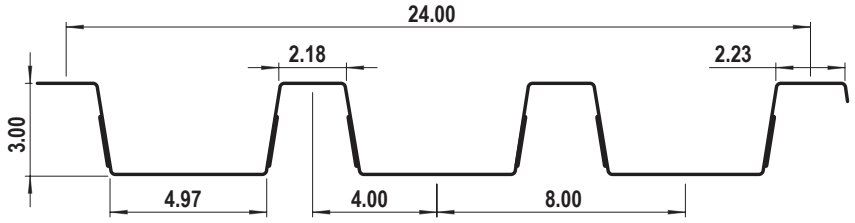
# WF-324 INVERTED COMPOSITE DECK




## IMPERIAL

| STEEL DECK SECTION PROPERTIES (Per foot of width) | | | | | | |
|---|---|---|---|---|---|---|
| Base Steel Thickness (in.) | Yield Stress (ksi) | Weight (psf) | Area ($in^2$) | Section Modulus ($in^3$) Midspan | Section Modulus ($in^3$) Support | Deflection Inertia ($in^4$) |
| 0.030 | 40 | 2.15 | 0.615 | 0.391 | 0.366 | 0.820 |
| 0.036 | 40 | 2.57 | 0.738 | 0.494 | 0.472 | 1.00 |
| 0.048 | 40 | 3.40 | 0.984 | 0.710 | 0.661 | 1.33 |
| 0.060 | 40 | 4.24 | 1.23 | 0.894 | 0.845 | 1.66 |

| COMPOSITE SLAB PROPERTIES (Per foot of width) | | | | | | |
|---|---|---|---|---|---|---|
| Overall Slab Depth, D (in.) | | | | | | |
| 5.0 | 5.5 | 6.0 | 6.5 | 7.0 | 7.5 | 8.0 |
| Slab Weight (psf) | | | | | | |
| 54.5 | 60.8 | 67.0 | 73.3 | 79.5 | 85.8 | 92.0 |
| Concrete Volume ($yd^3/100ft^2$) | | | | | | |
| 1.24 | 1.40 | 1.55 | 1.71 | 1.86 | 2.01 | 2.17 |

**Maximum Specified Uniformly Distributed Loads (psf)**

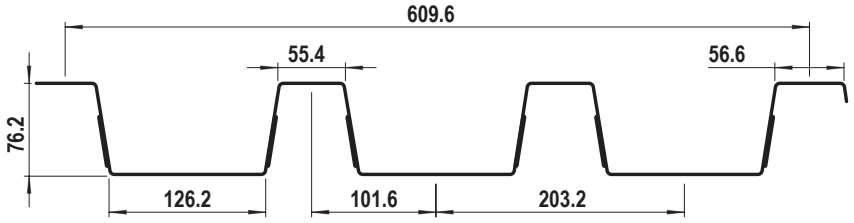
| Slab Depth, D (in.) | | 5.0 | | | 5.5 | | | 6.0 | | | 6.5 | | | 7.0 | | | 7.5 | | | 8.0 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Steel (in.) | Slab Span (ft) | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| 0.030 | 9'0" | 109 | 109 | 109 | 123 | 123 | 123 | 137 | 137 | 137 | 152 | 152 | 152 | 166 | 166 | 166 | 180 | 180 | 180 | 195 | 195 | 195 |
| | 9'6" | 95 | 95 | 95 | 107 | 107 | 107 | 119 | 119 | 119 | 132 | 132 | 132 | 144 | 144 | 144 | 157 | 157 | 157 | 169 | 169 | 169 |
| | 10'0" | 83 | 83 | 83 | 93 | 93 | 93 | 104 | 104 | 104 | 115 | 115 | 115 | 126 | 126 | 126 | 137 | 137 | 137 | 148 | 148 | 148 |
| | 10'6" | 72 | 72 | 72 | 82 | 82 | 82 | 91 | 91 | 91 | 101 | 101 | 101 | 110 | 110 | 110 | 120 | 120 | 120 | 129 | 129 | 129 |
| | 11'0" | 64 | 64 | 64 | 72 | 72 | 72 | 80 | 80 | 80 | 89 | 89 | 89 | 97 | 97 | 97 | 106 | 106 | 106 | 114 | 114 | 114 |
| | 11'6" | 56 | 56 | 56 | 64 | 64 | 64 | 71 | 71 | 71 | 78 | 78 | 78 | 86 | 86 | 86 | 93 | 93 | 93 | 100 | 100 | 100 |
| | 12'0" | 50 | 50 | 50 | 56 | 56 | 56 | 63 | 63 | 63 | 69 | 69 | 69 | 76 | 76 | 76 | 82 | 82 | 82 | 89 | 89 | 89 |
| 0.036 | 10'0" | 96 | 96 | 96 | 109 | 109 | 109 | 121 | 121 | 121 | 134 | 134 | 134 | 147 | 147 | 147 | 159 | 159 | 159 | 172 | 172 | 172 |
| | 10'6" | 85 | 85 | 85 | 96 | 96 | 96 | 108 | 108 | 108 | 119 | 119 | 119 | 130 | 130 | 130 | 141 | 141 | 141 | 152 | 152 | 152 |
| | 11'0" | 76 | 76 | 76 | 86 | 86 | 86 | 96 | 96 | 96 | 106 | 106 | 106 | 116 | 116 | 116 | 126 | 126 | 126 | 135 | 135 | 135 |
| | 11'6" | 68 | 68 | 68 | 76 | 76 | 76 | 85 | 85 | 85 | 94 | 94 | 94 | 103 | 103 | 103 | 112 | 112 | 112 | 121 | 121 | 121 |
| | 12'0" | 61 | 61 | 61 | 68 | 68 | 68 | 76 | 76 | 76 | 84 | 84 | 84 | 92 | 92 | 92 | 100 | 100 | 100 | 108 | 108 | 108 |
| | 12'6" | 54 | 54 | 54 | 61 | 61 | 61 | 69 | 69 | 69 | 76 | 76 | 76 | 83 | 83 | 83 | 90 | 90 | 90 | 97 | 97 | 97 |
| | 13'0" | 49 | 49 | 49 | 55 | 55 | 55 | 62 | 62 | 62 | 68 | 68 | 68 | 75 | 75 | 75 | 81 | 81 | 81 | 87 | 87 | 87 |
| 0.048 | 10'6" | 129 | 129 | 129 | 145 | 145 | 145 | 162 | 162 | 162 | 179 | 179 | 179 | 196 | 196 | 196 | 213 | 213 | 213 | 230 | 230 | 230 |
| | 11'0" | 117 | 117 | 117 | 132 | 132 | 132 | 147 | 147 | 147 | 163 | 163 | 163 | 178 | 178 | 178 | 193 | 193 | 193 | 209 | 209 | 209 |
| | 11'6" | 106 | 106 | 106 | 120 | 120 | 120 | 134 | 134 | 134 | 148 | 148 | 148 | 162 | 162 | 162 | 176 | 176 | 176 | 190 | 190 | 190 |
| | 12'0" | 97 | 97 | 97 | 110 | 110 | 110 | 123 | 123 | 123 | 136 | 136 | 136 | 149 | 149 | 149 | 161 | 161 | 161 | 174 | 174 | 174 |
| | 12'6" | 89 | 89 | 89 | 101 | 101 | 101 | 113 | 113 | 113 | 125 | 125 | 125 | 136 | 136 | 136 | 148 | 148 | 148 | 160 | 160 | 160 |
| | 13'0" | 82 | 82 | 82 | 93 | 93 | 93 | 104 | 104 | 104 | 115 | 115 | 115 | 126 | 126 | 126 | 136 | 136 | 136 | 147 | 147 | 147 |
| | 13'6" | 76 | 76 | 76 | 86 | 86 | 86 | 96 | 96 | 96 | 106 | 106 | 106 | 116 | 116 | 116 | 126 | 126 | 126 | 136 | 136 | 136 |
| | 14'0" | 70 | 70 | 70 | 80 | 80 | 80 | 89 | 89 | 89 | 98 | 98 | 98 | 107 | 107 | 107 | 117 | 117 | 117 | 126 | 126 | 126 |
| | 14'6" | 65 | 65 | 65 | 74 | 74 | 74 | 83 | 83 | 83 | 91 | 91 | 91 | 100 | 100 | 100 | 108 | 108 | 108 | 117 | 117 | 117 |
| | 15'0" | 61 | 61 | 61 | 69 | 69 | 69 | 77 | 77 | 77 | 85 | 85 | 85 | 93 | 93 | 93 | 101 | 101 | 101 | 109 | 109 | 109 |
| 0.060 | 11'0" | 132 | 132 | 132 | 149 | 149 | 149 | 166 | 166 | 166 | 184 | 184 | 184 | 201 | 201 | 201 | 219 | 219 | 219 | 236 | 236 | 236 |
| | 11'6" | 121 | 121 | 121 | 137 | 137 | 137 | 152 | 152 | 152 | 168 | 168 | 168 | 184 | 184 | 184 | 200 | 200 | 200 | 216 | 216 | 216 |
| | 12'0" | 111 | 111 | 111 | 125 | 125 | 125 | 140 | 140 | 140 | 155 | 155 | 155 | 169 | 169 | 169 | 184 | 184 | 184 | 198 | 198 | 198 |
| | 12'6" | 102 | 102 | 102 | 116 | 116 | 116 | 129 | 129 | 129 | 143 | 143 | 143 | 156 | 156 | 156 | 170 | 170 | 170 | 183 | 183 | 183 |
| | 13'0" | 95 | 95 | 95 | 107 | 107 | 107 | 119 | 119 | 119 | 132 | 132 | 132 | 144 | 144 | 144 | 157 | 157 | 157 | 169 | 169 | 169 |
| | 13'6" | 88 | 88 | 88 | 99 | 99 | 99 | 111 | 111 | 111 | 122 | 122 | 122 | 134 | 134 | 134 | 146 | 146 | 146 | 157 | 157 | 157 |
| | 14'0" | 82 | 82 | 82 | 92 | 92 | 92 | 103 | 103 | 103 | 114 | 114 | 114 | 125 | 125 | 125 | 135 | 135 | 135 | 146 | 146 | 146 |
| | 14'6" | 76 | 76 | 76 | 86 | 86 | 86 | 96 | 96 | 96 | 106 | 106 | 106 | 116 | 116 | 116 | 126 | 126 | 126 | 136 | 136 | 136 |
| | 15'0" | 71 | 71 | 71 | 81 | 81 | 81 | 90 | 90 | 90 | 99 | 99 | 99 | 109 | 109 | 109 | 118 | 118 | 118 | 127 | 127 | 127 |
| | 15'6" | 67 | 67 | 67 | 76 | 76 | 76 | 84 | 84 | 84 | 93 | 93 | 93 | 102 | 102 | 102 | 111 | 111 | 111 | 119 | 119 | 119 |
| 0.030 | DP | 148 | | | 193 | | | 247 | | | 309 | | | 381 | | | 463 | | | 556 | | |
| 0.036 | DP | 157 | | | 205 | | | 261 | | | 327 | | | 403 | | | 490 | | | 588 | | |
| 0.048 | DP | 174 | | | 227 | | | 289 | | | 361 | | | 444 | | | 539 | | | 646 | | |
| 0.060 | DP | 190 | | | 246 | | | 313 | | | 391 | | | 481 | | | 583 | | | 699 | | |

**NOTES:**
1. One shore support required at midspan in shaded areas.
2. Slab weight of steel deck and concrete slab has been accounted for in the load table.
3. Shoring was based on Light Duty uniform construction live load of ***20 psf***.
4. DP = deflection parameter.
5. See composite slab notes and design example.
6. Prepared by Dr. R.M. Schuster, Distinguished Professor Emeritus, University of Waterloo.

CSSBI Fabricator Member

NOVEMBER 2024

# WF-324 INVERTED COMPOSITE DECK




## METRIC

| STEEL DECK SECTION PROPERTIES (Per metre of width) | | | | | | | COMPOSITE SLAB PROPERTIES (Per metre of width) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Steel Thickness (mm) | Yield Stress (MPa) | Mass (kg/m$^2$) | Area (mm$^2$) | Section Modulus (x10$^3$ mm$^3$) | | Deflection Inertia (x10$^6$ mm$^4$) | Overall Slab Depth, D (mm) | | | | | | |
| | | | | Midspan | Support | | 130 | 140 | 150 | 160 | 170 | 180 | 190 |
| | | | | | | | Slab Weight (kPa) | | | | | | |
| 0.762 | 275 | 10.5 | 1300 | 21.0 | 19.7 | 1.12 | 2.58 | 2.80 | 3.03 | 3.25 | 3.48 | 3.70 | 3.93 |
| 0.914 | 275 | 12.5 | 1560 | 26.6 | 25.4 | 1.37 | Concrete Volume (m$^3$/10m$^2$) | | | | | | |
| 1.22 | 275 | 16.6 | 2081 | 38.2 | 35.6 | 1.82 | 1.05 | 1.15 | 1.25 | 1.35 | 1.45 | 1.55 | 1.65 |
| 1.52 | 275 | 20.7 | 2601 | 48.1 | 45.4 | 2.27 | | | | | | | |

**Maximum Specified Uniformly Distributed Loads (kPa)**

| Slab Depth, D (mm) | | 130 | | | 140 | | | 150 | | | 160 | | | 170 | | | 180 | | | 190 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Base Steel (mm) | Slab Span (m) | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | | Deck Span | | |
| | | *1* | *2* | *3* | *1* | *2* | *3* | *1* | *2* | *3* | *1* | *2* | *3* | *1* | *2* | *3* | *1* | *2* | *3* | *1* | *2* | *3* |
| 0.762 | 2.5 | 6.8 | 6.8 | 6.8 | 7.5 | 7.5 | 7.5 | 8.2 | 8.2 | 8.2 | 8.9 | 8.9 | 8.9 | 9.5 | 9.5 | 9.5 | 10.2 | 10.2 | 10.2 | 10.9 | 10.9 | 10.9 |
| | 2.6 | 6.2 | 6.2 | 6.2 | 6.8 | 6.8 | 6.8 | 7.4 | 7.4 | 7.4 | 8.0 | 8.0 | 8.0 | 8.7 | 8.7 | 8.7 | 9.3 | 9.3 | 9.3 | 9.9 | 9.9 | 9.9 |
| | 2.8 | 5.1 | 5.1 | 5.1 | 5.6 | 5.6 | 5.6 | 6.1 | 6.1 | 6.1 | 6.7 | 6.7 | 6.7 | 7.2 | 7.2 | 7.2 | 7.7 | 7.7 | 7.7 | 8.2 | 8.2 | 8.2 |
| | 3.0 | 4.3 | 4.3 | 4.3 | 4.7 | 4.7 | 4.7 | 5.1 | 5.1 | 5.1 | 5.6 | 5.6 | 5.6 | 6.0 | 6.0 | 6.0 | 6.4 | 6.4 | 6.4 | 6.8 | 6.8 | 6.8 |
| | 3.2 | 3.6 | 3.6 | 3.6 | 4.0 | 4.0 | 4.0 | 4.3 | 4.3 | 4.3 | 4.7 | 4.7 | 4.7 | 5.0 | 5.0 | 5.0 | 5.4 | 5.4 | 5.4 | 5.8 | 5.8 | 5.8 |
| | 3.4 | 3.0 | 3.0 | 3.0 | 3.3 | 3.3 | 3.3 | 3.6 | 3.6 | 3.6 | 4.0 | 4.0 | 4.0 | 4.3 | 4.3 | 4.3 | 4.6 | 4.6 | 4.6 | 4.9 | 4.9 | 4.9 |
| | 3.5 | 2.8 | 2.8 | 2.8 | 3.1 | 3.1 | 3.1 | 3.4 | 3.4 | 3.4 | 3.6 | 3.6 | 3.6 | 3.9 | 3.9 | 3.9 | 4.2 | 4.2 | 4.2 | 4.5 | 4.5 | 4.5 |
| | 3.6 | 2.6 | 2.6 | 2.6 | 2.8 | 2.8 | 2.8 | 3.1 | 3.1 | 3.1 | 3.4 | 3.4 | 3.4 | 3.6 | 3.6 | 3.6 | 3.9 | 3.9 | 3.9 | 4.1 | 4.1 | 4.1 |
| 0.914 | 2.6 | 7.0 | 7.0 | 7.0 | 7.7 | 7.7 | 7.7 | 8.4 | 8.4 | 8.4 | 9.1 | 9.1 | 9.1 | 9.8 | 9.8 | 9.8 | 10.5 | 10.5 | 10.5 | 11.2 | 11.2 | 11.2 |
| | 2.8 | 5.8 | 5.8 | 5.8 | 6.4 | 6.4 | 6.4 | 7.0 | 7.0 | 7.0 | 7.6 | 7.6 | 7.6 | 8.2 | 8.2 | 8.2 | 8.8 | 8.8 | 8.8 | 9.3 | 9.3 | 9.3 |
| | 3.0 | 4.9 | 4.9 | 4.9 | 5.4 | 5.4 | 5.4 | 5.9 | 5.9 | 5.9 | 6.4 | 6.4 | 6.4 | 6.9 | 6.9 | 6.9 | 7.4 | 7.4 | 7.4 | 7.9 | 7.9 | 7.9 |
| | 3.2 | 4.2 | 4.2 | 4.2 | 4.6 | 4.6 | 4.6 | 5.0 | 5.0 | 5.0 | 5.5 | 5.5 | 5.5 | 5.9 | 5.9 | 5.9 | 6.3 | 6.3 | 6.3 | 6.7 | 6.7 | 6.7 |
| | 3.4 | 3.6 | 3.6 | 3.6 | 4.0 | 4.0 | 4.0 | 4.3 | 4.3 | 4.3 | 4.7 | 4.7 | 4.7 | 5.1 | 5.1 | 5.1 | 5.4 | 5.4 | 5.4 | 5.8 | 5.8 | 5.8 |
| | 3.5 | 3.3 | 3.3 | 3.3 | 3.7 | 3.7 | 3.7 | 4.0 | 4.0 | 4.0 | 4.4 | 4.4 | 4.4 | 4.7 | 4.7 | 4.7 | 5.0 | 5.0 | 5.0 | 5.4 | 5.4 | 5.4 |
| | 3.6 | 3.1 | 3.1 | 3.1 | 3.4 | 3.4 | 3.4 | 3.7 | 3.7 | 3.7 | 4.0 | 4.0 | 4.0 | 4.4 | 4.4 | 4.4 | 4.7 | 4.7 | 4.7 | 5.0 | 5.0 | 5.0 |
| | 3.8 | 2.7 | 2.7 | 2.7 | 3.0 | 3.0 | 3.0 | 3.2 | 3.2 | 3.2 | 3.5 | 3.5 | 3.5 | 3.8 | 3.8 | 3.8 | 4.1 | 4.1 | 4.1 | 4.3 | 4.3 | 4.3 |
| 1.22 | 2.8 | 8.3 | 8.3 | 8.3 | 9.1 | 9.1 | 9.1 | 10.0 | 10.0 | 10.0 | 10.8 | 10.8 | 10.8 | 11.7 | 11.7 | 11.7 | 12.5 | 12.5 | 12.5 | 13.3 | 13.3 | 13.3 |
| | 3.0 | 7.2 | 7.2 | 7.2 | 7.9 | 7.9 | 7.9 | 8.7 | 8.7 | 8.7 | 9.4 | 9.4 | 9.4 | 10.1 | 10.1 | 10.1 | 10.8 | 10.8 | 10.8 | 11.5 | 11.5 | 11.5 |
| | 3.2 | 6.3 | 6.3 | 6.3 | 6.9 | 6.9 | 6.9 | 7.6 | 7.6 | 7.6 | 8.2 | 8.2 | 8.2 | 8.8 | 8.8 | 8.8 | 9.5 | 9.5 | 9.5 | 10.1 | 10.1 | 10.1 |
| | 3.4 | 5.5 | 5.5 | 5.5 | 6.1 | 6.1 | 6.1 | 6.7 | 6.7 | 6.7 | 7.2 | 7.2 | 7.2 | 7.8 | 7.8 | 7.8 | 8.3 | 8.3 | 8.3 | 8.9 | 8.9 | 8.9 |
| | 3.5 | 5.2 | 5.2 | 5.2 | 5.7 | 5.7 | 5.7 | 6.3 | 6.3 | 6.3 | 6.8 | 6.8 | 6.8 | 7.3 | 7.3 | 7.3 | 7.8 | 7.8 | 7.8 | 8.4 | 8.4 | 8.4 |
| | 3.6 | 4.9 | 4.9 | 4.9 | 5.4 | 5.4 | 5.4 | 5.9 | 5.9 | 5.9 | 6.4 | 6.4 | 6.4 | 6.9 | 6.9 | 6.9 | 7.4 | 7.4 | 7.4 | 7.9 | 7.9 | 7.9 |
| | 3.8 | 4.4 | 4.4 | 4.4 | 4.8 | 4.8 | 4.8 | 5.3 | 5.3 | 5.3 | 5.7 | 5.7 | 5.7 | 6.2 | 6.2 | 6.2 | 6.6 | 6.6 | 6.6 | 7.0 | 7.0 | 7.0 |
| | 4.0 | 3.9 | 3.9 | 3.9 | 4.3 | 4.3 | 4.3 | 4.7 | 4.7 | 4.7 | 5.1 | 5.1 | 5.1 | 5.5 | 5.5 | 5.5 | 5.9 | 5.9 | 5.9 | 6.3 | 6.3 | 6.3 |
| | 4.2 | 3.6 | 3.6 | 3.6 | 3.9 | 3.9 | 3.9 | 4.3 | 4.3 | 4.3 | 4.6 | 4.6 | 4.6 | 5.0 | 5.0 | 5.0 | 5.4 | 5.4 | 5.4 | 5.7 | 5.7 | 5.7 |
| | 4.4 | 3.2 | 3.2 | 3.2 | 3.6 | 3.6 | 3.6 | 3.9 | 3.9 | 3.9 | 4.2 | 4.2 | 4.2 | 4.5 | 4.5 | 4.5 | 4.8 | 4.8 | 4.8 | 5.2 | 5.2 | 5.2 |
| 1.52 | 3.4 | 6.3 | 6.3 | 6.3 | 6.9 | 6.9 | 6.9 | 7.6 | 7.6 | 7.6 | 8.2 | 8.2 | 8.2 | 8.8 | 8.8 | 8.8 | 9.5 | 9.5 | 9.5 | 10.1 | 10.1 | 10.1 |
| | 3.5 | 6.0 | 6.0 | 6.0 | 6.6 | 6.6 | 6.6 | 7.2 | 7.2 | 7.2 | 7.8 | 7.8 | 7.8 | 8.4 | 8.4 | 8.4 | 9.0 | 9.0 | 9.0 | 9.6 | 9.6 | 9.6 |
| | 3.6 | 5.6 | 5.6 | 5.6 | 6.2 | 6.2 | 6.2 | 6.8 | 6.8 | 6.8 | 7.3 | 7.3 | 7.3 | 7.9 | 7.9 | 7.9 | 8.5 | 8.5 | 8.5 | 9.0 | 9.0 | 9.0 |
| | 3.8 | 5.1 | 5.1 | 5.1 | 5.6 | 5.6 | 5.6 | 6.1 | 6.1 | 6.1 | 6.6 | 6.6 | 6.6 | 7.1 | 7.1 | 7.1 | 7.6 | 7.6 | 7.6 | 8.1 | 8.1 | 8.1 |
| | 4.0 | 4.6 | 4.6 | 4.6 | 5.0 | 5.0 | 5.0 | 5.5 | 5.5 | 5.5 | 5.9 | 5.9 | 5.9 | 6.4 | 6.4 | 6.4 | 6.9 | 6.9 | 6.9 | 7.3 | 7.3 | 7.3 |
| | 4.2 | 4.1 | 4.1 | 4.1 | 4.6 | 4.6 | 4.6 | 5.0 | 5.0 | 5.0 | 5.4 | 5.4 | 5.4 | 5.8 | 5.8 | 5.8 | 6.2 | 6.2 | 6.2 | 6.7 | 6.7 | 6.7 |
| | 4.4 | 3.8 | 3.8 | 3.8 | 4.2 | 4.2 | 4.2 | 4.5 | 4.5 | 4.5 | 4.9 | 4.9 | 4.9 | 5.3 | 5.3 | 5.3 | 5.7 | 5.7 | 5.7 | 6.1 | 6.1 | 6.1 |
| | 4.5 | 3.6 | 3.6 | 3.6 | 4.0 | 4.0 | 4.0 | 4.3 | 4.3 | 4.3 | 4.7 | 4.7 | 4.7 | 5.1 | 5.1 | 5.1 | 5.4 | 5.4 | 5.4 | 5.8 | 5.8 | 5.8 |
| | 4.6 | 3.5 | 3.5 | 3.5 | 3.8 | 3.8 | 3.8 | 4.2 | 4.2 | 4.2 | 4.5 | 4.5 | 4.5 | 4.9 | 4.9 | 4.9 | 5.2 | 5.2 | 5.2 | 5.6 | 5.6 | 5.6 |
| | 4.8 | 3.2 | 3.2 | 3.2 | 3.5 | 3.5 | 3.5 | 3.8 | 3.8 | 3.8 | 4.1 | 4.1 | 4.1 | 4.5 | 4.5 | 4.5 | 4.8 | 4.8 | 4.8 | 5.1 | 5.1 | 5.1 |
| 0.762 | DP | 211 | | | 259 | | | 315 | | | 378 | | | 448 | | | 527 | | | 614 | | |
| 0.914 | DP | 224 | | | 276 | | | 334 | | | 401 | | | 475 | | | 558 | | | 650 | | |
| 1.22 | DP | 249 | | | 305 | | | 369 | | | 442 | | | 524 | | | 614 | | | 715 | | |
| 1.52 | DP | 271 | | | 332 | | | 401 | | | 480 | | | 568 | | | 666 | | | 775 | | |

**NOTES:**
1. One shore support required at midspan in shaded areas.
2. Slab weight of steel deck and concrete slab has been accounted for in the load table.
3. Shoring was based on Light Duty uniform construction live load of ***1 kPa***.
4. DP = deflection parameter.
5. See composite slab notes and design example.
6. Prepared by Dr. R.M. Schuster, Distinguished Professor Emeritus, University of Waterloo.

CSSBI Fabricator Member

# WF-324 INVERTED COMPOSITE SLAB TECHNICAL NOTES (IMPERIAL UNITS)

## *Material Properties*

1. The composite steel deck WF-324 Inverted is the WF-324 roof deck with embossments rolled into the web elements to achieve the composite interlocking capacity between the steel deck and concrete.
2. Steel deck section properties were calculated in accordance with CSA S136-16.
3. Steel conforms to ASTM A653 SS Grade 40 with G90 surface coatings.
4. Concrete is based on normal density of 145 pcf and having a minimum compressive strength of 3 ksi.

## *Load Table*

1. Loads are maximum specified uniformly distributed loads resulting from human occupancy and should not be used for concentrated loads.
   Maximum specified load from load table must be ***≥ [LL + (1.25/1.5)DL]***;
   Where LL = specified live load;
   DL = specified dead load;
2. Loads greater than ***400 psf*** are commonly the result of large concentrated moving loads. In such cases, contact ***WESTFORM METALS.***
3. The WF-324 steel deck provides the positive reinforcement for the simply supported composite slab and no additional reinforcing steel is required. To control shrinkage and temperature cracking, it is the responsibility of the design engineer to provide the minimum shrinkage and temperature reinforcement as specified in CSSBI S3-2019.
4. *Shoring requirements shown in shaded areas of the load table were established in accordance with CSSBI 12M-24 and are based on a Light Duty uniform construction live load of **20 psf**. For Medium or Heavy Duty construction live loads contact **WESTFORM METALS** for the maximum unshored spans. Minimum bearing length at end support is 3 in. and at mid-support 6 in.*
5. To establish the shear-bond capacity of the composite slab system, laboratory tests were carried out at the Applied Dynamics Laboratory, Department of Civil Engineering, McMaster University, Hamilton Ontario in accordance with CSSBI S2-2017.
6. Use of deflection parameter, DP

   $$W_d = \frac{DP \times 10^6}{DC \times (L)^3}$$

   where:
   $W_d$ = Maximum specified deflection load in psf
   DP = Deflection parameter from load table
   DC = Deflection constant such as 360
   L = Span length in feet
7. All technical information and load tables were prepared by Dr. R.M. Schuster, P.Eng. Distinguished Professor Emeritus, University of Waterloo, Ontario.

## EXAMPLE

Determine the specified uniformly distributed live load that can be placed on the WF-324 Inverted composite floor slab, given the following information:

***Given:***

- Steel deck thickness = 0.048 in.
- Yield stress = 40 ksi
- Overall slab depth = 6.5 in.
- Double span, each = 13.5 ft
- Specified superimposed dead load, DL = 30 psf

***Check Strength:***

The maximum specified load in **(psf)** from load table must be ≥ [LL + 0.833(DL)],

where:
LL = specified live load
DL = specified superimposed dead load

From load table under 13.5 ft span, the maximum specified load is ***106 psf***, therefore,
106 ≥ [LL + 0.833(30)] and solving for LL,

**LL = *81 psf***

Since this is in the shaded area, one shore support is required at mid-span in each span.

***Note:***
***The self-weight of the steel deck and concrete slab have already been accounted for in the maximum specified uniformly distributed load given in the composite slab load table.***

***Check Deflection:***

From table DP = 361 and assuming DC = 360

$W_d = 361 \times 10^6/360/(13.5)^3$ = ***408 psf***
Since this is greater than 81 psf, strength controls.

# WF-324 INVERTED COMPOSITE SLAB TECHNICAL NOTES (METRIC UNITS)

## *Material Properties*

1. The composite steel deck WF-324 Inverted is the WF-324 roof deck with embossments rolled into the web elements to achieve the composite interlocking capacity between the steel deck and concrete.
2. Steel deck section properties were calculated in accordance with CSA S136-16.
3. Steel conforms to ASTM A653M SS Grade 275 with Z275 surface coatings.
4. Concrete is based on normal density of 2300 kg/m$^3$ and having a minimum compressive strength of 20 MPa.

## *Load Table*

1. Loads are maximum specified uniformly distributed loads resulting from human occupancy and should not be used for concentrated loads.
   Maximum specified load from load table must be ***≥ [LL + (1.25/1.5)DL]***;
   Where LL = specified live load;
   DL = specified dead load;
2. Loads greater than ***20 kPa*** are commonly the result of large concentrated moving loads. In such cases, contact ***WESTFORM METALS.***
3. The WF-324 steel deck provides the positive reinforcement for the simply supported composite slab and no additional reinforcing steel is required. To control shrinkage and temperature cracking, it is the responsibility of the design engineer to provide the minimum shrinkage and temperature reinforcement as specified in CSSBI S3-2019.
4. *Shoring requirements shown in shaded areas of the load table were established in accordance with CSSBI 12M-24 and are based on a Light Duty uniform construction live load of **1 kPa**. For Medium or Heavy Duty construction live loads contact **WESTFORM METALS** for the maximum unshored spans. Minimum bearing length at end support is 75 mm and at mid-support 150 mm.*
5. To establish the shear-bond capacity of the composite slab system, laboratory tests were carried out at the Applied Dynamics Laboratory, Department of Civil Engineering, McMaster University, Hamilton, Ontario in accordance with CSSBI S2-2017.
6. Use of deflection parameter, DP

$$W_d = \frac{DP \times 10^3}{DC \times (L)^3}$$

   where:
   $W_d$ = Maximum specified deflection load in kPa
   DP = Deflection parameter from load table
   DC = Deflection constant such as 360
   L = Span length in meters
7. All technical information and load tables were prepared by Dr. R.M. Schuster, P.Eng. Distinguished Professor Emeritus, University of Waterloo, Ontario.

## EXAMPLE

Determine the specified uniformly distributed live load that can be placed on the WF-324 Inverted composite floor slab, given the following information:

***Given:***

- Steel deck thickness = 0.914 mm
- Yield stress = 275 MPa
- Overall slab depth = 150 mm
- Double span, each = 3.5 m
- Specified superimposed dead load, DL = 1.10 kPa

***Check Strength:***

The maximum specified load in **(kPa)** from load table must be ≥ [LL + 0.833(DL)],

where:
LL = specified live load
DL = specified superimposed dead load

From load table under 3.5 m span, the maximum specified load is ***4.0 kPa***, therefore,
4.0 ≥ [LL + 0.833(1.10)] and solving for LL,

**LL = *3.1 kPa***

Since this is in the shaded area, one shore support is required at mid-span in each span.

***Note:***

***The self-weight of the steel deck and concrete slab have already been accounted for in the maximum specified uniformly distributed load given in the composite slab load table.***

***Check Deflection:***

From table DP = 334 and assuming DC = 360

$W_d = 334 \times 10^3/360/(3.5)^3$ = ***21.6 kPa***
Since this is greater than 3.1 kPa, strength controls.