



NEW MILLENNIUM
BUILDING SYSTEMS

Factory Mutual Approved Steel Decks – N Deck

To whom it may concern:

New Millennium Building Systems steel roof deck types F (intermediate rib – IR), B (wide rib – WR) and N (deep rib – DR) are approved for use as a component of Factory Mutual compliant roof systems. New Millennium decks have been approved in accordance with Factory Mutual, Approval Standard for Steel Deck as Component of Class 1 Insulated Steel Roof Deck Construction, Class Number 4451 revised 6/2012. Reference the following tables for approved gages, maximum allowed center-to-center spans and securement requirements for Classes 1-60, 1-75 and 1-90. The securement of the roof system must be enhanced at the building corners and perimeter as outlined in FM Global Property Loss Prevention Data Sheet 1-29.

To ensure availability of material and avoid delays to your project, New Millennium must be informed as early in the contract process as possible when steel with a minimum yield stress of 80 ksi is determined to be a requirement by the design professional to satisfy Factory Mutual Data Sheet 1-29, Section 2.2.3, Steel Roof Deck. One of the design considerations that may require the higher strength steel is when a rating higher than 1-90 is needed. Consult the Section noted above for other conditions that may also result in the necessity of this requirement.

| Type N - Factory Mutual Maximum Ctr. to Ctr. Spans (ft. - in.) | | | | | | | | | | | | | | | | | | |
|--|--------|--------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|---------|---------|--------|---------|---------|--------|
| FM Class | 1 - 60 | | | | | | 1 - 75 | | | | | | 1 - 90 | | | | | |
| Deck Gage | 22 | 21 | 20 | 19 | 18 | 16 | 22 | 21 | 20 | 19 | 18 | 16 | 22 | 21 | 20 | 19 | 18 | 16 |
| Single Span | 12 - 8 | 14 - 3 | 14 - 11 | 16 - 1 | 17 - 2 | 19 - 3 | 12 - 4 | 13 - 3 | 14 - 0 | 15 - 3 | 16 - 3 | 18 - 3 | 11 - 3 | 12 - 1 | 12 - 9 | 13 - 11 | 14 - 10 | 16 - 8 |
| Double Span | 13 - 0 | 14 - 0 | 14 - 11 | 16 - 3 | 17 - 5 | 19 - 10 | 11 - 7 | 12 - 6 | 13 - 4 | 14 - 7 | 15 - 7 | 17 - 9 | 10 - 7 | 11 - 5 | 12 - 2 | 13 - 3 | 14 - 3 | 16 - 3 |
| Triple Span | 14 - 6 | 15 - 8 | 16 - 8 | 18 - 2 | 19 - 6 | 22 - 3 | 13 - 0 | 14 - 0 | 14 - 11 | 16 - 3 | 17 - 5 | 19 - 10 | 11 - 10 | 12 - 10 | 13 - 7 | 14 - 10 | 15 - 11 | 18 - 2 |

New Millennium Building Systems LLC Type N steel roof deck is secured to the structural supports. The deck is covered with an FM Approved fully or partially adhered roof covering or with a mechanically attached roof covering when the in-row fastener spacing is less than or equal to one-half of the deck span, per proprietary listings. For all constructions, minimum 2 in. (38 mm) thick polyisocyanurate insulation board is installed with edges along the centerline of the top flange.

Go to www.roofnav.com to obtain up to date information.

The maximum allowable span is the lesser of:

- the span shown in the table below,
- the maximum span for the selected proprietary fastener used to secure the deck or
- the maximum span shown in the specified RoofNav assembly

The wind uplift rating of the completed roof assembly cannot exceed the wind rating of the above deck components shown in the specified RoofNav assembly.

The deck is secured to structural supports using fasteners FM Approved for securing steel deck to structural supports or with welds as described below. Steel deck side laps are secured using fasteners FM Approved for securing steel deck laps. Refer to RoofNav product listings for fastener details.

In lieu of mechanical fasteners, the decks are secured to supports with puddle welds as noted in Tables A through C. The weld diameter shown is the minimum visible weld diameter for a single sheet of deck for spans shown in. See Table D for the equivalent visible weld diameter needed when welding through multiple sheets of deck.

| Maximum Spans for Type N | | | | | | |
|---------------------------------|--------------------------|------|------|------|------|------|
| Deck Design Thickness | Wind Rating - Three Span | | | | | |
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 174 | 4420 | 156 | 3962 | 142 | 3607 |
| 0.0329 in. (0.84 mm, 21 ga.) | 188 | 4775 | 168 | 4267 | 154 | 3912 |
| 0.0358 in. (0.91 mm, 20 ga.) | 200 | 5080 | 179 | 4547 | 163 | 4140 |
| 0.0418 in. (1.10 mm, 19 ga.) | 218 | 5537 | 195 | 4953 | 178 | 4521 |
| 0.0474 in. (1.20 mm, 18 ga.) | 234 | 5944 | 209 | 5309 | 191 | 4851 |
| 0.0598 in. (1.52 mm, 16 ga.) | 267 | 6782 | 238 | 6045 | 218 | 5537 |
| Deck Design Thickness | Wind Rating - Two Span | | | | | |
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 156 | 3962 | 139 | 3531 | 127 | 3226 |
| 0.0329 in. (0.84 mm, 21 ga.) | 168 | 4267 | 150 | 3810 | 137 | 3480 |
| 0.0358 in. (0.91 mm, 20 ga.) | 179 | 4547 | 160 | 4064 | 146 | 3708 |
| 0.0418 in. (1.10 mm, 19 ga.) | 195 | 4953 | 175 | 4445 | 159 | 4039 |
| 0.0474 in. (1.20 mm, 18 ga.) | 209 | 5309 | 187 | 4750 | 171 | 4343 |
| 0.0598 in. (1.52 mm, 16 ga.) | 238 | 6045 | 213 | 5410 | 195 | 4953 |
| Deck Design Thickness | Wind Rating - One Span | | | | | |
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 152 | 3861 | 148 | 3759 | 135 | 3429 |
| 0.0329 in. (0.84 mm, 21 ga.) | 171 | 4343 | 159 | 4039 | 145 | 3683 |
| 0.0358 in. (0.91 mm, 20 ga.) | 179 | 4547 | 168 | 4267 | 153 | 3886 |
| 0.0418 in. (1.10 mm, 19 ga.) | 193 | 4902 | 183 | 4648 | 167 | 4242 |
| 0.0474 in. (1.20 mm, 18 ga.) | 206 | 5232 | 195 | 4953 | 178 | 4521 |
| 0.0598 in. (1.52 mm, 16 ga.) | 231 | 5867 | 219 | 5563 | 200 | 5080 |

| Table A - Type N | | | | | | | |
|------------------|-----|---------------|------|--------------|-------|----------------|-----|
| Deck Yield | | Weld Diameter | | Weld Spacing | | Weld Electrode | |
| psi | MPa | in. | mm | in. | mm | psi | MPa |
| 33000 | 228 | 0.5 | 12.7 | 8 | 203.2 | 60000 | 414 |

| Deck Design Thickness | Wind Rating - One Span | | | | | |
|------------------------------|------------------------|------|------|------|------|------|
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 111 | 2819 | 89 | 2261 | 74 | 1880 |
| 0.0329 in. (0.84 mm, 21 ga.) | 123 | 3124 | 98 | 2489 | 82 | 2083 |
| 0.0358 in. (0.91 mm, 20 ga.) | 133 | 3378 | 106 | 2692 | 88 | 2235 |
| 0.0418 in. (1.10 mm, 19 ga.) | 153 | 3886 | 123 | 3124 | 102 | 2591 |
| 0.0474 in. (1.20 mm, 18 ga.) | 172 | 4369 | 137 | 3480 | 114 | 2896 |
| 0.0598 in. (1.52 mm, 16 ga.) | 211 | 5359 | 169 | 4293 | 140 | 3556 |

| Deck Design Thickness | Wind Rating - Two Spans | | | | | |
|------------------------------|-------------------------|------|------|------|------|------|
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 89 | 2261 | 71 | 1803 | 59 | 1499 |
| 0.0329 in. (0.84 mm, 21 ga.) | 98 | 2489 | 79 | 2007 | 65 | 1651 |
| 0.0358 in. (0.91 mm, 20 ga.) | 106 | 2692 | 85 | 2159 | 71 | 1803 |
| 0.0418 in. (1.10 mm, 19 ga.) | 123 | 3124 | 98 | 2489 | 82 | 2083 |
| 0.0474 in. (1.20 mm, 18 ga.) | 137 | 3480 | 110 | 2794 | 91 | 2311 |
| 0.0598 in. (1.52 mm, 16 ga.) | 169 | 4293 | 135 | 3429 | 112 | 2845 |

| Deck Design Thickness | Wind Rating - Three or More Spans | | | | | |
|------------------------------|-----------------------------------|------|------|------|------|------|
| | 1-60 | | 1-75 | | 1-90 | |
| | in. | mm | in. | mm | in. | mm |
| 0.0295 in. (0.75 mm, 22 ga.) | 101 | 2565 | 81 | 2057 | 67 | 1702 |
| 0.0329 in. (0.84 mm, 21 ga.) | 112 | 2845 | 89 | 2261 | 74 | 1880 |
| 0.0358 in. (0.91 mm, 20 ga.) | 121 | 3073 | 97 | 2464 | 80 | 2032 |
| 0.0418 in. (1.10 mm, 19 ga.) | 139 | 3531 | 111 | 2819 | 93 | 2362 |
| 0.0474 in. (1.20 mm, 18 ga.) | 156 | 3962 | 125 | 3175 | 104 | 2642 |
| 0.0598 in. (1.52 mm, 16 ga.) | 192 | 4877 | 153 | 3886 | 128 | 3251 |

| Table B - Type N | | | | | | | |
|-----------------------------------|------------------------------|---------------|--------|--------------|-------|----------------|------|
| Deck Yield | | Weld Diameter | | Weld Spacing | | Weld Electrode | |
| psi | MPa | in. | mm | in. | mm | psi | MPa |
| 33000 | 228 | 0.625 | 15.875 | 8 | 203.2 | 60000 | 414 |
| Wind Rating - One Span | | | | | | | |
| Deck Design Thickness | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| | 0.0295 in. (0.75 mm, 22 ga.) | 141 | 3581 | 112 | 2845 | 94 | 2388 |
| 0.0329 in. (0.84 mm, 21 ga.) | 156 | 3962 | 125 | 3175 | 104 | 2642 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 169 | 4293 | 135 | 3429 | 112 | 2845 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 195 | 4953 | 156 | 3962 | 130 | 3302 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 219 | 5563 | 175 | 4445 | 146 | 3708 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 271 | 6883 | 217 | 5512 | 181 | 4597 | |
| Wind Rating - Two Spans | | | | | | | |
| Deck Design Thickness | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| | 0.0295 in. (0.75 mm, 22 ga.) | 112 | 2845 | 90 | 2286 | 75 | 1905 |
| 0.0329 in. (0.84 mm, 21 ga.) | 125 | 3175 | 100 | 2540 | 83 | 2108 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 135 | 3429 | 108 | 2743 | 90 | 2286 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 156 | 3962 | 125 | 3175 | 104 | 2642 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 175 | 4445 | 140 | 3556 | 117 | 2972 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 217 | 5512 | 173 | 4394 | 144 | 3658 | |
| Wind Rating - Three or More Spans | | | | | | | |
| Deck Design Thickness | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| | 0.0295 in. (0.75 mm, 22 ga.) | 128 | 3251 | 102 | 2591 | 85 | 2159 |
| 0.0329 in. (0.84 mm, 21 ga.) | 142 | 3607 | 113 | 2870 | 94 | 2388 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 154 | 3912 | 123 | 3124 | 102 | 2591 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 178 | 4521 | 142 | 3607 | 118 | 2997 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 199 | 5055 | 159 | 4039 | 133 | 3378 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 246 | 6248 | 197 | 5004 | 164 | 4166 | |

| Table C - Type N | | | | | | | |
|------------------------------|-----------------------------------|---------------|-------|--------------|-------|----------------|-----|
| Deck Yield | | Weld Diameter | | Weld Spacing | | Weld Electrode | |
| psi | MPa | in. | mm | in. | mm | psi | MPa |
| 33000 | 228 | 0.75 | 19.05 | 8 | 203.2 | 60000 | 414 |
| | | | | | | | |
| Deck Design Thickness | Wind Rating - One Span | | | | | | |
| | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| 0.0295 in. (0.75 mm, 22 ga.) | 170 | 4318 | 136 | 3454 | 113 | 2870 | |
| 0.0329 in. (0.84 mm, 21 ga.) | 189 | 4801 | 151 | 3835 | 126 | 3200 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 205 | 5207 | 164 | 4166 | 136 | 3454 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 237 | 6020 | 190 | 4826 | 158 | 4013 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 267 | 6782 | 214 | 5436 | 178 | 4521 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 331 | 8407 | 265 | 6731 | 221 | 5613 | |
| | | | | | | | |
| Deck Design Thickness | Wind Rating - Two Spans | | | | | | |
| | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| 0.0295 in. (0.75 mm, 22 ga.) | 136 | 3454 | 109 | 2769 | 91 | 2311 | |
| 0.0329 in. (0.84 mm, 21 ga.) | 151 | 3835 | 121 | 3073 | 101 | 2565 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 164 | 4166 | 131 | 3327 | 109 | 2769 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 190 | 4826 | 152 | 3861 | 126 | 3200 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 214 | 5436 | 171 | 4343 | 142 | 3607 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 265 | 6731 | 212 | 5385 | 176 | 4470 | |
| | | | | | | | |
| Deck Design Thickness | Wind Rating - Three or More Spans | | | | | | |
| | 1-60 | | 1-75 | | 1-90 | | |
| | in. | mm | in. | mm | in. | mm | |
| 0.0295 in. (0.75 mm, 22 ga.) | 155 | 3937 | 124 | 3150 | 103 | 2616 | |
| 0.0329 in. (0.84 mm, 21 ga.) | 172 | 4369 | 137 | 3480 | 114 | 2896 | |
| 0.0358 in. (0.91 mm, 20 ga.) | 186 | 4724 | 149 | 3785 | 124 | 3150 | |
| 0.0418 in. (1.10 mm, 19 ga.) | 216 | 5486 | 172 | 4369 | 144 | 3658 | |
| 0.0474 in. (1.20 mm, 18 ga.) | 243 | 6172 | 194 | 4928 | 162 | 4115 | |
| 0.0598 in. (1.52 mm, 16 ga.) | 301 | 7645 | 241 | 6121 | 200 | 5080 | |

The equivalent visible weld diameter needed when welding through multiple sheets of deck

| Table D - Type N | | | | | | |
|------------------------------|--|-----|-----------------|-----|-----------------|-----|
| Deck Design Thickness | Number of Welded Sheets | | | | | |
| | 2 | 4 | 2 | 4 | 2 | 4 |
| | in. (mm) | | in. (mm) | | in. (mm) | |
| | Visible Weld Diameter Through Single Sheet | | | | | |
| | 0.5 (12.7) | | 0.625 (15.9) | | 0.75 (19.1) | |
| | Equivalent Visible Weld Diameter for Multiple Sheets | | | | | |
| 0.0295 in. (0.75 mm, 22 ga.) | 0.500 (12.7) | | 0.625 (15.9) | | 0.750 (19.1) | |
| 0.0329 in. (0.84 mm, 21 ga.) | 0.500 (12.7) | | 0.625 (15.9) | | 0.750 (19.1) | |
| 0.0358 in. (0.91 mm, 20 ga.) | 0.500 (12.7) | † | 0.625 (15.9) | | 0.750 (19.1) | |
| 0.0418 in. (1.10 mm, 19 ga.) | 0.500 (12.7) | N/A | 0.625 (15.9) | N/A | 0.750 (19.1) | N/A |
| 0.0474 in. (1.20 mm, 18 ga.) | 0.500 (12.7) | N/A | 0.625 (15.9) | N/A | 0.750 (19.1) | N/A |
| 0.0598 in. (1.52 mm, 16 ga.) | ‡ | N/A | 0.625 (15.9) | N/A | 0.750 (19.1) | N/A |

† = 0.526 in. (13.4 mm) with 60,000 psi (414 MPa) weld electrode and 0.510 in. (13.0 mm) with 70,000 psi (483 MPa) weld electrode

‡ = 0.533 in. (13.5 mm) with 60,000 psi (414 MPa) weld electrode and 0.512 in. (13.0 mm) with 70,000 psi (483 MPa) weld electrode