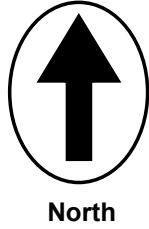
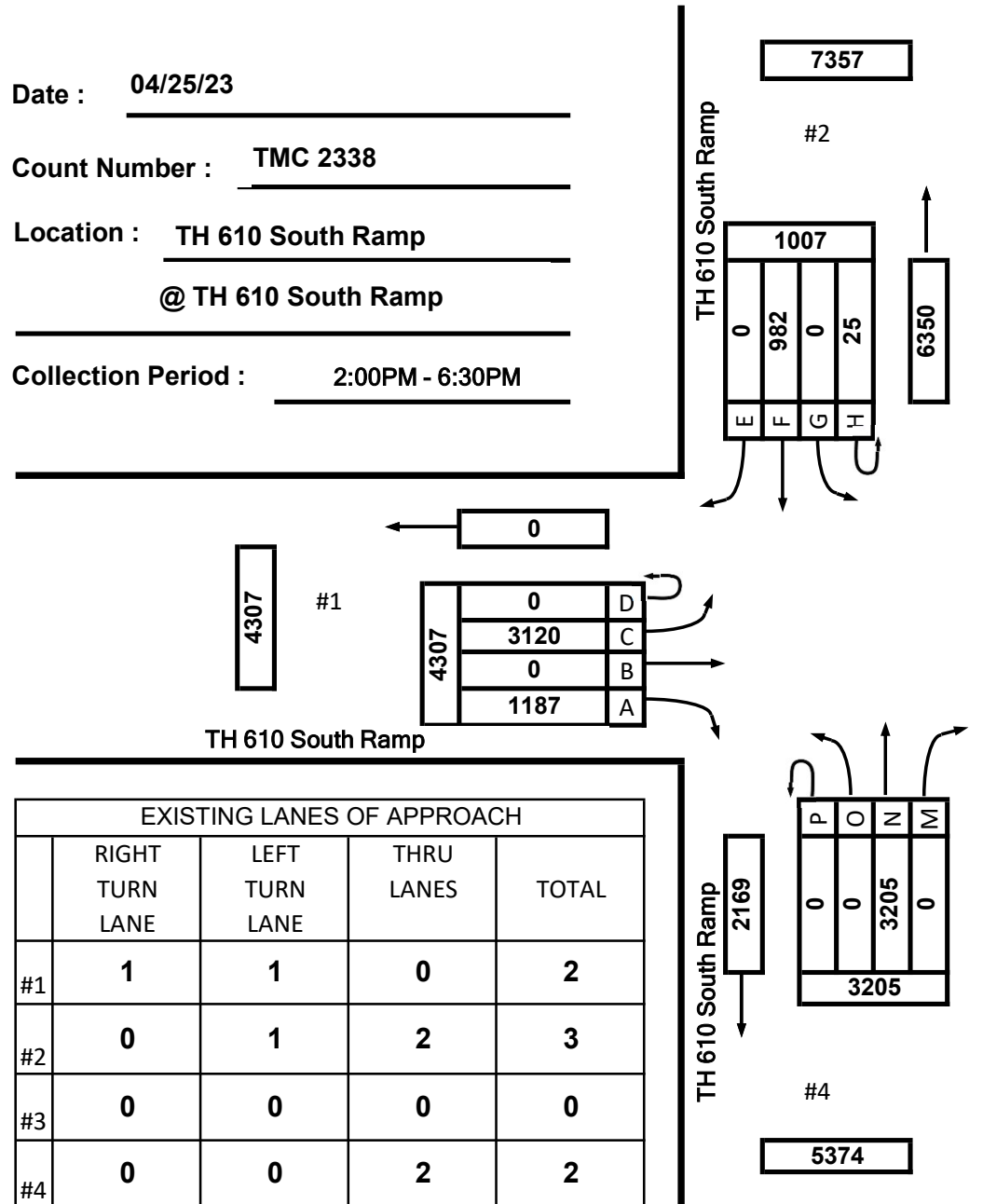


Date : 04/25/23

Count Number : TMC 2338

Location : TH 610 South Ramp
@ TH 610 South Ramp

Collection Period : 2:00PM - 6:30PM



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

Anoka County Highway Department

Traffic Volume and Turning Movement Study

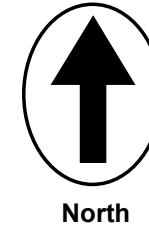
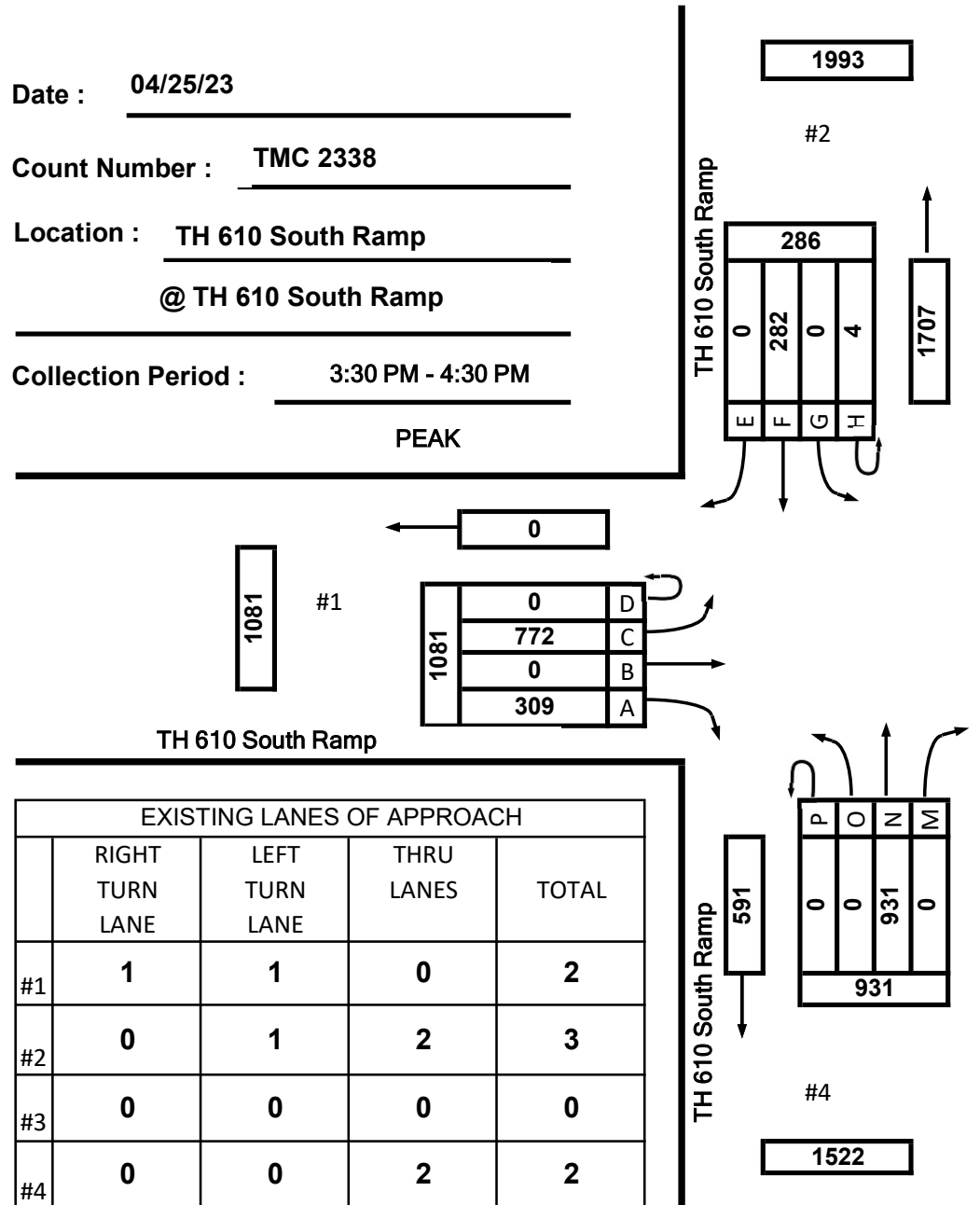
Date : 04/25/23

Count Number : TMC 2338

Location : TH 610 South Ramp
@ TH 610 South Ramp

Collection Period : 3:30 PM - 4:30 PM

PEAK



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 2338-t
 Site Code :
 Start Date : 04/25/2023
 Page No : 1

Weather: Cool & Sunny
 Count Cam 3
 Study Conducted by: Kevin

Groups Printed- Cars + - Trucks

Start Time	CSAH 1 (East River Rd) Southbound						Westbound						CSAH 1 (East River Rd) Northbound						TH 610 South Ramp Eastbound						Exclu. Total	Inclu. Total	Int. Total
	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total	Right	Thru	Left	UTrn	Peds	App. Total			
14:00	0	32	0	0	0	32	0	0	0	0	0	0	0	121	0	0	0	121	42	0	122	0	0	164	0	317	317
14:15	0	37	0	1	0	38	0	0	0	0	0	0	0	145	0	0	0	145	66	0	160	0	0	226	0	409	409
14:30	0	60	0	3	0	63	0	0	0	0	0	0	0	139	0	0	0	139	61	0	144	0	0	205	0	407	407
14:45	0	41	0	2	0	43	0	0	0	0	0	0	0	160	0	0	0	160	69	0	153	0	0	222	0	425	425
Total	0	170	0	6	0	176	0	0	0	0	0	0	0	565	0	0	0	565	238	0	579	0	0	817	0	1558	1558
15:00	0	52	0	1	0	53	0	0	0	0	0	0	0	171	0	0	0	171	83	0	157	0	0	240	0	464	464
15:15	0	61	0	2	0	63	0	0	0	0	0	0	0	171	0	0	0	171	86	0	173	0	0	259	0	493	493
15:30	0	90	0	1	0	91	0	0	0	0	0	0	0	241	0	0	0	241	96	0	154	0	0	250	0	582	582
15:45	0	51	0	1	0	52	0	0	0	0	0	0	0	221	0	0	0	221	71	0	212	0	0	283	0	556	556
Total	0	254	0	5	0	259	0	0	0	0	0	0	0	804	0	0	0	804	336	0	696	0	0	1032	0	2095	2095
16:00	0	72	0	0	0	72	0	0	0	0	0	0	0	257	0	0	0	257	63	0	215	0	2	278	2	607	609
16:15	0	69	0	2	0	71	0	0	0	0	0	0	0	212	0	0	0	212	79	0	191	0	0	270	0	553	553
16:30	0	37	0	1	0	38	0	0	0	0	0	0	0	252	0	0	0	252	56	0	197	0	0	253	0	543	543
16:45	0	71	0	1	0	72	0	0	0	0	0	0	0	172	0	0	0	172	65	0	193	0	0	258	0	502	502
Total	0	249	0	4	0	253	0	0	0	0	0	0	0	893	0	0	0	893	263	0	796	0	2	1059	2	2205	2207
17:00	0	68	0	2	0	70	0	0	0	0	0	0	0	236	0	0	0	236	56	0	228	0	0	284	0	590	590
17:15	0	54	0	2	0	56	0	0	0	0	0	0	0	180	0	0	0	180	54	0	199	0	0	253	0	489	489
17:30	0	42	0	5	0	47	0	0	0	0	0	0	0	165	0	0	0	165	61	0	188	0	0	249	0	461	461
17:45	0	50	0	0	0	50	0	0	0	0	0	0	0	143	0	0	0	143	63	0	168	0	0	231	0	424	424
Total	0	214	0	9	0	223	0	0	0	0	0	0	0	724	0	0	0	724	234	0	783	0	0	1017	0	1964	1964
18:00	0	47	0	0	0	47	0	0	0	0	0	0	0	103	0	0	0	103	59	0	137	0	0	196	0	346	346
18:15	0	48	0	1	0	49	0	0	0	0	0	0	0	115	0	0	1	115	57	0	129	0	0	186	1	350	351
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1
Grand Total	0	982	0	25	0	1007	0	0	0	0	0	0	0	3205	0	0	1	3205	1187	0	3120	0	2	4307	3	8519	8522
Apprch %	0	97.5	0	2.5	0	95.6	0	0	0	0	0	0	0	100	0	0	0	97.1	27.6	0	72.4	0	100	97.6	0	0	97.2
Total %	0	11.5	0	0.3	0	11.8	0	0	0	0	0	0	0	37.6	0	0	0	37.6	13.9	0	36.6	0	0	50.6	0	100	0
Cars +	0	938	0	25	0	963	0	0	0	0	0	0	0	3111	0	0	0	3112	1147	0	3058	0	0	4207	0	0	8282
% Cars +	0	95.5	0	100	0	95.6	0	0	0	0	0	0	0	97.1	0	0	100	97.1	96.6	0	98	0	100	97.6	0	0	97.2
Trucks	0	44	0	0	0	44	0	0	0	0	0	0	0	94	0	0	0	94	40	0	62	0	0	102	0	0	240
% Trucks	0	4.5	0	0	0	4.4	0	0	0	0	0	0	0	2.9	0	0	0	2.9	3.4	0	2	0	0	2.4	0	0	2.8



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Cool & Sunny
 Count Cam 3
 Study Conducted by: Kevin

File Name : TMC 2338-t
 Site Code :
 Start Date : 04/25/2023
 Page No : 2

Start Time	CSAH 1 (East River Rd) Southbound					Westbound					CSAH 1 (East River Rd) Northbound					TH 610 South Ramp Eastbound					Int. Total
	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	
Peak Hour Analysis From 14:00 to 18:30 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:30																					
15:30	0	90	0	1	91	0	0	0	0	0	0	241	0	0	241	96	0	154	0	250	582
15:45	0	51	0	1	52	0	0	0	0	0	0	221	0	0	221	71	0	212	0	283	556
16:00	0	72	0	0	72	0	0	0	0	0	0	257	0	0	257	63	0	215	0	278	607
16:15	0	69	0	2	71	0	0	0	0	0	0	212	0	0	212	79	0	191	0	270	553
Total Volume	0	282	0	4	286	0	0	0	0	0	0	931	0	0	931	309	0	772	0	1081	2298
% App. Total	0	98.6	0	1.4		0	0	0	0		0	100	0	0		28.6	0	71.4	0		
PHF	.000	.783	.000	.500	.786	.000	.000	.000	.000	.000	.000	.906	.000	.000	.906	.805	.000	.898	.000	.955	.946



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

File Name : TMC 2338-t
 Site Code :
 Start Date : 04/25/2023
 Page No : 1

Weather: Cool & Sunny
 Count Cam 3
 Study Conducted by: Kevin

Groups Printed- Trucks

Start Time	CSAH 1 (East River Rd) Southbound					Westbound					CSAH 1 (East River Rd) Northbound					TH 610 South Ramp Eastbound					Int. Total
	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	Right	Thru	Left	UTrn	App. Total	
14:00	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	1	0	9	0	10	17
14:15	0	3	0	0	3	0	0	0	0	0	0	13	0	0	13	5	0	8	0	13	29
14:30	0	4	0	0	4	0	0	0	0	0	0	7	0	0	7	7	0	3	0	10	21
14:45	0	3	0	0	3	0	0	0	0	0	0	6	0	0	6	1	0	7	0	8	17
Total	0	13	0	0	13	0	0	0	0	0	0	30	0	0	30	14	0	27	0	41	84
15:00	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	2	0	3	0	5	13
15:15	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	2	0	2	0	4	12
15:30	0	10	0	0	10	0	0	0	0	0	0	4	0	0	4	5	0	3	0	8	22
15:45	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	1	0	2	0	3	12
Total	0	20	0	0	20	0	0	0	0	0	0	19	0	0	19	10	0	10	0	20	59
16:00	0	2	0	0	2	0	0	0	0	0	0	9	0	0	9	2	0	3	0	5	16
16:15	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	2	0	1	0	3	15
16:30	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8	2	0	6	0	8	16
16:45	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	5	0	7	8
Total	0	6	0	0	6	0	0	0	0	0	0	26	0	0	26	8	0	15	0	23	55
17:00	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	1	0	5	0	6	11
17:15	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	1	0	3	0	4	8
17:30	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	1	0	1	0	2	7
17:45	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	4
Total	0	3	0	0	3	0	0	0	0	0	0	13	0	0	13	5	0	9	0	14	30
18:00	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	4
18:15	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	2	0	1	0	3	8
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	44	0	0	44	0	0	0	0	0	0	94	0	0	94	40	0	62	0	102	240
Apprch %	0	100	0	0		0	0	0	0		0	100	0	0		39.2	0	60.8	0		
Total %	0	18.3	0	0	18.3	0	0	0	0	0	0	39.2	0	0	39.2	16.7	0	25.8	0	42.5	

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 2338

Study Date : 05/04/2023

Signal Warrants - Summary

Major Street Approaches

Eastbound: TH 610 South Ramp

Number of Lanes : 1

Total Approach Volume: 4,307

Minor Street Approaches

Northbound: CSAH 1 (East River Rd)

Number of Lanes :2+

Total Approach Volume: 3,205

Southbound: CSAH 1 (East River Rd)

Number of Lanes :2+

Total Approach Volume: 1,007

Warrant Summary (Rural Values Apply)

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

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

Required volumes reached for 5 hours, 8 are needed

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

Required volumes reached for 5 hours, 8 are needed

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

Required 1A volumes reached for 5 hours, 8 are needed

Required 1B volumes reached for 5 hours, 8 are needed

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

Number of hours (5) volumes exceed minimum \geq minimum required (4).

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

Warrant 3A - Peak Hour Delay.....**Satisfied**

Number of one hour periods (19) volumes exceed minimum \geq required (1). Delay data not evaluated.

Warrant 3B - Peak Hour Volumes.....**Satisfied**

Volumes exceed minimums for at least one hour period.

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 2338

Study Date : 05/04/2023

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 5 one hour periods meet minimums.
Warrant is NOT met.

Site Data Required

Rural Settings Apply = **True**
 Number of Major Lanes = **1**
 Number of Minor Lanes = **2 or more**

Volume Requirements

Rural Factor of 70 % applied
 Veh/Hr Major = **350**
 Veh/Hr Minor = **140**

Time	Major Road				Total	Minor Road		Met?
	Major EB	+	Major WB	=		Minor NB	Minor SB	
	TH 610 South Ramp					CSAH 1 (East River Rd)		
15:30 - 16:30	1081	+	0	=	1081	931	286	Yes
16:30 - 17:30	1048	+	0	=	1048	840	236	Yes
14:30 - 15:30	926	+	0	=	926	641	222	Yes
17:30 - 18:30	862	+	0	=	862	526	193	Yes
13:30 - 14:30	390	+	0	=	390	266	70	Yes
13:15 - 14:15	164	+	0	=	164	121	32	No
00:00 - 01:00	0	+	0	=	0	0	0	No
00:15 - 01:15	0	+	0	=	0	0	0	No
00:30 - 01:30	0	+	0	=	0	0	0	No
00:45 - 01:45	0	+	0	=	0	0	0	No
01:00 - 02:00	0	+	0	=	0	0	0	No
01:15 - 02:15	0	+	0	=	0	0	0	No
01:30 - 02:30	0	+	0	=	0	0	0	No
01:45 - 02:45	0	+	0	=	0	0	0	No
02:00 - 03:00	0	+	0	=	0	0	0	No
02:15 - 03:15	0	+	0	=	0	0	0	No
02:30 - 03:30	0	+	0	=	0	0	0	No
02:45 - 03:45	0	+	0	=	0	0	0	No
03:00 - 04:00	0	+	0	=	0	0	0	No
03:15 - 04:15	0	+	0	=	0	0	0	No
03:30 - 04:30	0	+	0	=	0	0	0	No
03:45 - 04:45	0	+	0	=	0	0	0	No
04:00 - 05:00	0	+	0	=	0	0	0	No
04:15 - 05:15	0	+	0	=	0	0	0	No
04:30 - 05:30	0	+	0	=	0	0	0	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 2338

Study Date : 05/04/2023

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 5 one hour periods meet minimums.
Warrant is NOT met.

Site Data Required

Rural Settings Apply = **True**
 Number of Major Lanes = **1**
 Number of Minor Lanes = **2 or more**

Volume Requirements

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

Time	Major Road				Total	Minor Road		Met?
	Major EB	+	Major WB	=		Minor NB	Minor SB	
	TH 610 South Ramp					CSAH 1 (East River Rd)		
15:45 - 16:45	1084	+	0	=	1084	942	233	Yes
16:45 - 17:45	1044	+	0	=	1044	753	245	Yes
14:45 - 15:45	971	+	0	=	971	743	250	Yes
17:45 - 18:45	613	+	0	=	613	362	146	Yes
13:45 - 14:45	595	+	0	=	595	405	133	Yes
13:30 - 14:30	390	+	0	=	390	266	70	No
13:15 - 14:15	164	+	0	=	164	121	32	No
01:30 - 02:30	0	+	0	=	0	0	0	No
01:45 - 02:45	0	+	0	=	0	0	0	No
02:00 - 03:00	0	+	0	=	0	0	0	No
02:15 - 03:15	0	+	0	=	0	0	0	No
02:30 - 03:30	0	+	0	=	0	0	0	No
02:45 - 03:45	0	+	0	=	0	0	0	No
03:00 - 04:00	0	+	0	=	0	0	0	No
03:15 - 04:15	0	+	0	=	0	0	0	No
03:30 - 04:30	0	+	0	=	0	0	0	No
03:45 - 04:45	0	+	0	=	0	0	0	No
04:00 - 05:00	0	+	0	=	0	0	0	No
04:15 - 05:15	0	+	0	=	0	0	0	No
04:30 - 05:30	0	+	0	=	0	0	0	No
04:45 - 05:45	0	+	0	=	0	0	0	No
05:00 - 06:00	0	+	0	=	0	0	0	No
05:15 - 06:15	0	+	0	=	0	0	0	No
05:30 - 06:30	0	+	0	=	0	0	0	No
05:45 - 06:45	0		0		0	0	0	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 2338

Study Date : 05/04/2023

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

Only 5 hours meet 1A minimums.
Only 5 hours meet 1B minimums.
Warrant is NOT met.

Site Data Required

Rural Settings Apply = **True**
Number of Major Lanes = **1**
Number of Minor Lanes = **2 or more**

Volume Requirements

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

Veh/Hr Minor = **112 56**

Major Road TH 610 South Ramp

Minor Road CSAH 1 (East River Rd)

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1A?
15:30 - 16:30	1081	+	0	=	1081	931	286	Yes
16:30 - 17:30	1048	+	0	=	1048	840	236	Yes
14:30 - 15:30	926	+	0	=	926	641	222	Yes
17:30 - 18:30	862	+	0	=	862	526	193	Yes
13:30 - 14:30	390	+	0	=	390	266	70	Yes
13:15 - 14:15	164	+	0	=	164	121	32	No
18:30 - 19:30	0	+	0	=	0	1	0	No
01:45 - 02:45	0	+	0	=	0	0	0	No
02:00 - 03:00	0	+	0	=	0	0	0	No
02:15 - 03:15	0	+	0	=	0	0	0	No
02:30 - 03:30	0	+	0	=	0	0	0	No
02:45 - 03:45	0	+	0	=	0	0	0	No

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1B?
15:45 - 16:45	1084	+	0	=	1084	942	233	Yes
16:45 - 17:45	1044	+	0	=	1044	753	245	Yes
14:45 - 15:45	971	+	0	=	971	743	250	Yes
17:45 - 18:45	613	+	0	=	613	362	146	Yes
13:45 - 14:45	595	+	0	=	595	405	133	Yes
13:30 - 14:30	390	+	0	=	390	266	70	No
13:15 - 14:15	164	+	0	=	164	121	32	No
01:45 - 02:45	0	+	0	=	0	0	0	No
02:00 - 03:00	0	+	0	=	0	0	0	No
02:15 - 03:15	0	+	0	=	0	0	0	No
02:30 - 03:30	0	+	0	=	0	0	0	No
02:45 - 03:45	0	+	0	=	0	0	0	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 2338

Study Date : 05/04/2023

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.

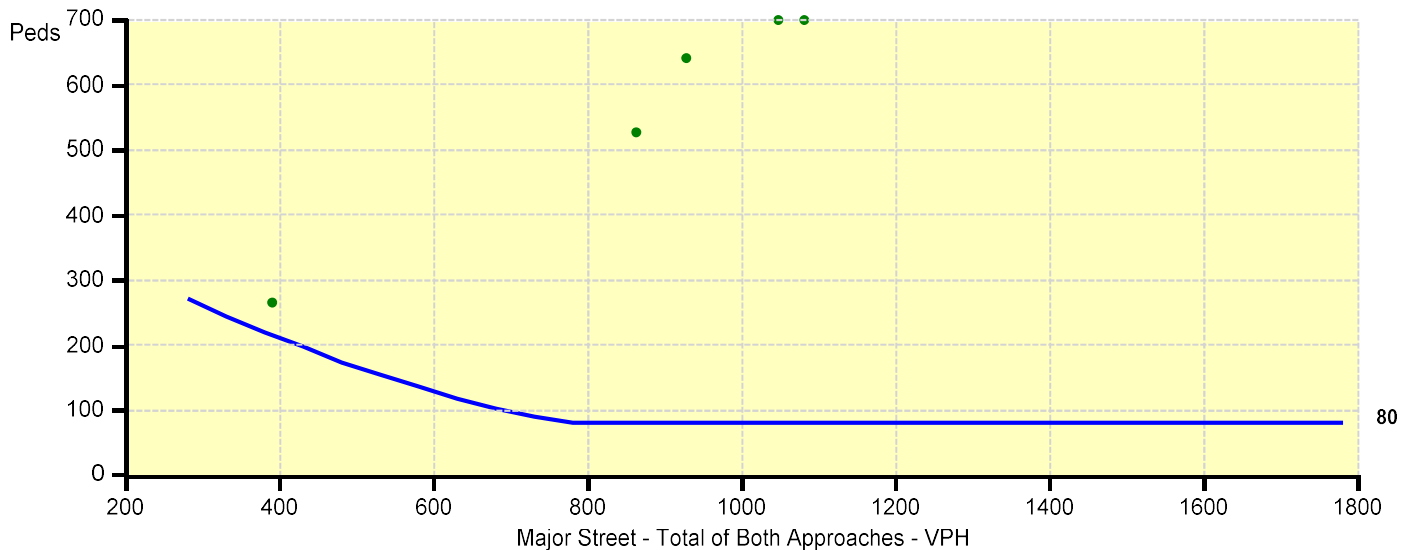
Summary

5 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
 Number of Major Lanes = **1**
 Number of Minor Lanes = **2 or more**

Time	Major Road TH 610 South Ramp				Total	Minor Road CSAH 1 (East River Rd)		Met?
	Major EB	+	Major WB	=		Minor NB	Minor SB	
15:30 - 16:30	1081	+	0	=	1081	931	286	Yes
16:30 - 17:30	1048	+	0	=	1048	840	236	Yes
14:30 - 15:30	926	+	0	=	926	641	222	Yes
17:30 - 18:30	862	+	0	=	862	526	193	Yes
13:30 - 14:30	390	+	0	=	390	266	70	Yes
13:15 - 14:15	164	+	0	=	164	121	32	No
01:45 - 02:45	0	+	0	=	0	0	0	No
02:00 - 03:00	0	+	0	=	0	0	0	No
02:15 - 03:15	0	+	0	=	0	0	0	No
02:30 - 03:30	0	+	0	=	0	0	0	No
02:45 - 03:45	0	+	0	=	0	0	0	No
03:00 - 04:00	0	+	0	=	0	0	0	No



ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 2338

Study Date : 05/04/2023

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

17 one hour periods meet minimums.
Warrant IS met.

Site Data Required

Rural Settings Apply = **True**
 Number of Major Lanes = **1**
 Number of Minor Lanes = **2 or more**

Time	Major Road TH 610 South Ramp					Minor Road CSAH 1 (East River Rd)		Met?
	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
15:45 - 16:45	1084	+	0	=	1084	942	233	Yes
15:30 - 16:30	1081	+	0	=	1081	931	286	Yes
15:15 - 16:15	1070	+	0	=	1070	890	278	Yes
16:15 - 17:15	1065	+	0	=	1065	872	251	Yes
16:00 - 17:00	1059	+	0	=	1059	893	253	Yes
16:30 - 17:30	1048	+	0	=	1048	840	236	Yes
16:45 - 17:45	1044	+	0	=	1044	753	245	Yes
15:00 - 16:00	1032	+	0	=	1032	804	259	Yes
17:00 - 18:00	1017	+	0	=	1017	724	223	Yes
14:45 - 15:45	971	+	0	=	971	743	250	Yes
17:15 - 18:15	929	+	0	=	929	591	200	Yes
14:30 - 15:30	926	+	0	=	926	641	222	Yes

