SPECIFICATION REFERENCE

# DESIGN FACTORS FOR A DESIGN SPEED OF 35 MPH (RURAL) USING E= 8% MAX.

| DESIGN VELOCITY =35 | | WIDTH= 18 FT | | | WIDTH=20 FT | | | WIDTH=22 FT | | | WIDTH=24 FT | | | WIDTH=48 FT | | | WIDTH=72 FT | | | INTERCHANGE RAMPS WIDTH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DESIGN SOFTWARE EQUIVALENTS (NUMBER OF LANES AT LANE WIDTH) | | | | | | | | | | | | | | | | | | | | | |
| | | 1 @ 9' | | | 1 @ 10' | | | 1 @ 11' | | | 1 @ 12' | | | 2 @ 12' | | | 3 @ 12' | | | 16 FT | | 18 FT | |
| RADIUS(FT) | E(%) | CR | LS | w | CR | LS | w | CR | LS | w | CR | LS | w | CR | LS | w | CR | LS | w | CR | LS | CR | LS |
| 5000 | NC | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0 |
| 3149 | 2.0 | 30 | 30 | 0.0 | 33 | 33 | 0.0 | 36 | 36 | 0.0 | 39 | 39 | 0.0 | 59 | 59 | 0.0 | 78 | 78 | 0.0 | 46 | 46 | 48 | 48 |
| 2866 | 2.1 | 30 | 31 | 0.0 | 33 | 34 | 0.0 | 36 | 38 | 0.0 | 39 | 41 | 0.0 | 59 | 61 | 0.0 | 78 | 82 | 0.0 | 46 | 48 | 48 | 51 |
| 2865 | 2.2 | 30 | 32 | 0.0 | 33 | 36 | 0.0 | 36 | 40 | 0.0 | 39 | 43 | 0.0 | 59 | 64 | 0.0 | 78 | 86 | 0.0 | 46 | 50 | 48 | 53 |
| 2835 | 2.2 | 30 | 32 | 0.0 | 33 | 36 | 0.0 | 36 | 40 | 0.0 | 39 | 43 | 0.0 | 59 | 64 | 0.0 | 78 | 86 | 0.0 | 46 | 50 | 48 | 53 |
| 2698 | 2.3 | 30 | 34 | 0.0 | 33 | 38 | 0.0 | 36 | 41 | 0.0 | 39 | 45 | 0.0 | 59 | 67 | 0.0 | 78 | 90 | 0.0 | 46 | 52 | 48 | 56 |
| 2573 | 2.4 | 30 | 35 | 0.0 | 33 | 39 | 0.0 | 36 | 43 | 0.0 | 33 | 47 | 0.0 | 59 | 70 | 0.0 | 78 | 93 | 0.0 | 46 | 55 | 48 | 58 |
| 2457 | 2.5 | 96 | 120 | 2.0 | 33 | 41 | 0.0 | 36 | 45 | 0.0 | 39 | 49 | 0.0 | 59 | 73 | 0.0 | 78 | 97 | 0.0 | 46 | 57 | 48 | 60 |
| 2350 | 2.6 | 93 | 120 | 2.0 | 33 | 42 | 0.0 | 36 | 47 | 0.0 | 39 | 51 | 0.0 | 59 | 76 | 0.0 | 78 | 101 | 0.0 | 46 | 59 | 48 | 63 |
| 2251 | 2.7 | 89 | 120 | 2.0 | 33 | 44 | 0.0 | 36 | 48 | 0.0 | 39 | 53 | 0.0 | 59 | 79 | 0.0 | 78 | 105 | 0.0 | 46 | 61 | 48 | 65 |
| 2159 | 2.8 | 86 | 120 | 2.0 | 33 | 46 | 0.0 | 36 | 50 | 0.0 | 39 | 55 | 0.0 | 59 | 82 | 0.0 | 78 | 109 | 0.0 | 46 | 64 | 48 | 68 |
| 2073 | 2.9 | 83 | 120 | 2.1 | 33 | 47 | 0.0 | 36 | 52 | 0.0 | 39 | 57 | 0.0 | 59 | 85 | 0.0 | 78 | 113 | 0.0 | 46 | 66 | 48 | 70 |
| 1993 | 3.0 | 80 | 120 | 2.1 | 33 | 49 | 0.0 | 36 | 54 | 0.0 | 39 | 59 | 0.0 | 59 | 88 | 0.0 | 78 | 117 | 0.0 | 46 | 68 | 48 | 72 |
| 1917 | 3.1 | 78 | 120 | 2.1 | 33 | 50 | 0.0 | 36 | 55 | 0.0 | 39 | 60 | 0.0 | 59 | 90 | 0.0 | 78 | 120 | 0.0 | 46 | 70 | 48 | 75 |
| 1847 | 3.2 | 75 | 120 | 2.1 | 33 | 52 | 0.0 | 36 | 57 | 0.0 | 39 | 62 | 0.0 | 59 | 93 | 0.0 | 78 | 124 | 0.0 | 46 | 73 | 48 | 77 |
| 1780 | 3.3 | 73 | 120 | 2.2 | 33 | 54 | 0.0 | 36 | 59 | 0.0 | 39 | 64 | 0.0 | 59 | 96 | 0.0 | 78 | 128 | 0.0 | 46 | 75 | 48 | 80 |
| 1717 | 3.4 | 71 | 120 | 2.2 | 33 | 55 | 0.0 | 36 | 61 | 0.0 | 39 | 66 | 0.0 | 59 | 99 | 0.0 | 78 | 132 | 0.0 | 46 | 77 | 48 | 82 |
| 1658 | 3.5 | 69 | 120 | 2.2 | 33 | 57 | 0.0 | 36 | 63 | 0.0 | 39 | 68 | 0.0 | 59 | 102 | 0.0 | 78 | 136 | 0.0 | 46 | 79 | 48 | 84 |
| 1602 | 3.6 | 67 | 120 | 2.2 | 33 | 59 | 0.0 | 36 | 64 | 0.0 | 39 | 70 | 0.0 | 59 | 105 | 0.0 | 78 | 140 | 0.0 | 46 | 82 | 48 | 87 |
| 1548 | 3.7 | 65 | 120 | 2.3 | 33 | 60 | 0.0 | 36 | 66 | 0.0 | 39 | 72 | 0.0 | 59 | 108 | 0.0 | 78 | 144 | 0.0 | 46 | 84 | 48 | 89 |
| 1497 | 3.8 | 64 | 120 | 2.3 | 33 | 62 | 0.0 | 36 | 68 | 0.0 | 39 | 74 | 0.0 | 59 | 111 | 0.0 | 78 | 148 | 0.0 | 46 | 86 | 48 | 92 |
| 1449 | 3.9 | 62 | 120 | 2.3 | 33 | 63 | 0.0 | 36 | 70 | 0.0 | 39 | 76 | 0.0 | 59 | 114 | 0.0 | 78 | 151 | 0.0 | 46 | 88 | 48 | 94 |
| 1403 | 4.0 | 60 | 120 | 2.3 | 33 | 65 | 0.0 | 36 | 71 | 0.0 | 39 | 78 | 0.0 | 59 | 117 | 0.0 | 78 | 155 | 0.0 | 46 | 91 | 48 | 96 |
| 1359 | 4.1 | 59 | 120 | 2.4 | 33 | 67 | 0.0 | 36 | 73 | 0.0 | 39 | 80 | 0.0 | 59 | 120 | 0.0 | 78 | 159 | 0.0 | 46 | 93 | 48 | 99 |
| 1317 | 4.2 | 58 | 120 | 2.4 | 33 | 68 | 0.0 | 36 | 75 | 0.0 | 39 | 82 | 0.0 | 59 | 122 | 0.0 | 78 | 163 | 0.0 | 46 | 95 | 48 | 101 |
| 1277 | 4.3 | 56 | 120 | 2.4 | 33 | 70 | 0.0 | 36 | 77 | 0.0 | 39 | 84 | 0.0 | 59 | 125 | 0.0 | 78 | 167 | 0.0 | 46 | 97 | 48 | 104 |
| 1238 | 4.4 | 55 | 120 | 2.4 | 33 | 71 | 0.0 | 36 | 79 | 0.0 | 39 | 86 | 0.0 | 59 | 128 | 0.0 | 78 | 171 | 0.0 | 46 | 100 | 48 | 106 |
| 1201 | 4.5 | 54 | 120 | 2.5 | 33 | 73 | 0.0 | 36 | 80 | 0.0 | 39 | 88 | 0.0 | 59 | 131 | 0.0 | 78 | 175 | 0.0 | 46 | 102 | 48 | 108 |
| 1165 | 4.6 | 53 | 120 | 2.5 | 33 | 75 | 0.0 | 36 | 82 | 0.0 | 39 | 90 | 0.0 | 59 | 134 | 0.0 | 78 | 179 | 0.0 | 46 | 104 | 48 | 111 |
| 1131 | 4.7 | 52 | 120 | 2.5 | 33 | 76 | 0.0 | 36 | 84 | 0.0 | 39 | 91 | 0.0 | 59 | 137 | 0.0 | 78 | 182 | 0.0 | 46 | 106 | 48 | 113 |
| 1097 | 4.8 | 50 | 120 | 2.6 | 33 | 78 | 0.0 | 36 | 86 | 0.0 | 39 | 93 | 0.0 | 59 | 140 | 0.0 | 78 | 186 | 0.0 | 46 | 109 | 48 | 116 |
| 1065 | 4.9 | 49 | 120 | 2.6 | 33 | 80 | 0.0 | 36 | 87 | 0.0 | 39 | 95 | 0.0 | 59 | 143 | 0.0 | 78 | 190 | 0.0 | 46 | 111 | 48 | 118 |
| 1034 | 5.0 | 48 | 120 | 2.6 | 33 | 81 | 0.0 | 36 | 89 | 0.0 | 39 | 97 | 0.0 | 59 | 146 | 0.0 | 78 | 194 | 0.0 | 46 | 113 | 48 | 120 |
| 1004 | 5.1 | 48 | 120 | 2.6 | 33 | 83 | 0.0 | 36 | 91 | 0.0 | 39 | 99 | 0.0 | 59 | 149 | 0.0 | 78 | 198 | 0.0 | 46 | 115 | 48 | 123 |
| 975 | 5.2 | 47 | 120 | 2.7 | 33 | 84 | 0.0 | 36 | 93 | 0.0 | 39 | 101 | 0.0 | 59 | 151 | 0.0 | 78 | 202 | 0.0 | 46 | 118 | 48 | 125 |
| 946 | 5.3 | 46 | 120 | 2.7 | 33 | 86 | 0.0 | 36 | 95 | 0.0 | 39 | 103 | 0.0 | 59 | 154 | 0.0 | 78 | 206 | 0.0 | 46 | 120 | 48 | 128 |
| 918 | 5.4 | 45 | 120 | 2.7 | 33 | 88 | 0.0 | 36 | 96 | 0.0 | 39 | 105 | 0.0 | 59 | 157 | 0.0 | 78 | 210 | 0.0 | 46 | 122 | 48 | 130 |
| 891 | 5.5 | 44 | 120 | 2.8 | 33 | 89 | 0.0 | 36 | 98 | 0.0 | 39 | 107 | 0.0 | 59 | 160 | 0.0 | 78 | 213 | 0.0 | 46 | 124 | 48 | 132 |
| 864 | 5.6 | 43 | 120 | 2.8 | 33 | 91 | 0.0 | 36 | 100 | 0.0 | 39 | 109 | 0.0 | 59 | 163 | 0.0 | 78 | 217 | 0.0 | 46 | 127 | 48 | 135 |
| 838 | 5.7 | 43 | 120 | 2.8 | 33 | 92 | 0.0 | 36 | 102 | 0.0 | 39 | 111 | 0.0 | 59 | 166 | 0.0 | 78 | 221 | 0.0 | 46 | 129 | 48 | 137 |
| 813 | 5.8 | 42 | 120 | 2.9 | 33 | 94 | 0.0 | 36 | 103 | 0.0 | 39 | 113 | 0.0 | 59 | 169 | 0.0 | 78 | 225 | 0.0 | 46 | 131 | 48 | 140 |
| 789 | 5.9 | 41 | 120 | 2.9 | 33 | 96 | 0.0 | 36 | 105 | 0.0 | 39 | 115 | 0.0 | 59 | 172 | 0.0 | 78 | 229 | 0.0 | 46 | 133 | 48 | 142 |
| 766 | 6.0 | 40 | 120 | 3.0 | 40 | 120 | 2.0 | 36 | 107 | 0.0 | 39 | 117 | 0.0 | 59 | 175 | 0.0 | 78 | 233 | 0.0 | 46 | 136 | 48 | 144 |
| 743 | 6.1 | 40 | 120 | 3.0 | 40 | 120 | 2.0 | 36 | 109 | 0.0 | 39 | 119 | 0.0 | 59 | 178 | 0.0 | 78 | 237 | 0.0 | 46 | 138 | 48 | 147 |
| 722 | 6.2 | 39 | 120 | 3.0 | 39 | 120 | 2.0 | 36 | 110 | 0.0 | 39 | 120 | 0.0 | 59 | 180 | 0.0 | 78 | 240 | 0.0 | 46 | 140 | 48 | 149 |
| 701 | 6.3 | 39 | 120 | 3.1 | 39 | 120 | 2.1 | 36 | 112 | 0.0 | 39 | 122 | 0.0 | 59 | 183 | 0.0 | 78 | 244 | 0.0 | 46 | 142 | 48 | 152 |
| 680 | 6.4 | 38 | 120 | 3.1 | 38 | 120 | 2.1 | 36 | 114 | 0.0 | 39 | 124 | 0.0 | 59 | 186 | 0.0 | 78 | 248 | 0.0 | 46 | 145 | 48 | 154 |
| 660 | 6.5 | 37 | 120 | 3.2 | 37 | 120 | 2.2 | 36 | 116 | 0.0 | 39 | 126 | 0.0 | 59 | 189 | 0.0 | 78 | 252 | 0.0 | 46 | 147 | 48 | 156 |
| 641 | 6.6 | 37 | 120 | 3.2 | 37 | 120 | 2.2 | 36 | 118 | 0.0 | 39 | 128 | 0.0 | 59 | 192 | 0.0 | 78 | 256 | 0.0 | 46 | 149 | 48 | 159 |
| 622 | 6.7 | 36 | 120 | 3.2 | 36 | 120 | 2.2 | 36 | 119 | 0.0 | 39 | 130 | 0.0 | 59 | 195 | 0.0 | 78 | 260 | 0.0 | 46 | 151 | 48 | 161 |
| 603 | 6.8 | 36 | 120 | 3.3 | 37 | 123 | 2.3 | 36 | 121 | 0.0 | 39 | 132 | 0.0 | 59 | 198 | 0.0 | 78 | 264 | 0.0 | 46 | 154 | 48 | 164 |
| 585 | 6.9 | 35 | 120 | 3.3 | 37 | 125 | 2.3 | 36 | 123 | 0.0 | 39 | 134 | 0.0 | 59 | 201 | 0.0 | 78 | 268 | 0.0 | 46 | 156 | 48 | 166 |
| 567 | 7.0 | 35 | 121 | 3.4 | 37 | 127 | 2.4 | 36 | 125 | 0.0 | 39 | 136 | 0.0 | 59 | 204 | 0.0 | 78 | 271 | 0.0 | 46 | 158 | 48 | 168 |
| 550 | 7.1 | 35 | 123 | 3.4 | 37 | 129 | 2.4 | 36 | 126 | 0.0 | 39 | 138 | 0.0 | 59 | 207 | 0.0 | 78 | 275 | 0.0 | 46 | 160 | 48 | 171 |
| 532 | 7.2 | 35 | 125 | 3.5 | 37 | 131 | 2.5 | 36 | 128 | 0.0 | 39 | 140 | 0.0 | 59 | 210 | 0.0 | 78 | 279 | 0.0 | 46 | 163 | 48 | 173 |
| 515 | 7.3 | 35 | 127 | 3.5 | 37 | 133 | 2.5 | 36 | 130 | 0.0 | 39 | 142 | 0.0 | 59 | 212 | 0.0 | 78 | 283 | 0.0 | 46 | 165 | 48 | 176 |
| 497 | 7.4 | 35 | 129 | 3.6 | 37 | 135 | 2.6 | 36 | 132 | 0.0 | 39 | 144 | 0.0 | 59 | 215 | 0.0 | 78 | 287 | 0.0 | 46 | 167 | 48 | 178 |
| 480 | 7.5 | 35 | 132 | 3.7 | 37 | 138 | 2.7 | 36 | 134 | 0.0 | 39 | 146 | 0.0 | 59 | 218 | 0.0 | 83 | 308 | 2.1 | 46 | 170 | 48 | 180 |
| 461 | 7.6 | 35 | 133 | 3.7 | 37 | 140 | 2.7 | 36 | 135 | 0.0 | 39 | 148 | 0.0 | 59 | 221 | 0.0 | 83 | 312 | 2.1 | 46 | 172 | 48 | 183 |
| 442 | 7.7 | 36 | 136 | 3.8 | 37 | 142 | 2.8 | 36 | 137 | 0.0 | 39 | 150 | 0.0 | 59 | 224 | 0.0 | 83 | 318 | 2.4 | 46 | 174 | 48 | 185 |
| 422 | 7.8 | 36 | 138 | 3.9 | 38 | 145 | 2.9 | 36 | 139 | 0.0 | 39 | 151 | 0.0 | 59 | 227 | 0.0 | 84 | 325 | 2.7 | 46 | 176 | 48 | 188 |
| 397 | 7.9 | 36 | 141 | 4.0 | 38 | 147 | 3.0 | 39 | 153 | 2.0 | 39 | 153 | 0.0 | 64 | 249 | 2.0 | 85 | 332 | 3.0 | 46 | 179 | 48 | 190 |
| 350 | 8.0 | 36 | 144 | 4.3 | 38 | 151 | 3.3 | 40 | 157 | 2.3 | 39 | 155 | 0.0 | 65 | 258 | 2.6 | 86 | 344 | 3.9 | 46 | 181 | 48 | 192 |

NOTE:
CR, LS & w VALUES IN FEET. LISTED RADIUS IS THE MINIMUM ALLOWABLE RADIUS FOR THE CORRESPONDING E, CR, LS, AND w VALUES.

TC-5.01

# TRANSITION CURVES - RURAL
## 35 MPH DESIGN SPEED

VIRGINIA DEPARTMENT OF TRANSPORTATION

802.37

REVISED 10-02

REVISED 3-03

REVISED 1-04