - 07:00	387	+	95	=	482	82	245	Yes
08:00 - 09:00	386	+	86	=	472	151	179	Yes
14:30 - 15:30	359	+	102	=	461	398	152	Yes
14:15 - 15:15	305	+	106	=	411	395	156	No
09:00 - 10:00	319	+	74	=	393	148	165	No
18:30 - 19:30	293	+	98	=	391	278	141	No
05:45 - 06:45	295	+	71	=	366	51	171	No
14:00 - 15:00	260	+	94	=	354	365	142	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1901**

Study Date: **06/26/2019**

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.

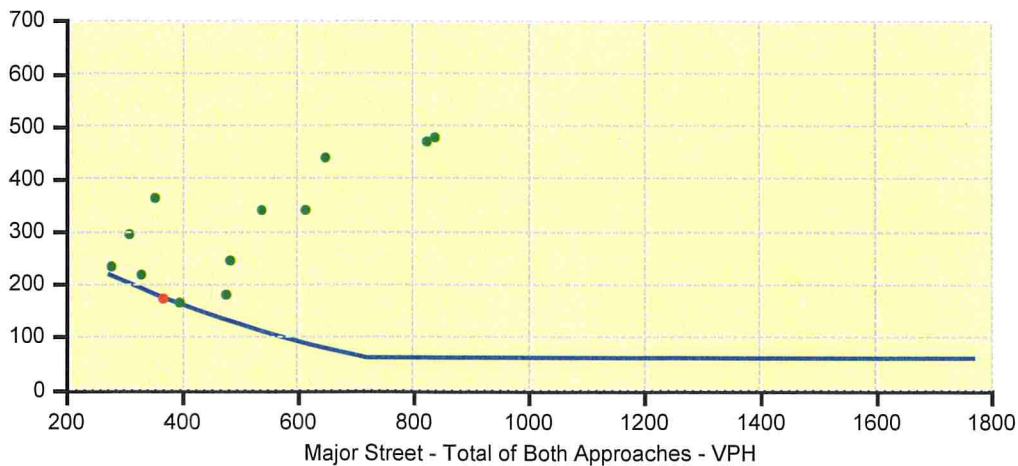
Summary

12 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 34				Total	Minor Road CSAH 21		Met?
	Major EB	+	Major WB	=		Minor NB	Minor SB	
17:00 - 18:00	588	+	249	=	837	479	219	Yes
16:00 - 17:00	574	+	250	=	824	472	218	Yes
15:00 - 16:00	492	+	156	=	648	439	185	Yes
07:00 - 08:00	464	+	149	=	613	171	341	Yes
18:00 - 19:00	412	+	125	=	537	342	179	Yes
06:00 - 07:00	387	+	95	=	482	82	245	Yes
08:00 - 09:00	386	+	86	=	472	151	179	Yes
09:00 - 10:00	319	+	74	=	393	148	165	Yes
14:00 - 15:00	260	+	94	=	354	365	142	Yes
13:00 - 14:00	257	+	72	=	329	217	119	Yes
19:00 - 20:00	235	+	74	=	309	294	135	Yes
							95	Yes



ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1901**

Study Date: **06/26/2019**

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

27 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 34				Total	Minor Road CSAH 21		Met?
	Major EB	+	Major WB	=		Minor NB	Minor SB	
16:30 - 17:30	598	+	303	=	901	460	231	Yes
16:45 - 17:45	606	+	283	=	889	465	231	Yes
16:15 - 17:15	615	+	273	=	888	465	226	Yes
17:00 - 18:00	588	+	249	=	837	479	219	Yes
16:00 - 17:00	574	+	250	=	824	472	218	Yes
15:30 - 16:30	570	+	203	=	773	470	206	Yes
15:45 - 16:45	541	+	222	=	763	478	218	Yes
17:15 - 18:15	543	+	217	=	760	478	215	Yes
15:15 - 16:15	519	+	168	=	687	459	190	Yes
17:30 - 18:30	507	+	161	=	668	483	212	Yes
15:00 - 16:00	492	+	156	=	648	439	185	Yes
							341	Yes

