

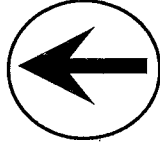
Date : 11/06/18

Count Number : TMC 1828

Location : CSAH 14 (Main St.)

@ TH 10 East Ramps

Collection Period : 6 AM - 7 PM



North

5060

#2

0	0	0	0	0	0
F	T	G	H		

TH 10 East Entrance Ramp

5060

CSAH 14

#3

I	3857
J	10542
K	0
L	0

28121

13722

15959

#1

28686

A	0
B	11521
C	1180
D	26

CSAH 14

12727

EXISTING LANES OF APPROACH			
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES
#1	0	2	3
#2	0	0	0
#3	1	0	3
#4	2	1	1
TOTAL			5
			0
			4
			4

M	2201
N	23
O	5391
P	0

#4

7615

TH 10 East Exit Ramp

0

Anoka County Highway Department
Traffic Volume and Turning
Movement Study

AM PEAK

EXISTING LANES OF APPROACH				
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	TOTAL
#1	0	2	3	5
#2	0	0	0	0
#3	1	0	3	4
#4	2	1	1	4

Date : 11/06/18

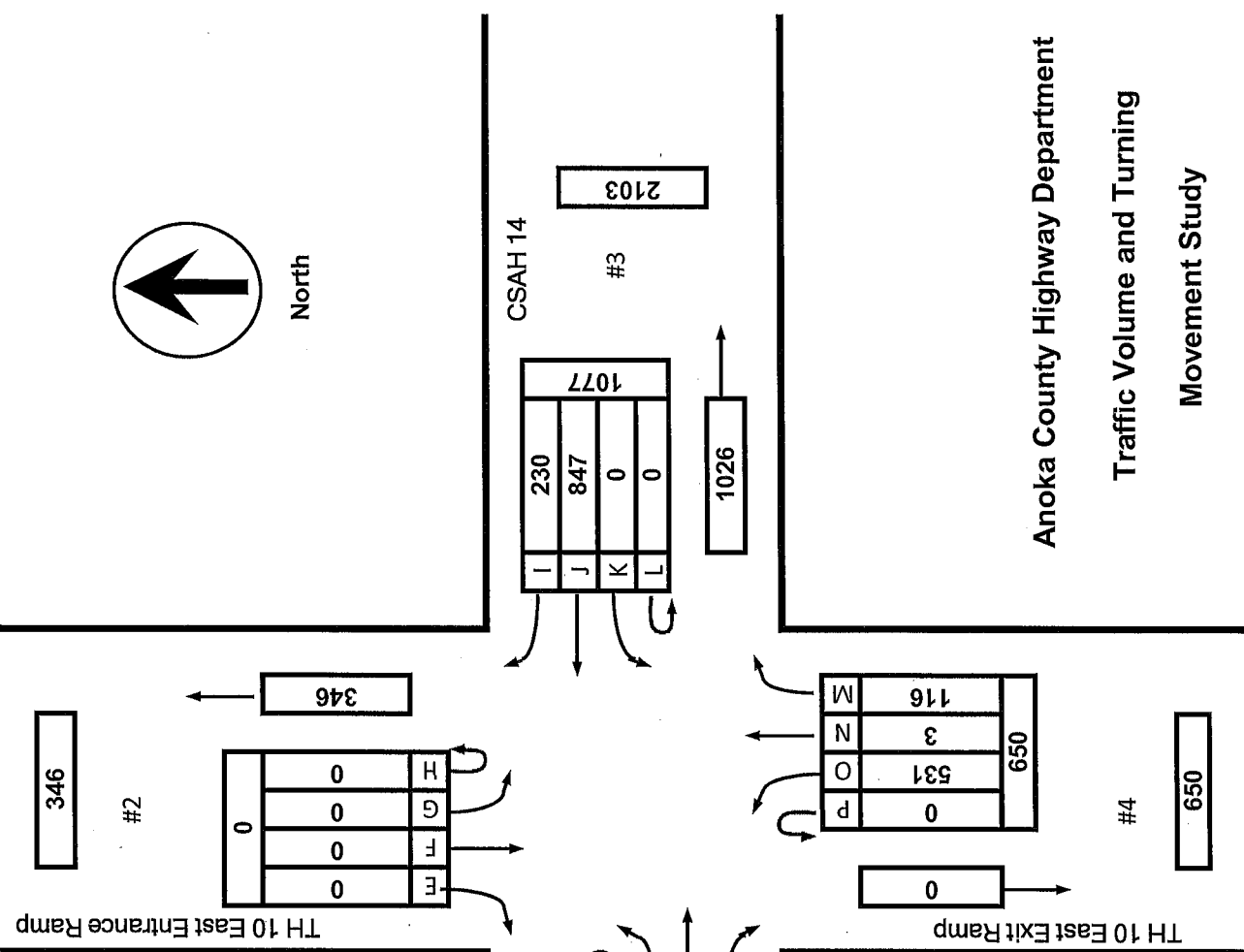
Count Number : TMC 1828

Location : CSAH 14 (Main St.)

@ TH 10 East Ramps

Collection Period : 11:45 AM - 12:45 PM

MID PEAK



	EXISTING LANES OF APPROACH			TOTAL
	RIGHT TURN LANE	LEFT TURN LANE	THRU LANES	
#1	0	2	3	5
#2	0	0	0	0
#3	1	0	3	4
#4	2	1	1	4

Anoka County Highway Department
Traffic Volume and Turning
Movement Study

Date: 11/06/18

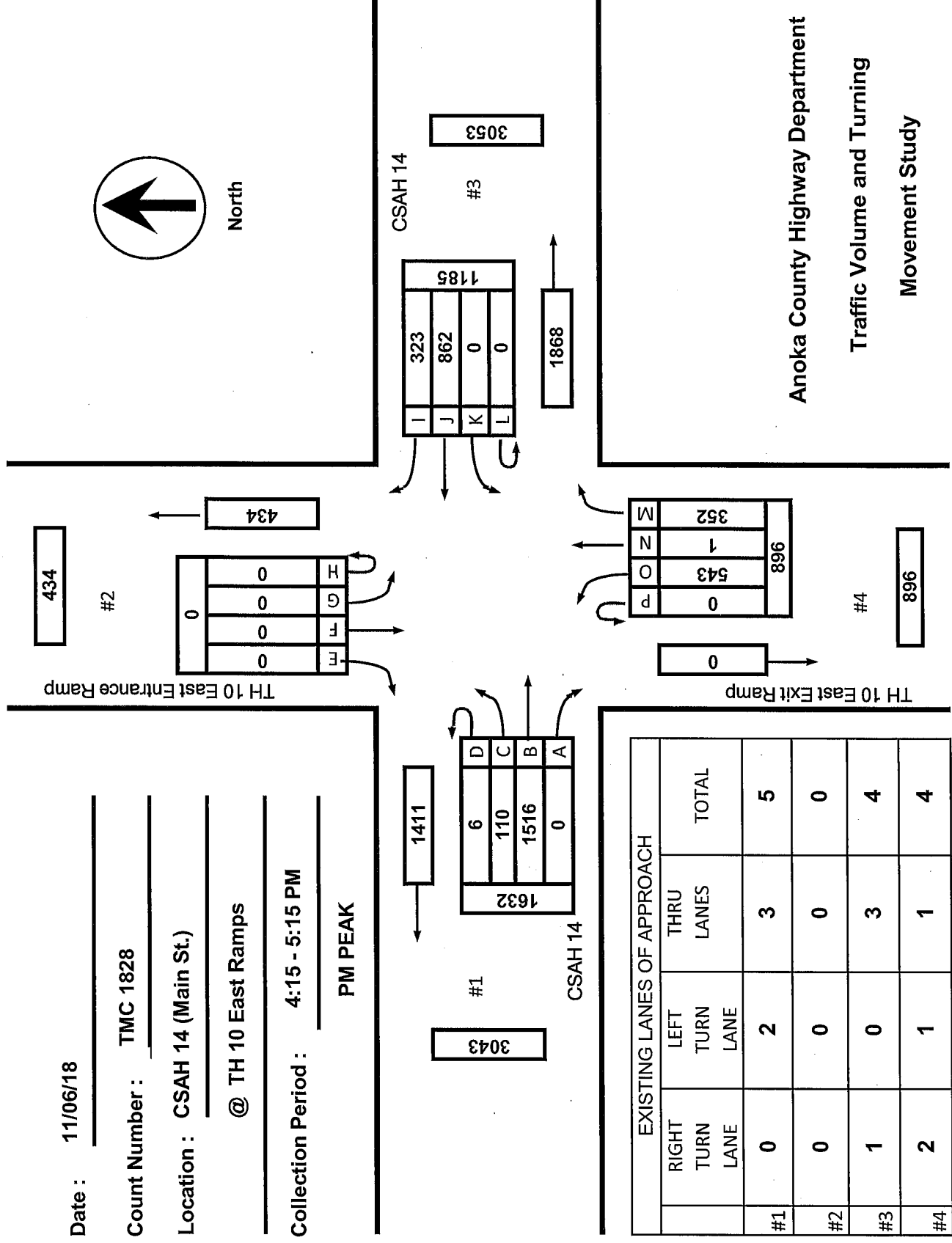
Count Number: TMC 1828

Location: CSAH 14 (Main St.)

@ TH 10 East Ramps

Collection Period: 4:15 - 5:15 PM

PM PEAK



Anoka County Highway Department
Traffic Volume and Turning
Movement Study



Study Conducted By: Andrea

Study Conducted By: Andrea

Groups Printed- Cars + - Trucks																												
TH 10 E Entrance Ramp							CSAH 14 Westbound							TH 10 East Exit Ramp							CSAH 14 Eastbound							
Start Time	UTm	Southbound					UTm	Left	Thru	Right	Peds	App. Total	UTm	Left	Thru	Right	Peds	App. Total	UTm	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total	
06:00	0	0	0	0	0	0	0	0	171	58	0	229	0	18	0	9	0	27	0	4	53	0	0	57	0	313	313	
06:15	0	0	0	0	0	0	0	0	186	73	0	259	0	40	1	6	0	47	0	14	70	0	0	84	0	390	390	
06:30	0	0	0	0	0	0	0	0	209	93	0	302	0	53	0	17	0	70	0	15	108	0	0	123	0	495	495	
06:45	0	0	0	0	0	0	0	0	203	120	0	323	0	61	0	31	0	92	0	11	125	0	0	136	0	551	551	
Total	0	0	0	0	0	0	0	0	769	344	0	1113	0	172	1	63	0	236	0	44	356	0	0	400	0	1749	1749	
07:00	0	0	0	0	0	0	0	0	206	123	0	329	0	43	1	21	0	65	0	6	138	0	0	144	0	538	538	
07:15	0	0	0	0	0	0	0	0	278	151	0	429	0	52	0	29	0	81	0	17	137	0	0	154	0	664	664	
07:30	0	0	0	0	0	0	0	0	301	173	0	474	0	72	0	17	0	89	0	18	129	0	0	147	0	710	710	
07:45	0	0	0	0	0	0	0	0	302	157	0	459	0	70	1	23	0	94	0	2	140	0	0	160	0	713	713	
Total	0	0	0	0	0	0	0	0	1087	604	0	1691	0	237	2	90	0	329	0	59	544	0	0	605	0	2625	2625	
08:00	0	0	0	0	0	0	0	0	191	113	0	304	0	59	2	24	0	85	0	1	116	0	0	128	0	517	517	
08:15	0	0	0	0	0	0	0	0	189	94	0	283	0	68	0	15	0	83	0	12	118	0	0	131	0	497	497	
08:30	0	0	0	0	0	0	0	0	188	90	0	278	0	65	0	25	0	90	0	16	136	0	0	152	0	520	520	
08:45	0	0	0	0	0	0	0	0	213	71	0	284	0	59	0	21	0	80	0	15	109	0	0	124	0	488	488	
Total	0	0	0	0	0	0	0	0	781	368	0	1149	0	251	2	85	0	338	0	54	479	0	0	535	0	2022	2022	
09:00	0	0	0	0	0	0	0	0	178	75	0	253	0	72	1	16	1	89	0	13	137	0	0	150	1	492	493	
09:15	0	0	0	0	0	0	0	0	219	58	0	277	0	93	0	19	0	112	1	28	146	0	0	175	0	564	564	
09:30	0	0	0	0	0	0	0	0	210	63	0	273	0	72	0	11	0	83	0	17	153	0	0	170	0	526	526	
09:45	0	0	0	0	0	0	0	0	204	56	0	260	0	105	0	36	0	141	1	11	143	0	0	155	0	556	556	
Total	0	0	0	0	0	0	0	0	811	252	0	1063	0	342	1	82	1	425	0	69	579	0	0	650	1	2138	2139	
10:00	0	0	0	0	0	0	0	0	221	41	0	262	0	87	1	21	0	109	0	13	164	0	0	178	0	549	549	
10:15	0	0	0	0	0	0	0	0	194	40	0	234	0	113	0	26	0	139	0	18	185	0	0	203	0	576	576	
10:30	0	0	0	0	0	1	0	0	242	51	0	293	0	82	0	16	0	98	0	18	175	0	0	193	1	584	585	
10:45	0	0	0	0	0	0	0	0	199	56	0	255	0	102	1	19	0	122	0	27	227	0	0	254	0	631	631	
Total	0	0	0	0	0	1	0	0	856	188	0	1044	0	384	2	82	0	468	1	76	751	0	0	828	1	2340	2341	
11:00	0	0	0	0	0	0	0	0	178	65	0	243	0	104	0	22	0	126	0	25	219	0	0	244	0	613	613	
11:15	0	0	0	0	0	0	0	0	189	63	0	252	0	121	0	26	0	147	0	3	33	176	0	0	212	0	611	611
11:30	0	0	0	0	0	0	0	0	193	56	0	249	0	133	0	23	0	156	0	29	211	0	0	240	0	645	645	
11:45	0	0	0	0	0	0	0	0	257	75	0	332	0	139	0	25	0	164	2	30	210	0	0	242	0	738	738	
Total	0	0	0	0	0	0	0	0	817	259	0	1076	0	497	0	96	0	593	5	117	816	0	0	938	0	2607	2607	



Study Conducted By: Andrea

Weather: Cold & Snow

	TH 10 E Entrance Ramp							CSAH 14							TH 10 East Exit Ramp							CSAH 14						
	Southbound				Westbound			Northbound				Eastbound			Southbound				Westbound			Northbound				Eastbound		
Start Time	UTm	Left	Thru	Right	Peds	App. Total	UTm	Left	Thru	Right	Peds	App. Total	UTm	Left	Thru	Right	Peds	App. Total	UTm	Left	Thru	Right	Peds	App. Total	Exch. Total	Intnl. Total	Int. Total	
12:00	0	0	0	0	0	0	0	0	216	54	0	270	0	150	2	28	0	180	1	27	232	0	0	260	0	710	710	
12:15	0	0	0	0	0	0	0	0	193	48	0	241	0	120	1	34	0	155	1	28	224	0	0	253	0	649	649	
12:30	0	0	0	0	1	0	0	0	181	53	0	234	0	122	0	29	0	151	0	28	244	0	0	272	1	657	658	
12:45	0	0	0	0	2	0	0	0	186	64	0	250	0	113	0	28	0	141	1	37	224	0	0	262	2	653	655	
Total	0	0	0	0	3	0	0	0	776	219	0	995	0	505	3	119	0	627	3	120	924	0	0	1047	3	2669	2672	
13:00	0	0	0	0	0	0	0	0	174	58	0	232	0	130	0	25	0	155	0	32	242	0	0	274	0	661	661	
13:15	0	0	0	0	0	0	0	0	182	57	0	239	0	113	0	40	0	153	0	25	202	0	0	227	0	619	619	
13:30	0	0	0	0	0	0	0	0	170	52	0	222	0	131	0	38	0	169	1	32	216	0	0	249	0	640	640	
13:45	0	0	0	0	0	0	0	0	199	62	0	261	0	108	1	36	0	145	0	23	219	0	0	242	0	648	648	
Total	0	0	0	0	0	0	0	0	725	229	0	954	0	482	1	139	0	622	1	112	879	0	0	992	0	2568	2568	
14:00	0	0	0	0	0	0	0	0	155	51	0	206	0	122	1	46	0	169	0	24	257	0	0	281	0	656	656	
14:15	0	0	0	0	0	0	0	0	189	57	0	246	0	111	2	54	0	167	1	25	254	0	0	280	0	693	693	
14:30	0	0	0	0	0	0	0	0	191	94	0	285	0	148	0	52	1	200	0	30	257	0	0	287	1	772	773	
14:45	0	0	0	0	0	0	0	0	198	83	0	281	0	148	1	73	0	222	0	25	289	0	0	314	0	817	817	
Total	0	0	0	0	0	0	0	0	733	285	0	1018	0	529	4	225	1	758	1	104	1057	0	0	1162	1	2938	2939	
15:00	0	0	0	0	0	0	0	0	196	80	0	276	0	127	0	64	0	191	0	29	283	0	0	312	0	779	779	
15:15	0	0	0	0	0	0	0	0	160	64	0	224	0	153	0	83	1	236	0	27	320	0	0	347	1	807	808	
15:30	0	0	0	0	0	0	0	0	210	64	0	274	0	123	1	70	0	194	1	31	327	0	0	359	0	827	827	
15:45	0	0	0	0	0	0	0	0	204	77	0	281	0	124	0	73	0	197	0	25	335	0	0	360	0	838	838	
Total	0	0	0	0	0	0	0	0	770	285	0	1055	0	527	1	290	1	818	1	112	1265	0	0	1378	1	3251	3252	
16:00	0	0	0	0	0	0	0	0	194	76	0	270	0	129	1	74	0	204	0	29	385	0	0	414	0	888	888	
16:15	0	0	0	0	0	0	0	0	190	71	0	261	0	149	0	90	0	239	3	36	380	0	0	419	0	919	919	
16:30	0	0	0	0	1	0	0	0	219	89	0	308	0	133	0	88	0	221	0	31	366	0	0	397	1	926	927	
16:45	0	0	0	0	0	0	0	0	220	71	0	291	0	125	0	90	0	215	1	23	388	0	0	412	0	918	918	
Total	0	0	0	0	1	0	0	0	823	307	0	1130	0	536	1	342	0	879	4	119	1519	0	0	1642	1	3651	3652	
17:00	0	0	0	0	0	0	0	0	233	92	0	325	0	136	1	84	0	221	2	20	382	0	0	404	0	950	950	
17:15	0	0	0	0	0	0	0	0	237	61	0	298	0	128	1	105	0	234	1	23	358	0	0	382	0	914	914	
17:30	0	0	0	0	0	0	0	0	192	74	0	266	0	148	0	94	0	242	1	26	332	0	0	359	0	867	867	
17:45	0	0	0	0	0	0	0	0	204	65	0	269	0	124	1	102	0	227	0	32	291	0	0	323	0	819	819	
Total	0	0	0	0	0	0	0	0	866	292	0	1158	0	536	3	385	0	924	4	101	1363	0	0	1468	0	3550	3550	
18:00	0	0	0	0	0	0	0	0	219	60	0	279	0	116	1	58	0	175	0	22	272	0	0	294	0	748	748	
18:15	0	0	0	0	0	0	0	0	199	58	0	257	0	107	0	52	0	159	0	23	265	0	0	288	0	704	704	
18:30	0	0	0	0	0	0	0	0	166	51	0	217	0	105	0	52	0	157	0	31	238	0	0	269	0	643	643	
18:45	0	0	0	0	0	0	0	0	144	56	0	200	0	65	1	41	0	107	0	17	214	0	0	231	0	538	538	
Total	0	0	0	0	0	0	0	0	728	225	0	953	0	393	2	203	0	598	0	93	989	0	0	1082	0	2633	2633	



Study Conducted By: Andrea

Weather: Cold & Snow

	TH 10 E Entrance Ramp Southbound						CSAH 14 Westbound						TH 10 East Exit Ramp Northbound						CSAH 14 Eastbound					
Start Time	UTrn	Left	Thru	Right	App. Total		UTrn	Left	Thru	Right	App. Total		UTrn	Left	Thru	Right	App. Total		UTrn	Left	Thru	Right	App. Total	Int. 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	0	0	0		0	0	206	123	329		0	43	1	21	65		0	6	138	0	144	538
07:15	0	0	0	0	0		0	0	278	151	429		0	52	0	29	81		0	17	137	0	154	664
07:30	0	0	0	0	0		0	0	301	173	474		0	72	0	17	89		0	18	129	0	147	710
07:45	0	0	0	0	0		0	0	302	157	459		0	70	1	23	94		2	18	140	0	160	713
Total Volume	0	0	0	0	0		0	0	1087	604	1691		0	237	2	90	329		2	59	544	0	605	2625
% App. Total	0	0	0	0	0		0	0	64.3	35.7		0	72	0.6	27.4		0.3		0.3	9.8	89.9	0		
PHE	.000	.000	.000	.000	.000		.000	.000	.900	.873	.892		.000	.823	.500	.776	.875		.250	.819	.971	.000	.945	.920

[illegible]



Anoka County Highway Department
Traffic Engineering Section
Traffic Volume and Turning Movement Study

Weather: Cold & Snow

CountCAM 200

Study Conducted By: Andrea

File Name : TMC 1828

Site Code :

Start Date : 11/06/2018

Page No : 4

TH 10 E Entrance Ramp Southbound					CSAH 14 Westbound					TH 10 East Exit Ramp Northbound					CSAH 14 Eastbound						
Start Time	UTm	Left	Thru	Right	App. Total	UTm	Left	Thru	Right	App. Total	UTm	Left	Thru	Right	App. Total	Int. Total					
Peak Hour Analysis From 14:00 to 18:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:15																					
16:15	0	0	0	0	0	0	0	190	71	261	0	149	0	90	239	3	36	380	0	419	919
16:30	0	0	0	0	0	0	0	219	89	308	0	133	0	88	221	0	31	366	0	397	926
16:45	0	0	0	0	0	0	0	220	71	291	0	125	0	90	215	1	23	388	0	412	918
17:00	0	0	0	0	0	0	0	233	92	325	0	136	1	84	221	2	20	382	0	404	950
Total Volume	0	0	0	0	0	0	0	862	323	1185	0	543	1	352	896	6	110	1516	0	1632	3713
% App. Total	0	0	0	0	0	0	0	72.7	27.3	91.2	0	60.6	0.1	39.3	93.7	0.4	6.7	92.9	0	97.4	97.7
PHF	.000	.000	.000	.000	.000	.000	.000	.925	.878	.912	.000	.911	.250	.978	.937	.500	.764	.977	.000	.974	.977



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Cold & Snow
 CountCAM 200
 Study Conducted By: Andrea

File Name : TMC 1828
 Site Code :
 Start Date : 11/06/2018
 Page No : 1

Groups Printed- Trucks

Start Time	TH 10 E Entrance Ramp Southbound					CSAH 14 Westbound					TH 10 East Exit Ramp Northbound					CSAH 14 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	4	4	8	0	2	0	1	3	0	0	1	0	1	12
06:15	0	0	0	0	0	0	0	5	2	7	0	2	0	1	3	0	0	6	0	6	16
06:30	0	0	0	0	0	0	0	0	5	5	0	2	0	1	3	0	1	7	0	8	16
06:45	0	0	0	0	0	0	0	4	3	7	0	5	0	1	6	0	0	13	0	13	26
Total	0	0	0	0	0	0	0	13	14	27	0	11	0	4	15	0	1	27	0	28	70
07:00	0	0	0	0	0	0	0	3	3	6	0	5	0	0	5	0	0	12	0	12	23
07:15	0	0	0	0	0	0	0	6	1	7	0	2	0	1	3	0	1	9	0	10	20
07:30	0	0	0	0	0	0	0	4	8	12	0	4	0	0	4	0	1	5	0	6	22
07:45	0	0	0	0	0	0	0	11	4	15	0	6	0	2	8	0	0	10	0	10	33
Total	0	0	0	0	0	0	0	24	16	40	0	17	0	3	20	0	2	36	0	38	98
08:00	0	0	0	0	0	0	0	5	6	11	0	0	0	1	1	0	0	7	0	7	19
08:15	0	0	0	0	0	0	0	6	4	10	0	6	0	0	6	0	1	9	0	10	26
08:30	0	0	0	0	0	0	0	2	2	4	0	3	0	1	4	0	4	7	0	11	19
08:45	0	0	0	0	0	0	0	4	2	6	0	5	0	2	7	0	0	3	0	3	16
Total	0	0	0	0	0	0	0	17	14	31	0	14	0	4	18	0	5	26	0	31	80
09:00	0	0	0	0	0	0	0	8	4	12	0	3	0	0	3	0	0	12	0	12	27
09:15	0	0	0	0	0	0	0	5	4	9	0	3	0	1	4	0	3	12	0	15	28
09:30	0	0	0	0	0	0	0	6	4	10	0	2	0	1	3	0	1	4	0	5	18
09:45	0	0	0	0	0	0	0	5	2	7	0	1	0	3	4	0	0	4	0	4	15
Total	0	0	0	0	0	0	0	24	14	38	0	9	0	5	14	0	4	32	0	36	88
10:00	0	0	0	0	0	0	0	7	3	10	0	2	0	2	4	0	0	7	0	7	21
10:15	0	0	0	0	0	0	0	2	2	4	0	4	0	5	9	0	1	6	0	7	20
10:30	0	0	0	0	0	0	0	6	5	11	0	2	0	1	3	0	0	5	0	5	19
10:45	0	0	0	0	0	0	0	7	2	9	0	1	0	3	4	0	0	10	0	10	23
Total	0	0	0	0	0	0	0	22	12	34	0	9	0	11	20	0	1	28	0	29	83
11:00	0	0	0	0	0	0	0	1	3	4	0	5	0	1	6	0	1	10	0	11	21
11:15	0	0	0	0	0	0	0	6	2	8	0	6	0	1	7	0	3	5	0	8	23
11:30	0	0	0	0	0	0	0	7	4	11	0	3	0	3	6	0	0	6	0	6	23
11:45	0	0	0	0	0	0	0	0	4	4	0	3	0	3	6	0	0	8	0	8	18
Total	0	0	0	0	0	0	0	14	13	27	0	17	0	8	25	0	4	29	0	33	85
12:00	0	0	0	0	0	0	0	3	5	8	0	1	0	3	4	0	0	3	0	3	15
12:15	0	0	0	0	0	0	0	5	1	6	0	5	0	3	8	0	0	6	0	6	20
12:30	0	0	0	0	0	0	0	0	3	3	0	9	0	0	9	0	0	2	0	2	14
12:45	0	0	0	0	0	0	0	7	2	9	0	1	0	2	3	0	1	9	0	10	22
Total	0	0	0	0	0	0	0	15	11	26	0	16	0	8	24	0	1	20	0	21	71
13:00	0	0	0	0	0	0	0	4	3	7	0	3	0	0	3	0	1	6	0	7	17
13:15	0	0	0	0	0	0	0	5	4	9	0	3	0	1	4	0	1	6	0	7	20
13:30	0	0	0	0	0	0	0	7	6	13	0	4	0	0	4	0	2	10	0	12	29
13:45	0	0	0	0	0	0	0	3	4	7	0	3	0	3	6	0	2	8	0	10	23
Total	0	0	0	0	0	0	0	19	17	36	0	13	0	4	17	0	6	30	0	36	89
14:00	0	0	0	0	0	0	0	4	4	8	0	4	0	1	5	0	1	12	0	13	26
14:15	0	0	0	0	0	0	0	5	2	7	0	0	0	1	1	0	1	3	0	4	12
14:30	0	0	0	0	0	0	0	3	12	15	0	4	0	0	4	0	0	4	0	4	23
14:45	0	0	0	0	0	0	0	3	10	13	0	3	0	0	3	0	0	3	0	3	19
Total	0	0	0	0	0	0	0	15	28	43	0	11	0	2	13	0	2	22	0	24	80
15:00	0	0	0	0	0	0	0	0	6	6	0	2	0	2	4	0	1	4	0	5	15



Anoka County Highway Department

Traffic Engineering Section

Traffic Volume and Turning Movement Study

Weather: Cold & Snow
 CountCAM 200
 Study Conducted By: Andrea

File Name : TMC 1828
 Site Code :
 Start Date : 11/06/2018
 Page No : 2

Groups Printed- Trucks

Start Time	TH 10 E Entrance Ramp Southbound						CSAH 14 Westbound						TH 10 East Exit Ramp Northbound						CSAH 14 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	0	0	0		0	0	2	3	5		0	1	0	1	2		0	0	7	0	7		14
15:30	0	0	0	0	0		0	0	2	5	7		0	1	0	0	1		0	0	6	0	6		14
15:45	0	0	0	0	0		0	0	6	1	7		0	2	0	1	3		0	0	4	0	4		14
Total	0	0	0	0	0		0	0	10	15	25		0	6	0	4	10		0	1	21	0	22		57
16:00	0	0	0	0	0		0	0	2	3	5		0	3	0	1	4		0	0	6	0	6		15
16:15	0	0	0	0	0		0	0	6	1	7		0	3	0	0	3		0	1	3	0	4		14
16:30	0	0	0	0	0		0	0	4	4	8		0	0	0	2	2		0	0	4	0	4		14
16:45	0	0	0	0	0		0	0	7	5	12		0	2	0	0	2		0	0	6	0	6		20
Total	0	0	0	0	0		0	0	19	13	32		0	8	0	3	11		0	1	19	0	20		63
17:00	0	0	0	0	0		0	0	8	5	13		0	0	0	0	0		0	1	4	0	5		18
17:15	0	0	0	0	0		0	0	2	3	5		0	0	0	2	2		0	0	1	0	1		8
17:30	0	0	0	0	0		0	0	3	2	5		0	3	0	0	3		0	0	1	0	1		9
17:45	0	0	0	0	0		0	0	0	1	1		0	3	0	2	5		0	1	2	0	3		9
Total	0	0	0	0	0		0	0	13	11	24		0	6	0	4	10		0	2	8	0	10		44
18:00	0	0	0	0	0		0	0	1	0	1		0	1	0	0	1		0	0	3	0	3		5
18:15	0	0	0	0	0		0	0	1	1	2		0	2	0	0	2		0	0	1	0	1		5
18:30	0	0	0	0	0		0	0	0	1	1		0	1	0	2	3		0	0	3	0	3		7
18:45	0	0	0	0	0		0	0	1	0	1		0	1	0	1	2		0	0	2	0	2		5
Total	0	0	0	0	0		0	0	3	2	5		0	5	0	3	8		0	0	9	0	9		22
Grand Total	0	0	0	0	0		0	0	208	180	388		0	142	0	63	205		0	30	307	0	337		930
Apprch %	0	0	0	0	0		0	0	53.6	46.4			0	69.3	0	30.7			0	8.9	91.1	0			
Total %	0	0	0	0	0		0	0	22.4	19.4	41.7		0	15.3	0	6.8	22		0	3.2	33	0	36.2		

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: TMC 1828

Study Date: 03/15/2019

Page No: 1

Signal Warrants - Summary

Major Street Approaches

Eastbound: CSAH 14

Number of Lanes : 2

Total Approach Volume: 12,727

Westbound: CSAH 14

Number of Lanes : 2

Total Approach Volume: 14,399

Minor Street Approaches

Northbound: TH 10 East Exit Ramp

Number of Lanes : 1

Total Approach Volume: 7,615

Southbound: TH 10 E Entrance Ramp

Number of Lanes : 1

Total Approach Volume: 0

Warrant Summary (Rural Values Apply)

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

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

Required volumes reached for 14 hours, 8 are needed

Warrant 1B - Interruption of Continuous Traffic.....Satisfied

Required volumes reached for 13 hours, 8 are needed

Warrant 1C - Combination of Warrants.....Satisfied

Required 1A volumes reached for 14 hours, 8 are needed

Required 1B volumes reached for 14 hours, 8 are needed

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

Number of hours (13) 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 1828

Study Date: 03/15/2019

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

14 hours meet minimums.
Warrant IS met.

Site Data Required

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

Volume Requirements

Rural Factor of 70 % applied
Veh/Hr Major = **420**

Veh/Hr Minor = **105**

Major Road CSAH 14						Minor Road TH 10 East Exit Ramp		
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met?
16:45 - 17:45	1557	+	1180	=	2737	912	0	Yes
15:45 - 16:45	1590	+	1120	=	2710	861	0	Yes
14:45 - 15:45	1332	+	1055	=	2387	843	0	Yes
17:45 - 18:45	1174	+	1022	=	2196	718	0	Yes
06:45 - 07:45	581	+	1555	=	2136	327	0	Yes
11:45 - 12:45	1027	+	1077	=	2104	650	0	Yes
13:45 - 14:45	1090	+	998	=	2088	681	0	Yes
12:45 - 13:45	1012	+	943	=	1955	618	0	Yes
10:45 - 11:45	950	+	999	=	1949	551	0	Yes
07:45 - 08:45	571	+	1324	=	1895	352	0	Yes
09:45 - 10:45	729	+	1049	=	1778	487	0	Yes
08:45 - 09:45	619	+	1087	=	1706	364	0	Yes
05:45 - 06:45	264	+	790	=	1054	144	0	Yes
18:45 - 19:45	231	+	200	=	431	107	0	Yes
05:30 - 06:30	141	+	488	=	629	74	0	No
05:15 - 06:15	57	+	229	=	286	27	0	No
22:45 - 23:45	0	+	0	=	0	0	0	No
22:30 - 23:30	0	+	0	=	0	0	0	No
22:15 - 23:15	0	+	0	=	0	0	0	No
20:00 - 21:00	0	+	0	=	0	0	0	No
23:15 - 00:15	0	+	0	=	0	0	0	No
23:30 - 00:30	0	+	0	=	0	0	0	No
00:00 - 01:00	0	+	0	=	0	0	0	No
23:00 - 00:00	0	+	0	=	0	0	0	No
23:45 - 00:45	0		0		0	0	0	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1828**

Study Date: **03/15/2019**

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

13 hours meet minimums.
Warrant IS met.

Site Data Required

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

Volume Requirements

Rural Factor of 70 % applied
Veh/Hr Major = **630**

Veh/Hr Minor = **53**

Major Road CSAH 14						Minor Road TH 10 East Exit Ramp		Met?
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
16:45 - 17:45	1557	+	1180	=	2737	912	0	Yes
15:45 - 16:45	1590	+	1120	=	2710	861	0	Yes
14:45 - 15:45	1332	+	1055	=	2387	843	0	Yes
17:45 - 18:45	1174	+	1022	=	2196	718	0	Yes
06:45 - 07:45	581	+	1555	=	2136	327	0	Yes
11:45 - 12:45	1027	+	1077	=	2104	650	0	Yes
13:45 - 14:45	1090	+	998	=	2088	681	0	Yes
12:45 - 13:45	1012	+	943	=	1955	618	0	Yes
10:45 - 11:45	950	+	999	=	1949	551	0	Yes
07:45 - 08:45	571	+	1324	=	1895	352	0	Yes
09:45 - 10:45	729	+	1049	=	1778	487	0	Yes
08:45 - 09:45	619	+	1087	=	1706	364	0	Yes
05:45 - 06:45	264	+	790	=	1054	144	0	Yes
05:30 - 06:30	141	+	488	=	629	74	0	No
18:45 - 19:45	231	+	200	=	431	107	0	No
05:15 - 06:15	57	+	229	=	286	27	0	No
22:30 - 23:30	0	+	0	=	0	0	0	No
22:15 - 23:15	0	+	0	=	0	0	0	No
22:00 - 23:00	0	+	0	=	0	0	0	No
22:45 - 23:45	0	+	0	=	0	0	0	No
00:00 - 01:00	0	+	0	=	0	0	0	No
23:45 - 00:45	0	+	0	=	0	0	0	No
19:30 - 20:30	0	+	0	=	0	0	0	No
23:00 - 00:00	0	+	0	=	0	0	0	No
23:15 - 00:15	0		0		0	0	0	No

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1828**
 Study Date: **03/15/2019**
 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

14 hours meet 1A minimums.
 14 hours meet 1B minimums.
 Warrant IS met.

Site Data Required

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

Volume Requirements

Rural Factor of 70% applied
 Warrant 1A 1B
 Veh/Hr Major = **336 504**
 Veh/Hr Minor = **84 42**

Major Road CSAH 14

Minor Road TH 10 East Exit Ramp

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1A?
16:45 - 17:45	1557	+	1180	=	2737	912	0	Yes
15:45 - 16:45	1590	+	1120	=	2710	861	0	Yes
14:45 - 15:45	1332	+	1055	=	2387	843	0	Yes
17:45 - 18:45	1174	+	1022	=	2196	718	0	Yes
06:45 - 07:45	581	+	1555	=	2136	327	0	Yes
11:45 - 12:45	1027	+	1077	=	2104	650	0	Yes
13:45 - 14:45	1090	+	998	=	2088	681	0	Yes
12:45 - 13:45	1012	+	943	=	1955	618	0	Yes
10:45 - 11:45	950	+	999	=	1949	551	0	Yes
07:45 - 08:45	571	+	1324	=	1895	352	0	Yes
09:45 - 10:45	729	+	1049	=	1778	487	0	Yes
08:45 - 09:45	619		1087		1706	364	0	Yes

Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	Met1B?
16:30 - 17:30	1595	+	1222	=	2817	891	0	Yes
15:30 - 16:30	1552	+	1086	=	2638	834	0	Yes
17:30 - 18:30	1264	+	1071	=	2335	803	0	Yes
14:30 - 15:30	1260	+	1066	=	2326	849	0	Yes
11:30 - 12:30	995	+	1092	=	2087	655	0	Yes
07:30 - 08:30	566	+	1520	=	2086	351	0	Yes
12:30 - 13:30	1035	+	955	=	1990	600	0	Yes
13:30 - 14:30	1052	+	935	=	1987	650	0	Yes
10:30 - 11:30	903	+	1043	=	1946	493	0	Yes
06:30 - 07:30	557	+	1383	=	1940	308	0	Yes
09:30 - 10:30	706	+	1029	=	1735	472	0	Yes
08:30 - 09:30	601		1092		1693	371	0	Yes

ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1828**

Study Date: **03/15/2019**

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.

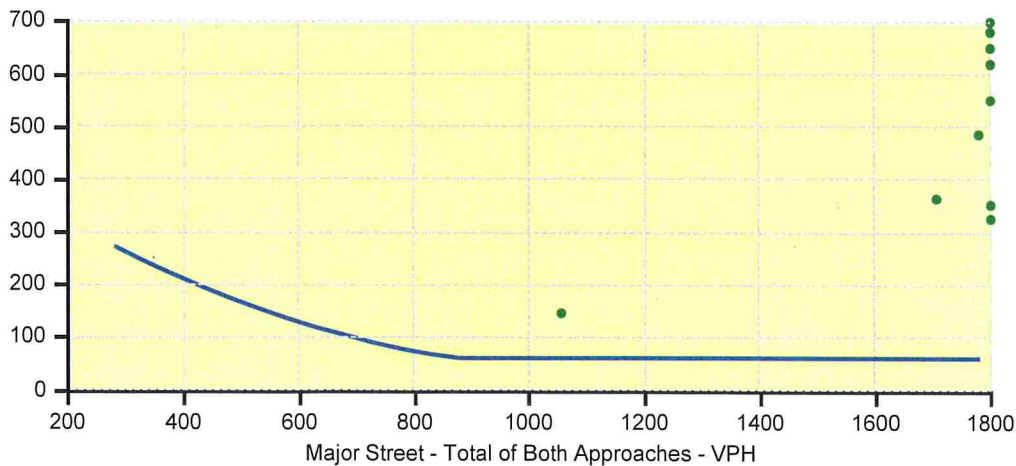
Summary

13 hours meet minimums.
Warrant IS met.

Site Data Required

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

Major Road CSAH 14						Minor Road TH 10 East Exit Ramp		Met?
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
16:45 - 17:45	1557	+	1180	=	2737	912	0	Yes
15:45 - 16:45	1590	+	1120	=	2710	861	0	Yes
14:45 - 15:45	1332	+	1055	=	2387	843	0	Yes
17:45 - 18:45	1174	+	1022	=	2196	718	0	Yes
06:45 - 07:45	581	+	1555	=	2136	327	0	Yes
11:45 - 12:45	1027	+	1077	=	2104	650	0	Yes
13:45 - 14:45	1090	+	998	=	2088	681	0	Yes
12:45 - 13:45	1012	+	943	=	1955	618	0	Yes
10:45 - 11:45	950	+	999	=	1949	551	0	Yes
07:45 - 08:45	571	+	1324	=	1895	352	0	Yes
09:45 - 10:45	729	+	1049	=	1778	487	0	Yes



ANOKA COUNTY HIGHWAY

PC-WARRANTS

TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name: **TMC 1828**

Study Date: **03/15/2019**

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

52 hours meet minimums.
Warrant IS met.

Site Data Required

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

Major Road CSAH 14						Minor Road TH 10 East Exit Ramp		Met?
Time	Major EB	+	Major WB	=	Total	Minor NB	Minor SB	
16:15 - 17:15	1632	+	1185	=	2817	896	0	Yes
16:30 - 17:30	1595	+	1222	=	2817	891	0	Yes
16:00 - 17:00	1642	+	1130	=	2772	879	0	Yes
16:45 - 17:45	1557	+	1180	=	2737	912	0	Yes
15:45 - 16:45	1590	+	1120	=	2710	861	0	Yes
15:30 - 16:30	1552	+	1086	=	2638	834	0	Yes
17:00 - 18:00	1468	+	1158	=	2626	924	0	Yes
15:15 - 16:15	1480	+	1049	=	2529	831	0	Yes
17:15 - 18:15	1358	+	1112	=	2470	878	0	Yes
15:00 - 16:00	1378	+	1055	=	2433	818	0	Yes
14:45 - 15:45	1332	+	1055	=	2387	843	0	Yes

