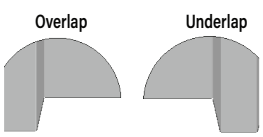
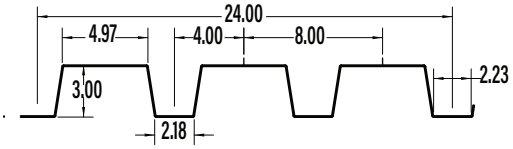
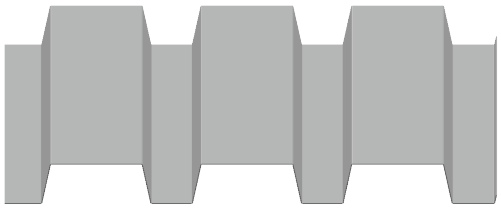
# WF-324 ROOF DECK



All dimensions are in inches

## SECTION PROPERTIES (PER FOOT OF WIDTH)

| IMPERIAL | Base Steel Thickness (in.) | Weight G90 (psf) | Yield Stress (ksi) | Sec. Modulus Midspan ($in^3$) | Sec. Modulus Support ($in^3$) | Deflection Moment of Inertia ($in^4$) | Specified Web Crippling Data $P_{e1}$ End (lb) | $P_{e2}$ End (lb) | $P_{i1}$ Interior (lb) | $P_{i2}$ Interior (lb) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.030 | 2.15 | 33 | 0.380 | 0.402 | 0.679 | 129 | 32.2 | 254 | 43.2 |
| | 0.036 | 2.57 | 33 | 0.487 | 0.508 | 0.881 | 193 | 48.2 | 378 | 64.2 |
| | 0.048 | 3.40 | 33 | 0.670 | 0.721 | 1.26 | 360 | 90.0 | 702 | 119 |
| | 0.060 | 4.24 | 33 | 0.854 | 0.894 | 1.64 | 582 | 145 | 1128 | 192 |
| | | | | | | | | | | |

**Live load factor = 1.5; Importance factor = 0.90; Importance Category = 1.0**

## MAXIMUM UNIFORMLY DISTRIBUTED SPECIFIED LOAD (PSF)

| SPAN LENGTH (ft) | | 1-SPAN BASE STEEL THICKNESS (in.) | | | | 2-SPAN BASE STEEL THICKNESS (in.) | | | | 3-SPAN BASE STEEL THICKNESS (in.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.030 | 0.036 | 0.048 | 0.060 | 0.030 | 0.036 | 0.048 | 0.060 | 0.030 | 0.036 | 0.048 | 0.060 |
| 6.0 | S | 139 | 179 | 245 | 313 | 147 | 186 | 264 | 328 | 184 | 233 | 330 | 410 |
| | D | 229 | 297 | 425 | 551 | 549 | 712 | 1021 | 1323 | 432 | 561 | 804 | 1042 |
| 6.5 | S | 119 | 152 | 209 | 267 | 126 | 159 | 225 | 279 | 157 | 198 | 281 | 349 |
| | D | 180 | 233 | 335 | 434 | 432 | 560 | 803 | 1041 | 340 | 441 | 632 | 819 |
| 7.0 | S | 102 | 131 | 180 | 230 | 108 | 137 | 194 | 241 | 135 | 171 | 243 | 301 |
| | D | 144 | 187 | 268 | 347 | 346 | 448 | 643 | 833 | 272 | 353 | 506 | 656 |
| 7.5 | S | 89 | 114 | 157 | 200 | 94 | 119 | 169 | 210 | 118 | 149 | 211 | 262 |
| | D | 117 | 152 | 218 | 282 | 281 | 364 | 523 | 677 | 221 | 287 | 412 | 533 |
| 8.0 | S | 78 | 100 | 138 | 176 | 83 | 105 | 149 | 184 | 104 | 131 | 186 | 231 |
| | D | 96 | 125 | 179 | 233 | 231 | 300 | 431 | 558 | 182 | 237 | 339 | 440 |
| 8.5 | S | 69 | 89 | 122 | 156 | 73 | 93 | 132 | 163 | 92 | 116 | 165 | 204 |
| | D | 80 | 104 | 150 | 194 | 193 | 250 | 359 | 465 | 152 | 197 | 283 | 366 |
| 9.0 | S | 62 | 79 | 109 | 139 | 66 | 83 | 117 | 146 | 82 | 103 | 147 | 182 |
| | D | 68 | 88 | 126 | 163 | 163 | 211 | 303 | 392 | 128 | 166 | 238 | 309 |
| 9.5 | S | 56 | 71 | 98 | 125 | 59 | 74 | 105 | 131 | 74 | 93 | 132 | 164 |
| | D | 58 | 75 | 107 | 139 | 138 | 179 | 257 | 333 | 109 | 141 | 203 | 262 |
| 10.0 | S | 50 | 64 | 88 | 113 | 53 | 67 | 95 | 118 | 66 | 84 | 119 | 148 |
| | D | 49 | 64 | 92 | 119 | 119 | 154 | 221 | 286 | 93 | 121 | 174 | 225 |
| 10.5 | S | 46 | 58 | 80 | 102 | 48 | 61 | 86 | 107 | 60 | 76 | 108 | 134 |
| | D | 43 | 55 | 79 | 103 | 102 | 133 | 191 | 247 | 81 | 105 | 150 | 194 |
| 11.0 | S | 41 | 53 | 73 | 93 | 44 | 55 | 79 | 98 | 55 | 69 | 98 | 122 |
| | D | 37 | 48 | 69 | 89 | 89 | 116 | 166 | 215 | 70 | 91 | 130 | 169 |
| 11.5 | S | 38 | 49 | 67 | 85 | 40 | 51 | 72 | 89 | 50 | 63 | 90 | 112 |
| | D | 32 | 42 | 60 | 78 | 78 | 101 | 145 | 188 | 61 | 80 | 114 | 148 |
| 12.0 | S | 35 | 45 | 61 | 78 | 37 | 47 | 66 | 82 | 46 | 58 | 83 | 102 |
| | D | 29 | 37 | 53 | 69 | 69 | 89 | 128 | 165 | 54 | 70 | 101 | 130 |
| 12.5 | S | 32 | 41 | 57 | 72 | 34 | 43 | 61 | 76 | 42 | 54 | 76 | 94 |
| | D | 25 | 33 | 47 | 61 | 61 | 79 | 113 | 146 | 48 | 62 | 89 | 115 |
| 13.0 | S | 30 | 38 | 52 | 67 | 31 | 40 | 56 | 70 | 39 | 50 | 70 | 87 |
| | D | 22 | 29 | 42 | 54 | 54 | 70 | 100 | 130 | 42 | 55 | 79 | 102 |
| 13.5 | S | 28 | 35 | 48 | 62 | 29 | 37 | 52 | 65 | 36 | 46 | 65 | 81 |
| | D | 20 | 26 | 37 | 48 | 48 | 62 | 90 | 116 | 38 | 49 | 71 | 91 |
| 14.0 | S | 26 | 33 | 45 | 58 | 27 | 34 | 49 | 60 | 34 | 43 | 61 | 75 |
| | D | 18 | 23 | 33 | 43 | 43 | 56 | 80 | 104 | 34 | 44 | 63 | 82 |

**Notes:**

1. Based on ASTM A 653 Grade 33 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of L/240.
4. For L/180, multiply values in row "D" by 1.33.
5. Web crippling not included in strength calculations. See Example.
6. Limit States Design principles were used in accordance with CSA Standard S136-16.
7. Prepared by Dr. R.M. Schuster, P. Eng., Distinguished Professor Emeritus, University of Waterloo.

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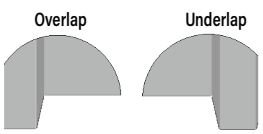
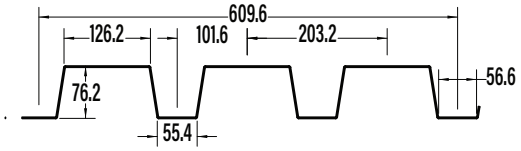
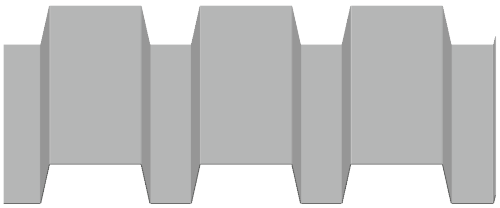
# WF-324 ROOF DECK



All dimensions are in millimeters

## SECTION PROPERTIES (PER METRE OF WIDTH)

| METRIC | Base Steel Thickness (mm) | Mass Z275 ($kg/m^2$) | Yield Stress (MPa) | Sec. Modulus Midspan ($x10^3$ $mm^3$) | Sec. Modulus Support ($x10^3$ $mm^3$) | Deflection Moment of Inertia ($x10^6 mm^4$) | Specified Web Crippling Data $P_{e1}$ End (kN) | $P_{e2}$ End (kN) | $P_{i1}$ Interior (kN) | $P_{i2}$ Interior (kN) |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.762 | 10.5 | 230 | 20.4 | 21.6 | 0.926 | 1.90 | 0.476 | 3.75 | 0.637 |
| | 0.914 | 12.5 | 230 | 26.2 | 27.2 | 1.20 | 2.84 | 0.710 | 5.57 | 0.947 |
| | 1.22 | 16.6 | 230 | 36.0 | 38.7 | 1.72 | 5.31 | 1.33 | 10.3 | 1.76 |
| | 1.52 | 20.7 | 230 | 45.9 | 48.1 | 2.24 | 8.58 | 2.15 | 16.6 | 2.83 |

**Live load factor = 1.5; Importance factor = 0.90; Importance Category = 1.0**

## MAXIMUM UNIFORMLY DISTRIBUTED SPECIFIED LOAD (kPa)

| SPAN LENGTH (mm) | | 1-SPAN BASE STEEL THICKNESS (mm) | | | | 2-SPAN BASE STEEL THICKNESS (mm) | | | | 3-SPAN BASE STEEL THICKNESS (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.762 | 0.914 | 1.22 | 1.52 | 0.762 | 0.914 | 1.22 | 1.52 | 0.762 | 0.914 | 1.22 | 1.52 |
| 2000 | S | 5.63 | 7.22 | 9.93 | 12.7 | 5.96 | 7.52 | 10.7 | 13.3 | 7.45 | 9.4 | 13.4 | 16.6 |
| | D | 8.35 | 10.8 | 15.6 | 20.2 | 20.1 | 26.0 | 37.3 | 48.4 | 15.8 | 20.5 | 29.4 | 38.1 |
| 2200 | S | 4.65 | 5.97 | 8.21 | 10.5 | 4.92 | 6.21 | 8.84 | 11.0 | 6.15 | 7.77 | 11.1 | 13.7 |
| | D | 6.28 | 8.14 | 11.7 | 15.2 | 15.1 | 19.6 | 28.1 | 36.4 | 11.9 | 15.4 | 22.1 | 28.6 |
| 2400 | S | 3.91 | 5.02 | 6.89 | 8.80 | 4.14 | 5.22 | 7.43 | 9.22 | 5.17 | 6.53 | 9.28 | 11.5 |
| | D | 4.83 | 6.27 | 9.00 | 11.7 | 11.6 | 15.1 | 21.6 | 28.0 | 9.14 | 11.9 | 17.0 | 22.1 |
| 2500 | S | 3.60 | 4.62 | 6.35 | 8.11 | 3.81 | 4.81 | 6.84 | 8.49 | 4.77 | 6.02 | 8.56 | 10.6 |
| | D | 4.28 | 5.55 | 7.96 | 10.3 | 10.3 | 13.3 | 19.1 | 24.8 | 8.08 | 10.5 | 15.1 | 19.5 |
| 2600 | S | 3.33 | 4.28 | 5.87 | 7.50 | 3.52 | 4.45 | 6.33 | 7.85 | 4.41 | 5.56 | 7.91 | 9.82 |
| | D | 3.80 | 4.93 | 7.08 | 9.18 | 9.12 | 11.8 | 17.0 | 22.0 | 7.19 | 9.33 | 13.4 | 17.4 |
| 2800 | S | 2.87 | 3.69 | 5.07 | 6.46 | 3.04 | 3.84 | 5.46 | 6.77 | 3.80 | 4.80 | 6.82 | 8.46 |
| | D | 3.04 | 3.95 | 5.67 | 7.35 | 7.31 | 9.48 | 13.6 | 17.6 | 5.75 | 7.47 | 10.7 | 13.9 |
| 3000 | S | 2.50 | 3.21 | 4.41 | 5.63 | 2.65 | 3.34 | 4.75 | 5.90 | 3.31 | 4.18 | 5.94 | 7.37 |
| | D | 2.47 | 3.21 | 4.61 | 5.98 | 5.94 | 7.71 | 11.1 | 14.3 | 4.68 | 6.07 | 8.71 | 11.3 |
| 3200 | S | 2.20 | 2.82 | 3.88 | 4.95 | 2.33 | 2.94 | 4.18 | 5.18 | 2.91 | 3.67 | 5.22 | 6.48 |
| | D | 2.04 | 2.65 | 3.80 | 4.92 | 4.89 | 6.35 | 9.11 | 11.8 | 3.85 | 5.00 | 7.18 | 9.31 |
| 3400 | S | 1.95 | 2.50 | 3.44 | 4.38 | 2.06 | 2.60 | 3.70 | 4.59 | 2.58 | 3.25 | 4.63 | 5.74 |
| | D | 1.70 | 2.21 | 3.17 | 4.10 | 4.08 | 5.30 | 7.60 | 9.85 | 3.21 | 4.17 | 5.98 | 7.76 |
| 3500 | S | 1.84 | 2.36 | 3.24 | 4.14 | 1.95 | 2.46 | 3.49 | 4.33 | 2.43 | 3.07 | 4.36 | 5.42 |
| | D | 1.56 | 2.02 | 2.90 | 3.76 | 3.74 | 4.85 | 6.97 | 9.03 | 2.95 | 3.82 | 5.49 | 7.11 |
| 3600 | S | 1.74 | 2.23 | 3.06 | 3.91 | 1.84 | 2.32 | 3.30 | 4.10 | 2.30 | 2.90 | 4.13 | 5.12 |
| | D | 1.43 | 1.86 | 2.67 | 3.46 | 3.44 | 4.46 | 6.40 | 8.30 | 2.71 | 3.51 | 5.04 | 6.54 |
| 3800 | S | 1.56 | 2.00 | 2.75 | 3.51 | 1.65 | 2.08 | 2.96 | 3.68 | 2.06 | 2.60 | 3.70 | 4.60 |
| | D | 1.22 | 1.58 | 2.27 | 2.94 | 2.92 | 3.79 | 5.44 | 7.06 | 2.30 | 2.99 | 4.29 | 5.56 |
| 4000 | S | 1.41 | 1.81 | 2.48 | 3.17 | 1.49 | 1.88 | 2.67 | 3.32 | 1.86 | 2.35 | 3.34 | 4.15 |
| | D | 1.04 | 1.36 | 1.94 | 2.52 | 2.51 | 3.25 | 4.67 | 6.05 | 1.97 | 2.56 | 3.67 | 4.76 |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

**Notes:**

1. Based on ASTM A 653M Grade 230 structural steel.
2. Values in row "S" are based on strength.
3. Values in row "D" are based on deflection of L/240.
4. For L/180, multiply values in row "D" by 1.33.
5. Web crippling not included in strength calculations. See Example.
6. Limit States Design principles were used in accordance with CSA Standard S136-16.
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