

Date : 6/22/04

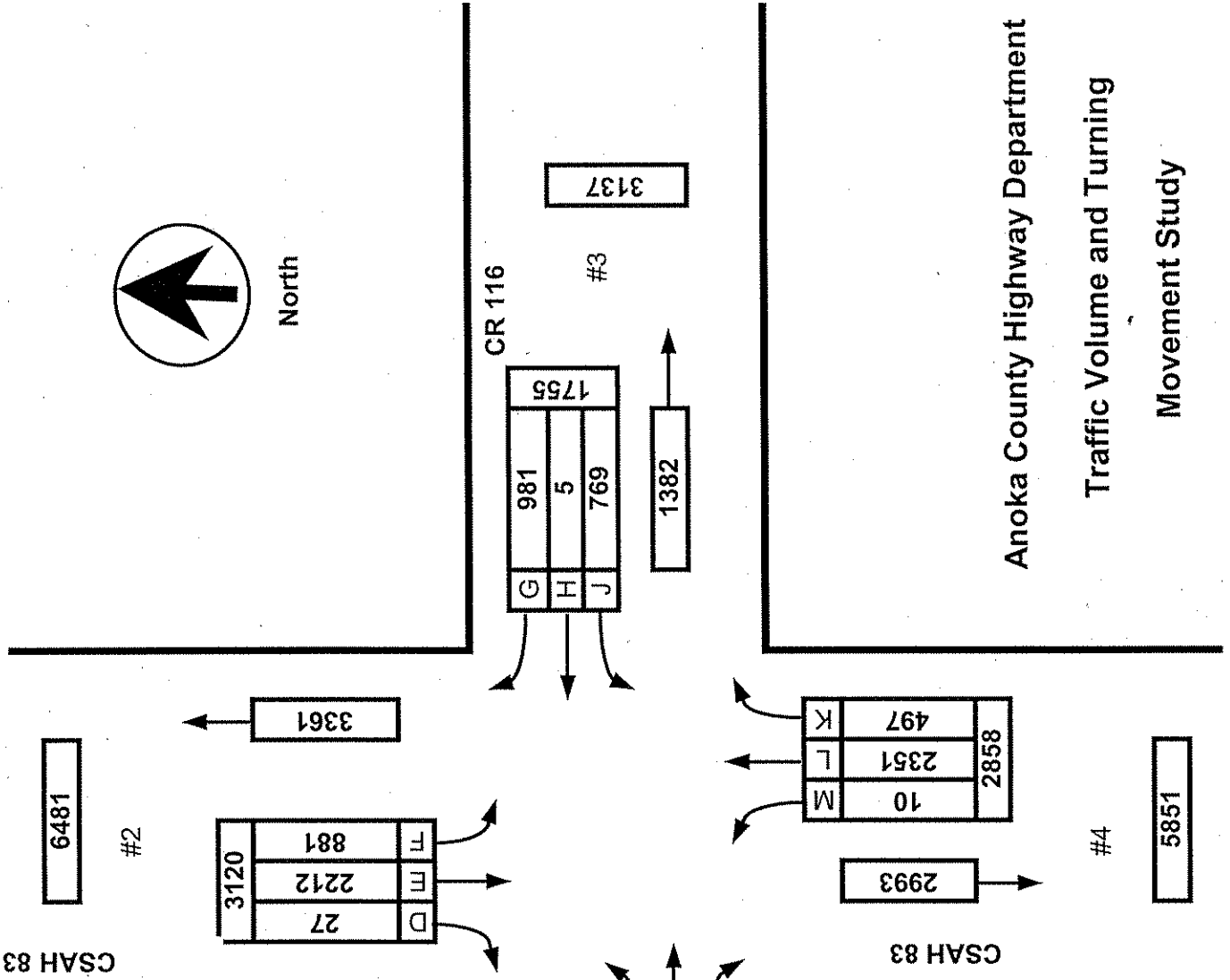
Count Number : TMC0409

Location : CSAH 83 (Armstrong Blvd.)

@ CR 116 (Industry Ave.)



North



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

Anoka County Highway Department
 Traffic Volume and Turning
 Movement Study

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

File Name : TMC0409
Site Code : 04090101
Start Date : 06/22/2004
Page No : 1

Weather: Rainy and Mild
Counter: TDC-8
Counted by: Katelyn/Kyle

Groups Printed- Unshifted

| Start Time | CSAH 83 Southbound | | | | | CR 116 Westbound | | | | | CSAH 83 Northbound | | | | | CR 116 Eastbound | | | | | Exclu. Total | Inclu. Total | Int. Total | |
|------------|--------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------|--------------|------------|----|
| | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | | | | |
| Factor | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | | | | |
| 06:00 | 15 | 51 | 1 | 7 | 67 | 4 | 0 | 3 | 1 | 7 | 0 | 2 | 6 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 82 | 90 |
| 06:15 | 42 | 55 | 1 | 3 | 98 | 3 | 0 | 3 | 0 | 6 | 0 | 10 | 6 | 1 | 16 | 0 | 1 | 0 | 1 | 1 | 5 | 121 | 126 | |
| 06:30 | 37 | 54 | 0 | 2 | 91 | 2 | 0 | 1 | 0 | 3 | 0 | 9 | 6 | 0 | 15 | 0 | 0 | 1 | 1 | 1 | 3 | 110 | 113 | |
| 06:45 | 43 | 65 | 0 | 0 | 108 | 6 | 0 | 5 | 0 | 11 | 0 | 12 | 8 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 139 | 139 | |
| Total | 137 | 225 | 2 | 12 | 364 | 15 | 0 | 12 | 1 | 27 | 0 | 33 | 26 | 1 | 59 | 0 | 1 | 1 | 2 | 2 | 16 | 452 | 468 | |
| 07:00 | 30 | 56 | 0 | 2 | 86 | 4 | 0 | 7 | 1 | 11 | 0 | 19 | 7 | 8 | 26 | 0 | 0 | 0 | 0 | 0 | 11 | 123 | 134 | |
| 07:15 | 37 | 56 | 0 | 3 | 93 | 4 | 0 | 8 | 1 | 12 | 0 | 9 | 6 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 5 | 120 | 125 | |
| 07:30 | 35 | 49 | 0 | 6 | 84 | 7 | 0 | 5 | 1 | 12 | 0 | 10 | 7 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 7 | 113 | 120 | |
| 07:45 | 36 | 45 | 1 | 2 | 82 | 12 | 0 | 8 | 2 | 20 | 0 | 13 | 11 | 3 | 24 | 0 | 0 | 0 | 0 | 0 | 7 | 126 | 133 | |
| Total | 138 | 206 | 1 | 13 | 345 | 27 | 0 | 28 | 5 | 55 | 0 | 51 | 31 | 12 | 82 | 0 | 0 | 0 | 0 | 0 | 30 | 482 | 512 | |
| 08:00 | 22 | 41 | 0 | 1 | 63 | 8 | 2 | 6 | 2 | 16 | 0 | 16 | 8 | 2 | 24 | 0 | 0 | 0 | 0 | 0 | 5 | 103 | 108 | |
| 08:15 | 21 | 35 | 0 | 1 | 56 | 7 | 0 | 8 | 1 | 15 | 0 | 8 | 1 | 0 | 9 | 3 | 0 | 0 | 2 | 3 | 4 | 83 | 87 | |
| 08:30 | 19 | 45 | 0 | 7 | 64 | 5 | 0 | 7 | 1 | 12 | 0 | 17 | 6 | 4 | 23 | 0 | 0 | 0 | 0 | 0 | 12 | 99 | 111 | |
| 08:45 | 16 | 31 | 0 | 1 | 47 | 8 | 0 | 5 | 0 | 13 | 0 | 11 | 6 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | 77 | 78 | |
| Total | 78 | 152 | 0 | 10 | 230 | 28 | 2 | 26 | 4 | 56 | 0 | 52 | 21 | 6 | 73 | 3 | 0 | 0 | 2 | 3 | 22 | 362 | 384 | |
| 09:00 | 13 | 26 | 0 | 5 | 39 | 6 | 0 | 3 | 1 | 9 | 0 | 15 | 5 | 1 | 20 | 1 | 0 | 0 | 0 | 1 | 7 | 69 | 76 | |
| 09:15 | 9 | 31 | 0 | 0 | 40 | 7 | 0 | 9 | 0 | 16 | 0 | 19 | 4 | 3 | 23 | 0 | 0 | 0 | 0 | 0 | 3 | 79 | 82 | |
| 09:30 | 13 | 23 | 0 | 4 | 36 | 6 | 0 | 3 | 0 | 9 | 0 | 17 | 4 | 4 | 21 | 0 | 0 | 0 | 0 | 0 | 8 | 66 | 74 | |
| 09:45 | 9 | 22 | 0 | 1 | 31 | 6 | 0 | 8 | 3 | 14 | 0 | 14 | 4 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 4 | 63 | 67 | |
| Total | 44 | 102 | 0 | 10 | 146 | 25 | 0 | 23 | 4 | 48 | 0 | 65 | 17 | 8 | 82 | 1 | 0 | 0 | 0 | 1 | 22 | 277 | 299 | |
| 10:00 | 9 | 29 | 0 | 0 | 38 | 4 | 0 | 6 | 0 | 10 | 0 | 15 | 1 | 1 | 16 | 1 | 0 | 0 | 0 | 1 | 1 | 65 | 66 | |
| 10:15 | 5 | 35 | 2 | 1 | 42 | 7 | 1 | 11 | 1 | 19 | 0 | 18 | 4 | 0 | 22 | 1 | 0 | 0 | 0 | 1 | 2 | 84 | 86 | |
| 10:30 | 3 | 26 | 0 | 3 | 29 | 3 | 0 | 5 | 1 | 8 | 0 | 9 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 4 | 47 | 51 | |
| 10:45 | 0 | 37 | 0 | 1 | 37 | 8 | 0 | 9 | 0 | 17 | 0 | 18 | 6 | 0 | 24 | 1 | 1 | 0 | 0 | 2 | 1 | 80 | 81 | |
| Total | 17 | 127 | 2 | 5 | 146 | 22 | 1 | 31 | 2 | 54 | 0 | 60 | 12 | 1 | 72 | 3 | 1 | 0 | 0 | 4 | 8 | 276 | 284 | |
| 11:00 | 10 | 23 | 2 | 2 | 35 | 4 | 0 | 5 | 2 | 9 | 0 | 11 | 3 | 1 | 14 | 0 | 0 | 0 | 0 | 0 | 5 | 58 | 63 | |
| 11:15 | 6 | 31 | 0 | 1 | 37 | 9 | 0 | 9 | 1 | 18 | 0 | 21 | 2 | 2 | 23 | 0 | 0 | 0 | 0 | 0 | 4 | 78 | 82 | |
| 11:30 | 13 | 26 | 0 | 0 | 39 | 2 | 0 | 17 | 1 | 19 | 0 | 25 | 4 | 2 | 29 | 0 | 0 | 2 | 1 | 2 | 4 | 89 | 93 | |
| 11:45 | 11 | 29 | 0 | 0 | 40 | 5 | 0 | 15 | 1 | 20 | 0 | 29 | 4 | 4 | 33 | 0 | 0 | 0 | 0 | 0 | 5 | 93 | 98 | |
| Total | 40 | 109 | 2 | 3 | 151 | 20 | 0 | 46 | 5 | 66 | 0 | 86 | 13 | 9 | 99 | 0 | 0 | 2 | 1 | 2 | 18 | 318 | 336 | |
| 12:00 | 8 | 34 | 0 | 0 | 42 | 7 | 0 | 12 | 0 | 19 | 1 | 33 | 8 | 1 | 42 | 0 | 0 | 0 | 0 | 0 | 1 | 103 | 104 | |
| 12:15 | 8 | 33 | 1 | 3 | 42 | 4 | 0 | 12 | 0 | 16 | 0 | 27 | 1 | 1 | 28 | 0 | 0 | 0 | 0 | 0 | 4 | 86 | 90 | |
| 12:30 | 14 | 28 | 0 | 4 | 42 | 5 | 0 | 9 | 2 | 14 | 0 | 26 | 4 | 2 | 30 | 0 | 0 | 0 | 0 | 0 | 8 | 86 | 94 | |
| 12:45 | 10 | 28 | 0 | 2 | 38 | 3 | 0 | 10 | 1 | 13 | 0 | 25 | 2 | 1 | 27 | 1 | 0 | 1 | 1 | 2 | 5 | 80 | 85 | |
| Total | 40 | 123 | 1 | 9 | 164 | 19 | 0 | 43 | 3 | 62 | 1 | 111 | 15 | 5 | 127 | 1 | 0 | 1 | 1 | 2 | 18 | 355 | 373 | |
| 13:00 | 10 | 26 | 0 | 1 | 36 | 4 | 0 | 9 | 1 | 13 | 0 | 24 | 3 | 1 | 27 | 0 | 0 | 0 | 0 | 0 | 3 | 76 | 79 | |
| 13:15 | 15 | 32 | 1 | 1 | 48 | 1 | 0 | 18 | 0 | 19 | 0 | 33 | 4 | 1 | 37 | 0 | 0 | 0 | 0 | 0 | 2 | 104 | 106 | |
| 13:30 | 12 | 28 | 0 | 3 | 40 | 9 | 0 | 14 | 1 | 23 | 1 | 33 | 1 | 1 | 35 | 0 | 0 | 1 | 0 | 1 | 5 | 99 | 104 | |
| 13:45 | 12 | 31 | 1 | 3 | 44 | 3 | 0 | 12 | 0 | 15 | 0 | 34 | 3 | 1 | 37 | 0 | 0 | 0 | 0 | 0 | 4 | 96 | 100 | |
| Total | 49 | 117 | 2 | 8 | 168 | 17 | 0 | 53 | 2 | 70 | 1 | 124 | 11 | 4 | 136 | 0 | 0 | 1 | 0 | 1 | 14 | 375 | 389 | |
| 14:00 | 8 | 39 | 0 | 1 | 47 | 11 | 0 | 13 | 5 | 24 | 0 | 52 | 12 | 3 | 64 | 0 | 0 | 0 | 1 | 0 | 10 | 135 | 145 | |
| 14:15 | 11 | 35 | 0 | 2 | 46 | 14 | 0 | 14 | 2 | 28 | 0 | 39 | 13 | 4 | 52 | 0 | 0 | 0 | 0 | 0 | 8 | 126 | 134 | |
| 14:30 | 6 | 39 | 0 | 4 | 45 | 19 | 0 | 15 | 2 | 34 | 1 | 51 | 10 | 4 | 62 | 0 | 0 | 0 | 0 | 0 | 10 | 141 | 151 | |
| 14:45 | 13 | 25 | 0 | 5 | 38 | 12 | 0 | 16 | 2 | 28 | 1 | 45 | 8 | 5 | 54 | 0 | 0 | 0 | 0 | 0 | 12 | 120 | 132 | |
| Total | 38 | 138 | 0 | 12 | 176 | 56 | 0 | 58 | 11 | 114 | 2 | 187 | 43 | 16 | 232 | 0 | 0 | 0 | 1 | 0 | 40 | 522 | 562 | |
| 15:00 | 10 | 26 | 0 | 3 | 36 | 25 | 0 | 14 | 4 | 39 | 0 | 61 | 6 | 4 | 67 | 2 | 0 | 0 | 1 | 2 | 12 | 144 | 156 | |
| 15:15 | 8 | 28 | 1 | 3 | 37 | 24 | 0 | 19 | 3 | 43 | 0 | 59 | 11 | 4 | 70 | 0 | 0 | 0 | 0 | 0 | 10 | 150 | 160 | |
| 15:30 | 8 | 39 | 0 | 0 | 47 | 52 | 0 | 47 | 2 | 99 | 0 | 45 | 16 | 4 | 61 | 2 | 0 | 0 | 2 | 2 | 8 | 209 | 217 | |
| 15:45 | 10 | 32 | 1 | 4 | 43 | 22 | 0 | 35 | 3 | 57 | 0 | 69 | 12 | 2 | 81 | 0 | 0 | 0 | 0 | 0 | 9 | 181 | 190 | |
| Total | 36 | 125 | 2 | 10 | 163 | 123 | 0 | 115 | 12 | 238 | 0 | 234 | 45 | 14 | 279 | 4 | 0 | 0 | 3 | 4 | 39 | 684 | 723 | |
| 16:00 | 11 | 35 | 0 | 3 | 46 | 28 | 1 | 48 | 3 | 77 | 0 | 71 | 17 | 5 | 88 | 1 | 0 | 0 | 1 | 1 | 12 | 212 | 224 | |
| 16:15 | 15 | 26 | 1 | 3 | 42 | 35 | 0 | 40 | 4 | 75 | 1 | 55 | 22 | 6 | 78 | 0 | 0 | 1 | 0 | 1 | 13 | 196 | 209 | |
| 16:30 | 18 | 26 | 0 | 1 | 44 | 40 | 0 | 47 | 2 | 87 | 0 | 74 | 19 | 6 | 93 | 1 | 0 | 0 | 1 | 1 | 10 | 225 | 235 | |
| 16:45 | 13 | 36 | 1 | 1 | 50 | 38 | 0 | 41 | 2 | 79 | 0 | 67 | 23 | 4 | 90 | 0 | 1 | 0 | 0 | 1 | 7 | 220 | 227 | |
| Total | 57 | 123 | 2 | 8 | 182 | 141 | 1 | 176 | 11 | 318 | 1 | 267 | 81 | 21 | 349 | 2 | 1 | 1 | 2 | 4 | 42 | 853 | 895 | |
| 17:00 | 21 | 36 | 1 | 1 | 58 | 17 | 0 | 25 | 3 | 42 | 0 | 37 | 11 | 5 | 48 | 0 | 0 | 0 | 0 | 0 | 9 | 148 | 157 | |
| 17:15 | 12 | 53 | 1 | 2 | 66 | 30 | 0 | 29 | 0 | 59 | 1 | 89 | 23 | 3 | 113 | 1 | 0 | 1 | 1 | 2 | 6 | 240 | 246 | |
| 17:30 | 18 | 42 | 0 | 2 | 60 | 30 | 0 | 32 | 4 | 62 | 0 | 76 | 19 | 4 | 95 | 1 | 0 | 0 | 1 | 1 | 11 | 218 | 229 | |
| 17:45 | 8 | 38 | 1 | 1 | 47 | 22 | 0 | 33 | 0 | 55 | 0 | 73 | 9 | 1 | 82 | 1 | 0 | 0 | 1 | 1 | 3 | 185 | 188 | |
| Total | 59 | 169 | 3 | 6 | 231 | 99 | 0 | 119 | 7 | 218 | 1 | 275 | 62 | 13 | 338 | 3 | 0 | 1 | 3 | 4 | 29 | 791 | 820 | |

Anoka County Highway Department
 Traffic Engineering
 Traffic Volume and Turning Movement Stud

File Name : TMC0409
 Site Code : 04090101
 Start Date : 06/22/2004
 Page No : 2

Weather: Rainy and Mild
 Counter: TDC-8
 Counted by: Katelyn/Kyle

Groups Printed- Unshifted

| Start Time | CSAH 83 Southbound | | | | | CR 116 Westbound | | | | | CSAH 83 Northbound | | | | | CR 116 Eastbound | | | | | Exclu. Total | Inclu. Total | Int. Total |
|-------------|--------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------------|------|-------|-------|------------|------------------|------|-------|-------|------------|--------------|--------------|------------|
| | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | Left | Thru | Right | Heavy | App. Total | | | |
| Factor | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | 1.0 | 1.0 | 1.0 | 1.0 | | | | |
| 18:00 | 12 | 25 | 1 | 1 | 38 | 26 | 0 | 33 | 2 | 59 | 1 | 75 | 14 | 4 | 90 | 1 | 0 | 0 | 0 | 1 | 7 | 188 | 195 |
| 18:15 | 10 | 31 | 0 | 1 | 41 | 24 | 0 | 31 | 2 | 55 | 0 | 77 | 7 | 2 | 84 | 1 | 0 | 0 | 1 | 1 | 6 | 181 | 187 |
| 18:30 | 12 | 39 | 1 | 1 | 52 | 15 | 0 | 16 | 2 | 31 | 1 | 59 | 9 | 2 | 69 | 2 | 0 | 0 | 2 | 2 | 7 | 154 | 161 |
| 18:45 | 7 | 40 | 1 | 2 | 48 | 14 | 0 | 19 | 1 | 33 | 0 | 56 | 4 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 3 | 141 | 144 |
| Total | 41 | 135 | 3 | 5 | 179 | 79 | 0 | 99 | 7 | 178 | 2 | 267 | 34 | 8 | 303 | 4 | 0 | 0 | 3 | 4 | 23 | 664 | 687 |
| 19:00 | 13 | 39 | 1 | 2 | 53 | 14 | 0 | 17 | 1 | 31 | 0 | 72 | 9 | 0 | 81 | 2 | 0 | 0 | 2 | 2 | 5 | 167 | 172 |
| 19:15 | 18 | 39 | 2 | 3 | 59 | 15 | 0 | 26 | 0 | 41 | 0 | 61 | 13 | 1 | 74 | 0 | 0 | 0 | 0 | 0 | 4 | 174 | 178 |
| 19:30 | 5 | 41 | 0 | 0 | 46 | 4 | 0 | 8 | 1 | 12 | 0 | 27 | 6 | 0 | 33 | 2 | 0 | 0 | 2 | 2 | 3 | 93 | 96 |
| 19:45 | 9 | 22 | 2 | 4 | 33 | 6 | 0 | 12 | 1 | 18 | 1 | 59 | 9 | 1 | 69 | 3 | 1 | 0 | 1 | 4 | 7 | 124 | 131 |
| Total | 45 | 141 | 5 | 9 | 191 | 39 | 0 | 63 | 3 | 102 | 1 | 219 | 37 | 2 | 257 | 7 | 1 | 0 | 5 | 8 | 19 | 558 | 577 |
| 20:00 | 4 | 25 | 1 | 2 | 30 | 8 | 0 | 11 | 0 | 19 | 0 | 47 | 10 | 1 | 57 | 1 | 0 | 0 | 1 | 1 | 4 | 107 | 111 |
| 20:15 | 5 | 35 | 1 | 2 | 41 | 6 | 1 | 13 | 0 | 20 | 0 | 45 | 5 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 2 | 111 | 113 |
| 20:30 | 12 | 40 | 0 | 0 | 52 | 9 | 0 | 16 | 0 | 25 | 0 | 30 | 6 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 0 | 113 | 113 |
| 20:45 | 13 | 16 | 0 | 1 | 29 | 7 | 0 | 8 | 0 | 15 | 0 | 40 | 4 | 1 | 44 | 0 | 0 | 3 | 0 | 3 | 2 | 91 | 93 |
| Total | 34 | 116 | 2 | 5 | 152 | 30 | 1 | 48 | 0 | 79 | 0 | 162 | 25 | 2 | 187 | 1 | 0 | 3 | 1 | 4 | 8 | 422 | 430 |
| 21:00 | 11 | 35 | 0 | 0 | 46 | 6 | 0 | 13 | 0 | 19 | 0 | 56 | 10 | 1 | 66 | 0 | 0 | 0 | 0 | 0 | 1 | 131 | 132 |
| 21:15 | 9 | 19 | 0 | 0 | 28 | 10 | 0 | 12 | 0 | 22 | 0 | 40 | 4 | 1 | 44 | 0 | 0 | 0 | 0 | 0 | 1 | 94 | 95 |
| 21:30 | 7 | 25 | 0 | 0 | 32 | 9 | 0 | 6 | 0 | 15 | 1 | 35 | 6 | 1 | 42 | 0 | 0 | 0 | 0 | 0 | 1 | 89 | 90 |
| 21:45 | 1 | 25 | 0 | 0 | 26 | 4 | 0 | 10 | 0 | 14 | 0 | 27 | 4 | 0 | 31 | 0 | 0 | 2 | 0 | 2 | 0 | 73 | 73 |
| Total | 28 | 104 | 0 | 0 | 132 | 29 | 0 | 41 | 0 | 70 | 1 | 158 | 24 | 3 | 183 | 0 | 0 | 2 | 0 | 2 | 3 | 387 | 390 |
| Grand Total | 881 | 2212 | 27 | 125 | 3120 | 769 | 5 | 981 | 77 | 1755 | 10 | 2351 | 497 | 125 | 2858 | 29 | 4 | 12 | 24 | 45 | 351 | 7778 | 8129 |
| Approch % | 28.2 | 70.9 | 0.9 | | | 43.8 | 0.3 | 55.9 | | | 0.3 | 82.3 | 17.4 | | | 64.4 | 8.9 | 26.7 | | | | | |
| Total % | 11.3 | 28.4 | 0.3 | | 40.1 | 9.9 | 0.1 | 12.6 | | 22.6 | 0.1 | 30.2 | 6.4 | | 36.7 | 0.4 | 0.1 | 0.2 | | 0.6 | 4.3 | 95.7 | |

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

Study Name : TMC0409
Study Date : 06/25/04
Page No. : 1

Signal Warrants - Summary

Major Street Approaches

Northbound: CSAH 83
Number of Lanes: 2
Approach Speed: 55
Total Approach Volume: 2,858

Southbound: CSAH 83
Number of Lanes: 1
Approach Speed: 55
Total Approach Volume: 3,120

Minor Street Approaches

Eastbound: CR 116
Number of Lanes: 1

Total Approach Volume: 45

Westbound: CR 116
Number of Lanes: 2

Total Approach Volume: 1,755

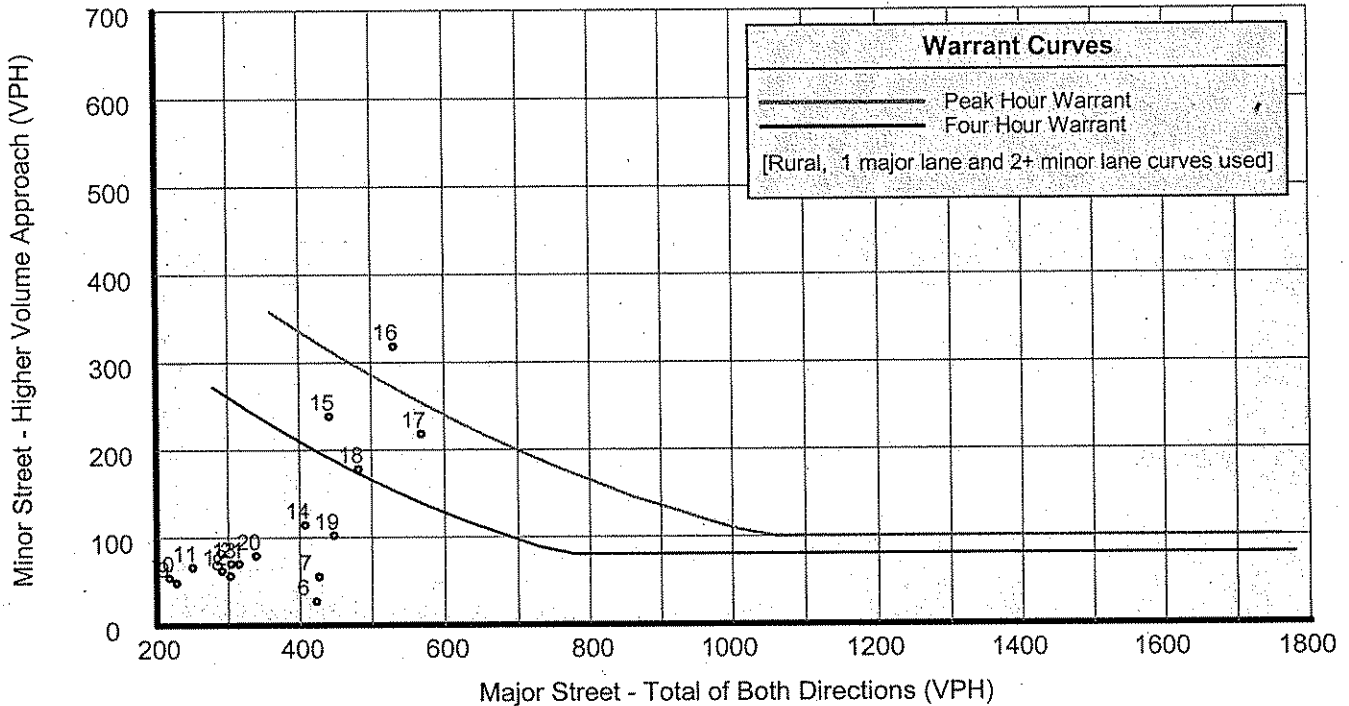
Warrant Summary (Rural values apply.)

| | |
|---|----------------------|
| Warrant 1 - Eight Hour Vehicular Volumes | Not Satisfied |
| Warrant 1A - Minimum Vehicular Volume | Not Satisfied |
| Required volumes reached for 4 hours, 8 are needed | |
| Warrant 1B - Interruption of Continuous Traffic | Not Satisfied |
| Required volumes reached for 2 hours, 8 are needed | |
| Warrant 1 A&B - Combination of Warrants | Not Satisfied |
| Required volumes reached for 4 hours, 8 are needed | |
| Warrant 2 - Four Hour Volumes | Satisfied |
| Number of hours (4) volumes exceed minimum >= minimum required (4). | |
| Warrant 3 - Peak Hour | Satisfied |
| Warrant 3A - Peak Hour Volumes | Satisfied |
| Volumes exceed minimums for at least one hour. | |
| Warrant 3B - Peak Hour Delay | Satisfied |
| Number of hours (5) volumes exceed minimum >= required (1). Delay data not evaluated. | |
| 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 |

ANOKA COUNTY HIGHWAY PC-WARRANTS TRAFFIC SIGNAL WARRANT ANALYSIS

Study Name : TMC0409
Study Date : 06/25/04
Page No. : 2

Signal Warrants - Summary



Analysis of 8-Hour Volume Warrants:

| Hour Begin | Major Total | Higher Minor Vol | Dir | War-1A | | | War-1B | | | War-1A&B | | |
|------------|-------------|------------------|-----|------------|------------|--------|------------|------------|--------|------------|------------|--------|
| | | | | Major Crit | Minor Crit | Meets? | Major Crit | Minor Crit | Meets? | Major Crit | Minor Crit | Meets? |
| 00:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 01:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 02:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 03:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 04:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 05:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 06:00 | 423 | 27 | WB | 350-Yes | 140-No | Major | 525-No | 70-No | --- | 420-Yes | 112-No | Major |
| 07:00 | 427 | 55 | WB | 350-Yes | 140-No | Major | 525-No | 70-No | --- | 420-Yes | 112-No | Major |
| 08:00 | 303 | 56 | WB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 09:00 | 228 | 48 | WB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 10:00 | 218 | 54 | WB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 11:00 | 250 | 66 | WB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 12:00 | 291 | 62 | WB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 13:00 | 304 | 70 | WB | 350-No | 140-No | --- | 525-No | 70-Yes | Minor | 420-No | 112-No | --- |
| 14:00 | 408 | 114 | WB | 350-Yes | 140-No | Major | 525-No | 70-Yes | Minor | 420-No | 112-Yes | Minor |
| 15:00 | 442 | 238 | WB | 350-Yes | 140-Yes | Both | 525-No | 70-Yes | Minor | 420-Yes | 112-Yes | Both |
| 16:00 | 531 | 318 | WB | 350-Yes | 140-Yes | Both | 525-Yes | 70-Yes | Both | 420-Yes | 112-Yes | Both |
| 17:00 | 569 | 218 | WB | 350-Yes | 140-Yes | Both | 525-Yes | 70-Yes | Both | 420-Yes | 112-Yes | Both |
| 18:00 | 482 | 178 | WB | 350-Yes | 140-Yes | Both | 525-No | 70-Yes | Minor | 420-Yes | 112-Yes | Both |
| 19:00 | 448 | 102 | WB | 350-Yes | 140-No | Major | 525-No | 70-Yes | Minor | 420-Yes | 112-No | Major |
| 20:00 | 339 | 79 | WB | 350-No | 140-No | --- | 525-No | 70-Yes | Minor | 420-No | 112-No | --- |
| 21:00 | 315 | 70 | WB | 350-No | 140-No | --- | 525-No | 70-Yes | Minor | 420-No | 112-No | --- |
| 22:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |
| 23:00 | 0 | 0 | EB | 350-No | 140-No | --- | 525-No | 70-No | --- | 420-No | 112-No | --- |

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

Study Name : TMC0409
Study Date : 06/25/04

Multi-Way Stop Warrant Report

Major Street Approaches

Northbound: CSAH 83
Total Approach Volume: 2,858
Approach Speed: 55

Southbound: CSAH 83
Total Approach Volume: 3,120
Approach Speed: 55

Minor Street Approaches

Eastbound: CR 116
Total Approach Volume: 45

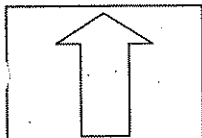
Westbound: CR 116
Total Approach Volume: 1,755

Warrant Summary

- Criteria A - Interim Measure** Not Evaluated
If traffic signals are justified, stop signs can be installed as an interim measure.
- Criteria B - Crash Experience** Not Evaluated
Number of crashes (0) is less than the minimum required (5).
- Criteria C - Minimum Volumes and Delays** Not Satisfied
Delay data not evaluated
Required volumes reached for 4 hours, 8 are needed
- Criteria D - 80% of Volumes, Delays, and Crashes** Not Evaluated
Delay data not evaluated
Required volumes reached for 4 hours, 8 are needed

Analysis of 8-Hour Volume Warrants:

| Time | Major Crit Total | Minor Total | Crit C | | | Crit D | | |
|---------------|---------------------|----------------|------------|------------|--------|------------|------------|--------|
| | | | Major Crit | Minor Crit | Meets? | Major Crit | Minor Crit | Meets? |
| 00:00 - 01:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 01:00 - 02:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 02:00 - 03:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 03:00 - 04:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 04:00 - 05:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 05:00 - 06:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 06:00 - 07:00 | 423 | 29 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 07:00 - 08:00 | 427 | 55 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 08:00 - 09:00 | 303 | 59 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 09:00 - 10:00 | 228 | 49 | 210-Yes | 140-No | Major | 240-No | 160-No | No |
| 10:00 - 11:00 | 218 | 58 | 210-Yes | 140-No | Major | 240-No | 160-No | No |
| 11:00 - 12:00 | 250 | 68 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 12:00 - 13:00 | 291 | 64 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 13:00 - 14:00 | 304 | 71 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 14:00 - 15:00 | 408 | 114 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 15:00 - 16:00 | 442 | 242 | 210-Yes | 140-Yes | Both | 240-Yes | 160-Yes | Both |
| 16:00 - 17:00 | 531 | 322 | 210-Yes | 140-Yes | Both | 240-Yes | 160-Yes | Both |
| 17:00 - 18:00 | 569 | 222 | 210-Yes | 140-Yes | Both | 240-Yes | 160-Yes | Both |
| 18:00 - 19:00 | 482 | 182 | 210-Yes | 140-Yes | Both | 240-Yes | 160-Yes | Both |
| 19:00 - 20:00 | 448 | 110 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 20:00 - 21:00 | 339 | 83 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 21:00 - 22:00 | 315 | 72 | 210-Yes | 140-No | Major | 240-Yes | 160-No | Major |
| 22:00 - 23:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |
| 23:00 - 00:00 | 0 | 0 | 210-No | 140-No | No | 240-No | 160-No | No |



NORTH

| |
|-------------------|
| APP. #1 = CR 116 |
| APP. #2 = CSAH 83 |
| APP. #3 = CR 116 |
| APP. #4 = CSAH 83 |

COUNT LOCATION:

CSAH 83 (Armstrong Blvd.) @

DATE:

06/22/2004

CR 116 (Industry Ave.)

| | | | |
|---------|---------|---------|---------|
| APP. #1 | APP. #2 | APP. #3 | APP. #4 |
|---------|---------|---------|---------|

HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT


A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.

B. RV- A HEAVY VEHICLE OPERATED BY A PRIVATE MOTORIST AND INVOLVED IN THE TRANSPORT OF RECREATIONAL EQUIPMENT OR FACILITIES.

C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

| TIME | PEDESTRIANS | | | | | HEAVY VEHICLES | | |
|---------------------|-------------|---------|---------|---------|--------------|---------------------|--------------|------------|
| | APP. #1 | APP. #2 | APP. #3 | APP. #4 | 15 MIN TOT | TRUCKS | RV | BUS |
| 6:00-6:15AM | | | | | | 8 | | |
| 6:15-6:30 | | | | | | 4 | | |
| 6:30-6:45 | | | | | | 3 | | |
| 6:45-7:00 | | | | | | | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 15 |
| 7:00-7:15 | | | | | | 9 | | 2 |
| 7:15-7:30 | | | | | | 4 | | 1 |
| 7:30-7:45 | | | | | | 7 | | |
| 7:45-8:00 | | | | | | 6 | | 1 |
| HOURLY TOTAL | | | | | 3 | HOURLY TOTAL | | 30 |
| 8:00-8:15 | | 1 | | | 1 | 5 | | |
| 8:15-8:30 | | | | 1 | | 3 | | |
| 8:30-8:45 | | | | | | 11 | | 2 |
| 8:45-9:00 | | | | | | 1 | | |
| HOURLY TOTAL | | | | | 1 | HOURLY TOTAL | | 22 |
| 9:00-9:15 | | | | | | 7 | | |
| 9:15-9:30 | | | | | | 3 | | |
| 9:30-9:45 | | | | | | 8 | | |
| 9:45-10:00 | | | | | | 4 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 22 |
| 10:00-10:15 | | | | | | 1 | | |
| 10:15-10:30 | | | | | | 2 | | |
| 10:30-10:45 | | | | 1 | 1 | 4 | | |
| 10:45-11:00 | | | | | | 1 | | |
| HOURLY TOTAL | | | | | 1 | HOURLY TOTAL | | 8 |
| 11:00-11:15 | | | | | | 4 | | |
| 11:15-11:30 | | | | | | 4 | | |
| 11:30-11:45 | | | | | | 4 | | |
| 11:45-12:00 | | | | | | 5 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 17 |
| 12:00-12:15 | | | | | | 1 | | |
| 12:15-12:30 | | 2 | | | 2 | 4 | | |
| 12:30-12:45 | | | | | | 7 | | 2 |
| 12:45-1:00 | | | | 2 | 2 | 5 | | |
| HOURLY TOTAL | | | | | 4 | HOURLY TOTAL | | 19 |
| 1:00-1:15 | | | | | | 2 | | 1 |
| 1:15-1:30 | | | | | | 2 | | |
| 1:30-1:45 | | | | | | 4 | | 1 |
| 1:45-2:00 | | | | | | 4 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 14 |
| | | | | | TOTAL | | TOTAL | 132 |

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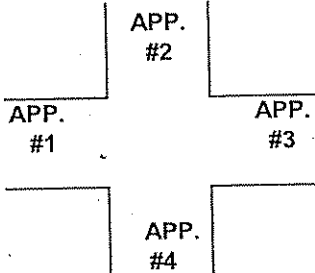

NORTH
 APP. #1 = CR 116
 APP. #2 = CSAH 83
 APP. #3 = CR 116
 APP. #4 = CSAH 83

COUNT LOCATION:

CSAH 83 (Armstrong Blvd.) @
 CR 116 (Industry Ave.)

DATE:

06/17/2004



HEAVY VEHICLE- ANY VEHICLE HAVING MORE THAN FOUR TIRES TOUCHING THE PAVEMENT
 A. TRUCKS- A HEAVY VEHICLE INVOLVED PRIMARILY IN THE TRANSPORT OF GOODS OR IN THE DELIVERY OF A SERVICE.
 B. RV- A HEAVY VEHICLE OPERATED BY A PRIVATE MOTORIST AND INVOLVED IN THE TRANSPORT OF RECREATIONAL EQUIPMENT OR FACILITIES.
 C. BUSES- A HEAVY VEHICLE INVOLVED IN THE TRANSPORTATION OF GROUPS OF PEOPLE.

| TIME | PEDESTRIANS | | | | | HEAVY VEHICLES | | |
|---------------------|-------------|---------|---------|---------|------------|---------------------|----|------------|
| | APP. #1 | APP. #2 | APP. #3 | APP. #4 | 15 MIN TOT | TRUCKS | RV | BUS |
| 2:00-2:15PM | | | | | | 10 | | |
| 2:15-2:30 | | | | | | 7 | | 1 |
| 2:30-2:45 | | | | 3 | 3 | 10 | | |
| 2:45-3:00 | | | | | | 12 | | |
| HOURLY TOTAL | | | | | 3 | HOURLY TOTAL | | 40 |
| 3:00-3:15 | | | | | | 12 | | |
| 3:15-3:30 | | | | | | 10 | | |
| 3:30-3:45 | | | | | | 7 | 1 | |
| 3:45-4:00 | | | | | | 9 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 39 |
| 4:00-4:15 | | | | | | 12 | | |
| 4:15-4:30 | | | | | | 12 | 1 | |
| 4:30-4:45 | | | | | | 9 | 1 | |
| 4:45-5:00 | | | | | | 7 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 42 |
| 5:00-5:15 | | | | | | 9 | | |
| 5:15-5:30 | | | | | | 6 | | |
| 5:30-5:45 | | | | | | 11 | | |
| 5:45-6:00 | | | | | | 3 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 29 |
| 6:00-6:15 | | | | | | 7 | | |
| 6:15-6:30 | | | | | | 6 | | |
| 6:30-6:45 | | | | | | 7 | | |
| 6:45-7:00 | | 2 | | | 2 | 3 | | |
| HOURLY TOTAL | | | | | 2 | HOURLY TOTAL | | 23 |
| 7:00-7:15 | | | | 2 | 2 | 5 | | |
| 7:15-7:30 | | | | | | 4 | | |
| 7:30-7:45 | | | | | | 3 | | |
| 7:45-8:00 | | | | | | 5 | 1 | |
| HOURLY TOTAL | | | | | 2 | HOURLY TOTAL | | 18 |
| 8:00-8:15 | | | | | | 5 | | |
| 8:15-8:30 | | | | | | 2 | | |
| 8:30-8:45 | | | | | | | | |
| 8:45-9:00 | | | | | | 2 | | |
| HOURLY TOTAL | | | | | | HOURLY TOTAL | | 9 |
| 9:00-9:15 | | 2 | | | 2 | 1 | | |
| 9:15-9:30 | | 2 | | | 2 | 1 | | |
| 9:30-9:45 | | | | | | 1 | | |
| 9:45-10:00 | | | | | | | | |
| HOURLY TOTAL | | | | | 4 | HOURLY TOTAL | | 3 |
| TOTAL | | | | | 11 | TOTAL | | 162 |

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