NOTE:
Lt, Lr & w VALUES IN FEET. LISTED RADIUS IS THE MINIMUM ALLOWABLE RADIUS FOR THE CORRESPONDING E, Lt, Lr, AND w VALUES.
WIDENING SHOWN IS BASED ON A WB-62 DESIGN VEHICLE.

# TRANSITION CURVES - RURAL
# 40 MPH DESIGN SPEED

## DESIGN FACTORS FOR A DESIGN SPEED OF 40 MPH (RURAL) USING E= 8% MAX.

| DESIGN VELOCITY =40 | | WIDTH= 18 FT | | | WIDTH=20 FT | | | WIDTH=22 FT | | | WIDTH=24 FT | | | WIDTH=48 FT | | | WIDTH=72 FT | | | INTERCHANGE RAMPS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DESIGN SOFTWARE EQUIVALENTS (NUMBER OF LANES AT LANE WIDTH) | | | | | | | | | | | | | | | | | | WIDTH | | | |
| | | 1 @ 9' | | | 1 @ 10' | | | 1 @ 11' | | | 1 @ 12' | | | 2 @ 12' | | | 3 @ 12' | | | 16 FT | | 18 FT | |
| RADIUS(FT) | E(%) | Lt | Lr | w | Lt | Lr | w | Lt | Lr | w | Lt | Lr | w | Lt | Lr | w | Lt | Lr | w | Lt | Lr | Lt | Lr |
| 5410 | NC | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4120 | 2 | 37 | 37 | 3.1 | 39 | 39 | 2.1 | 38 | 38 | 0 | 42 | 42 | 0 | 63 | 63 | 0 | 83 | 83 | 0 | 49 | 49 | 52 | 52 |
| 3920 | 2.1 | 37 | 39 | 3.2 | 39 | 41 | 2.2 | 38 | 40 | 0 | 42 | 44 | 0 | 63 | 66 | 0 | 83 | 87 | 0 | 49 | 51 | 52 | 54 |
| 3640 | 2.2 | 37 | 41 | 3.2 | 39 | 43 | 2.2 | 38 | 42 | 0 | 42 | 46 | 0 | 63 | 69 | 0 | 83 | 92 | 0 | 49 | 54 | 52 | 57 |
| 3480 | 2.3 | 37 | 43 | 3.3 | 39 | 45 | 2.3 | 38 | 44 | 0 | 42 | 48 | 0 | 63 | 72 | 0 | 83 | 96 | 0 | 49 | 56 | 52 | 60 |
| 3400 | 2.4 | 37 | 45 | 3.3 | 39 | 47 | 2.3 | 38 | 46 | 0 | 42 | 50 | 0 | 63 | 75 | 0 | 83 | 100 | 0 | 49 | 59 | 52 | 62 |
| 3160 | 2.5 | 37 | 47 | 3.4 | 39 | 49 | 2.4 | 38 | 48 | 0 | 42 | 52 | 0 | 63 | 78 | 0 | 83 | 104 | 0 | 49 | 61 | 52 | 65 |
| 3094 | 2.6 | 37 | 48 | 3.4 | 39 | 51 | 2.4 | 38 | 50 | 0 | 42 | 54 | 0 | 63 | 81 | 0 | 83 | 108 | 0 | 49 | 64 | 52 | 67 |
| 2970 | 2.7 | 37 | 50 | 3.4 | 39 | 53 | 2.4 | 38 | 52 | 0 | 42 | 56 | 0 | 63 | 84 | 0 | 83 | 112 | 0 | 49 | 66 | 52 | 70 |
| 2784 | 2.8 | 84 | 52 | 3.5 | 39 | 55 | 2.5 | 38 | 54 | 0 | 42 | 58 | 0 | 63 | 87 | 0 | 83 | 116 | 0 | 49 | 68 | 52 | 72 |
| 2712 | 2.9 | 81 | 54 | 3.5 | 39 | 57 | 2.5 | 38 | 55 | 0 | 42 | 60 | 0 | 63 | 90 | 0 | 83 | 120 | 0 | 49 | 71 | 52 | 75 |
| 2556 | 3 | 78 | 56 | 3.6 | 39 | 59 | 2.6 | 38 | 57 | 0 | 42 | 63 | 0 | 63 | 94 | 0 | 83 | 125 | 0 | 49 | 73 | 52 | 78 |
| 2472 | 3.1 | 76 | 58 | 3.6 | 39 | 61 | 2.6 | 38 | 59 | 0 | 42 | 65 | 0 | 63 | 97 | 0 | 83 | 129 | 0 | 49 | 76 | 52 | 80 |
| 2395 | 3.2 | 74 | 60 | 3.7 | 40 | 63 | 2.7 | 38 | 61 | 0 | 42 | 67 | 0 | 63 | 100 | 0 | 83 | 133 | 0 | 49 | 78 | 52 | 83 |
| 2294 | 3.3 | 71 | 62 | 3.7 | 40 | 65 | 2.7 | 38 | 63 | 0 | 42 | 69 | 0 | 63 | 103 | 0 | 83 | 137 | 0 | 49 | 80 | 52 | 85 |
| 2212 | 3.4 | 69 | 64 | 3.8 | 40 | 67 | 2.8 | 38 | 65 | 0 | 42 | 71 | 0 | 63 | 106 | 0 | 83 | 141 | 0 | 49 | 83 | 52 | 88 |
| 2171 | 3.5 | 67 | 66 | 3.8 | 40 | 69 | 2.8 | 38 | 67 | 0 | 42 | 73 | 0 | 63 | 109 | 0 | 83 | 145 | 0 | 49 | 85 | 52 | 90 |
| 2073 | 3.6 | 65 | 68 | 3.9 | 40 | 72 | 2.9 | 38 | 69 | 0 | 42 | 75 | 0 | 63 | 112 | 0 | 83 | 149 | 0 | 49 | 88 | 52 | 93 |
| 2001 | 3.7 | 64 | 70 | 3.9 | 40 | 74 | 2.9 | 38 | 71 | 0 | 42 | 77 | 0 | 63 | 115 | 0 | 83 | 154 | 0 | 49 | 90 | 52 | 96 |
| 1941 | 3.8 | 62 | 73 | 4 | 40 | 76 | 3 | 42 | 79 | 2 | 42 | 79 | 0 | 63 | 118 | 0 | 83 | 158 | 0 | 49 | 93 | 52 | 98 |
| 1856 | 3.9 | 60 | 74 | 4 | 40 | 78 | 3 | 42 | 81 | 2 | 42 | 81 | 0 | 63 | 122 | 0 | 83 | 162 | 0 | 49 | 95 | 52 | 101 |
| 1800 | 4 | 59 | 77 | 4.1 | 40 | 80 | 3.1 | 42 | 84 | 2.1 | 42 | 83 | 0 | 63 | 125 | 0 | 83 | 166 | 0 | 49 | 97 | 52 | 103 |
| 1744 | 4.1 | 58 | 79 | 4.1 | 40 | 82 | 3.1 | 42 | 86 | 2.1 | 42 | 85 | 0 | 63 | 128 | 0 | 83 | 170 | 0 | 49 | 100 | 52 | 106 |
| 1689 | 4.2 | 56 | 81 | 4.2 | 40 | 84 | 3.2 | 42 | 88 | 2.2 | 42 | 87 | 0 | 63 | 131 | 0 | 83 | 174 | 0 | 49 | 102 | 52 | 108 |
| 1635 | 4.3 | 55 | 83 | 4.2 | 40 | 86 | 3.2 | 42 | 90 | 2.2 | 42 | 89 | 0 | 63 | 134 | 0 | 83 | 178 | 0 | 49 | 105 | 52 | 111 |
| 1581 | 4.4 | 54 | 85 | 4.3 | 41 | 89 | 3.3 | 42 | 93 | 2.3 | 42 | 92 | 0 | 63 | 137 | 0 | 83 | 183 | 0 | 49 | 107 | 52 | 114 |
| 1527 | 4.5 | 52 | 87 | 4.3 | 41 | 91 | 3.3 | 42 | 95 | 2.3 | 42 | 94 | 0 | 63 | 140 | 0 | 83 | 187 | 0 | 49 | 110 | 52 | 116 |
| 1502 | 4.6 | 51 | 89 | 4.4 | 41 | 93 | 3.4 | 43 | 97 | 2.4 | 42 | 96 | 0 | 63 | 143 | 0 | 83 | 191 | 0 | 49 | 112 | 52 | 119 |
| 1477 | 4.7 | 50 | 91 | 4.4 | 41 | 95 | 3.4 | 43 | 99 | 2.4 | 42 | 98 | 0 | 63 | 146 | 0 | 83 | 195 | 0 | 49 | 114 | 52 | 121 |
| 1424 | 4.8 | 49 | 94 | 4.5 | 41 | 98 | 3.5 | 43 | 102 | 2.5 | 42 | 100 | 0 | 63 | 149 | 0 | 83 | 199 | 0 | 49 | 117 | 52 | 124 |
| 1368 | 4.9 | 48 | 96 | 4.5 | 41 | 100 | 3.5 | 43 | 104 | 2.5 | 42 | 102 | 0 | 63 | 153 | 0 | 83 | 203 | 0 | 49 | 119 | 52 | 126 |
| 1346 | 5 | 47 | 98 | 4.6 | 41 | 102 | 3.6 | 43 | 107 | 2.6 | 42 | 104 | 0 | 63 | 156 | 0 | 83 | 207 | 0 | 49 | 122 | 52 | 129 |
| 1296 | 5.1 | 46 | 100 | 4.7 | 41 | 105 | 3.7 | 43 | 109 | 2.7 | 42 | 106 | 0 | 63 | 159 | 0 | 83 | 212 | 0 | 49 | 124 | 52 | 132 |
| 1267 | 5.2 | 45 | 102 | 4.7 | 41 | 107 | 3.7 | 43 | 111 | 2.7 | 42 | 108 | 0 | 63 | 162 | 0 | 83 | 216 | 0 | 49 | 127 | 52 | 134 |
| 1220 | 5.3 | 45 | 105 | 4.8 | 42 | 109 | 3.8 | 43 | 114 | 2.8 | 42 | 110 | 0 | 63 | 165 | 0 | 83 | 220 | 0 | 49 | 129 | 52 | 137 |
| 1190 | 5.4 | 44 | 107 | 4.8 | 42 | 111 | 3.8 | 43 | 116 | 2.8 | 42 | 112 | 0 | 63 | 168 | 0 | 83 | 224 | 0 | 49 | 131 | 52 | 139 |
| 1160 | 5.5 | 43 | 109 | 4.9 | 42 | 114 | 3.9 | 43 | 119 | 2.9 | 42 | 114 | 0 | 63 | 171 | 0 | 83 | 228 | 0 | 49 | 134 | 52 | 142 |
| 1101 | 5.6 | 42 | 112 | 5 | 42 | 116 | 4 | 44 | 121 | 3 | 45 | 126 | 2 | 73 | 203 | 4 | 97 | 271 | 6 | 49 | 136 | 52 | 144 |
| 1081 | 5.7 | 42 | 114 | 5.1 | 42 | 119 | 4.1 | 44 | 124 | 3.1 | 45 | 129 | 2.1 | 73 | 208 | 4.2 | 98 | 278 | 6.3 | 49 | 139 | 52 | 147 |
| 1054 | 5.8 | 41 | 116 | 5.1 | 42 | 121 | 4.1 | 44 | 126 | 3.1 | 45 | 131 | 2.1 | 73 | 212 | 4.2 | 98 | 282 | 6.3 | 49 | 141 | 52 | 150 |
| 1025 | 5.9 | 40 | 118 | 5.2 | 42 | 124 | 4.2 | 44 | 129 | 3.2 | 46 | 134 | 2.2 | 74 | 217 | 4.4 | 98 | 289 | 6.6 | 49 | 144 | 52 | 152 |
| 988 | 6 | 41 | 121 | 5.3 | 42 | 126 | 4.3 | 44 | 131 | 3.3 | 46 | 137 | 2.3 | 74 | 222 | 4.6 | 99 | 296 | 6.9 | 49 | 146 | 52 | 155 |
| 957 | 6.1 | 41 | 124 | 5.4 | 43 | 129 | 4.4 | 44 | 134 | 3.4 | 46 | 139 | 2.4 | 75 | 228 | 4.8 | 100 | 303 | 7.2 | 49 | 148 | 52 | 157 |
| 942 | 6.2 | 41 | 126 | 5.4 | 43 | 131 | 4.4 | 44 | 136 | 3.4 | 46 | 142 | 2.4 | 75 | 231 | 4.8 | 100 | 308 | 7.2 | 49 | 151 | 52 | 160 |
| 912 | 6.3 | 41 | 128 | 5.5 | 43 | 134 | 4.5 | 44 | 139 | 3.5 | 46 | 144 | 2.5 | 75 | 237 | 5 | 100 | 315 | 7.5 | 49 | 153 | 52 | 162 |
| 875 | 6.4 | 41 | 131 | 5.6 | 43 | 136 | 4.6 | 45 | 142 | 3.6 | 46 | 147 | 2.6 | 76 | 242 | 5.2 | 101 | 323 | 7.8 | 49 | 156 | 52 | 165 |
| 866 | 6.5 | 41 | 133 | 5.6 | 43 | 138 | 4.6 | 45 | 144 | 3.6 | 46 | 150 | 2.6 | 76 | 246 | 5.2 | 101 | 328 | 7.8 | 49 | 158 | 52 | 168 |
| 837 | 6.6 | 41 | 135 | 5.7 | 43 | 141 | 4.7 | 45 | 147 | 3.7 | 47 | 152 | 2.7 | 77 | 251 | 5.4 | 102 | 335 | 8.1 | 49 | 160 | 52 | 170 |
| 806 | 6.7 | 42 | 139 | 5.9 | 43 | 144 | 4.9 | 45 | 150 | 3.9 | 47 | 156 | 2.9 | 78 | 259 | 5.8 | 103 | 345 | 8.7 | 49 | 163 | 52 | 173 |
| 782 | 6.8 | 42 | 141 | 6 | 44 | 147 | 5 | 45 | 153 | 4 | 47 | 159 | 3 | 78 | 264 | 6 | 104 | 352 | 9 | 49 | 165 | 52 | 175 |
| 754 | 6.9 | 42 | 144 | 6.1 | 44 | 150 | 5.1 | 45 | 156 | 4.1 | 47 | 162 | 3.1 | 79 | 270 | 6.2 | 105 | 360 | 9.3 | 49 | 168 | 52 | 178 |
| 744 | 7 | 42 | 146 | 6.1 | 44 | 152 | 5.1 | 45 | 158 | 4.1 | 47 | 164 | 3.1 | 79 | 274 | 6.2 | 105 | 365 | 9.3 | 49 | 170 | 52 | 180 |
| 714 | 7.1 | 42 | 149 | 6.3 | 44 | 155 | 5.3 | 46 | 161 | 4.3 | 48 | 168 | 3.3 | 80 | 281 | 6.6 | 106 | 375 | 9.9 | 49 | 173 | 52 | 183 |
| 692 | 7.2 | 43 | 152 | 6.4 | 44 | 158 | 5.4 | 46 | 164 | 4.4 | 48 | 171 | 3.4 | 80 | 287 | 6.8 | 107 | 383 | 10.2 | 49 | 175 | 52 | 186 |
| 663 | 7.3 | 43 | 155 | 6.5 | 45 | 161 | 5.5 | 46 | 167 | 4.5 | 48 | 174 | 3.5 | 81 | 293 | 7 | 107 | 391 | 10.5 | 49 | 177 | 52 | 188 |
| 651 | 7.4 | 43 | 157 | 6.6 | 45 | 164 | 5.6 | 46 | 170 | 4.6 | 48 | 177 | 3.6 | 81 | 299 | 7.2 | 108 | 399 | 10.8 | 49 | 180 | 52 | 191 |
| 622 | 7.5 | 43 | 161 | 6.8 | 45 | 167 | 5.8 | 47 | 174 | 4.8 | 48 | 180 | 3.8 | 82 | 307 | 7.6 | 109 | 409 | 11.4 | 49 | 182 | 52 | 193 |
| 597 | 7.6 | 44 | 164 | 6.9 | 45 | 170 | 5.9 | 47 | 177 | 4.9 | 49 | 183 | 3.9 | 83 | 313 | 7.8 | 110 | 417 | 11.7 | 49 | 185 | 52 | 196 |
| 581 | 7.7 | 44 | 166 | 7 | 45 | 173 | 6 | 47 | 180 | 5 | 49 | 186 | 4 | 83 | 319 | 8 | 111 | 425 | 12 | 49 | 187 | 52 | 198 |
| 561 | 7.8 | 44 | 170 | 7.2 | 46 | 177 | 6.2 | 47 | 183 | 5.2 | 49 | 190 | 4.2 | 84 | 327 | 8.4 | 112 | 436 | 12.6 | 49 | 190 | 52 | 201 |
| 535 | 7.9 | 44 | 173 | 7.4 | 46 | 180 | 6.4 | 48 | 187 | 5.4 | 49 | 194 | 4.4 | 85 | 336 | 8.8 | 114 | 447 | 13.2 | 49 | 192 | 52 | 204 |
| 446 | 8 | 46 | 182 | 8.3 | 48 | 189 | 7.3 | 49 | 196 | 6.3 | 51 | 203 | 5.3 | 90 | 358 | 10.6 | 120 | 478 | 15.9 | 49 | 194 | 52 | 206 |