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# MIRAGE PANELS, PBU-PANELS, U-PANELS, MEGA-RIB PANELS

**CSI Section:**

**07 41 13 – Metal Roof Panels**
**07 42 13 – Metal Wall Panels**
**07 42 13.13 – Formed Metal Wall Panels**

## 1.0 RECOGNITION

Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels described in this report have been evaluated for use as metal roof and wall panels. The structural, weather resistance and fire performance properties of the Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels have been evaluated for compliance with the following codes:

- 2018,2015, 2012, and 2009 International Building Code® (IBC)
- 2018, 2015, 2012, and 2009 International Residential Code® (IRC)

## 2.0 LIMITATIONS

Use of the Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels described in this report is subject to the following limitations:

**2.1** Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels shall be installed and used in accordance with this report, applicable code requirements and the manufacturer's published installation guidelines. Where conflicts occur, the more restrictive requirements shall govern.

**2.2** Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels roof slopes shall comply with IBC Section 1507.4.2 or IRC Section R905.10.2.

**2.3** Details and calculations demonstrating compliance with this report shall be submitted to the building official for approval. When required by the local jurisdiction, the structural calculations and related documents shall be prepared by a registered design professional.

**2.4** Design of panel penetrations and other panel discontinuities shall be the responsibility of the design professional using rational engineering mechanics or in accordance with the manufacturer's installation instructions as approved by the building official.

**2.5** Use of the Mirage panels as lateral load resisting elements in horizontal or vertical diaphragms is outside the scope of this report.

**2.6** Where PBU-Panels, U-Panels, or Maga-Rib Panels wall panels are used as vertical diaphragm shear resistance in walls (shear wall) of light-frame construction, for seismic design, the walls shall be classified as a "bearing wall system" or "building frame system" with "light-framed walls with shear panels of all other materials" subject to the conditions of this classification as defined in ASCE/SEI 7 Section 12.2.

**2.7** When steel panels are used as the stressed skin shear carrying element of a horizontal or sloped diaphragm as defined in Section 202 of the IBC, the diaphragm length and width shall be limited by one of the following: engineering mechanics; applied loads; shear capacity of the diaphragm; diaphragm shear deflection limited by the requirements of ASCE/SEI 7 in Section 12.8.6 entitled, "Story Drift Determination"; or Section 12.12 entitled, "Drift and Deformation". Shear deflection shall be based on the shear stiffness for the steel deck diaphragm and equations of mechanics. Common shear deflection equations as shown in Table 19 of this report may be used.

### 2.8 Product Performance

**2.8.1 Structural:** The tables provided in this report specify the gross and effective section properties, inward (positive) uniform allowable loads, allowable reactions at supports, outward (negative) uniform allowable loads, allowable diaphragm shear strengths, q (plf) and shear stiffnesses, G (kips/in) for each of the panels described in Section 4.0 of this report.

**2.8.2 Roof Classification:** Roof assemblies complying with the requirements of IBC Section 1505.2, Exception 2, or IRC Section R902.1, Exception 2, are considered Class A roof assemblies. For other conditions, roof assemblies shall be listed as Class A, B, or C in accordance with ASTM E108 or UL 790, by an approved listing agency or shall be considered as a non-classified roofing.

**2.8.3 Air and Water Infiltration:** Air infiltration resistance is outside the scope of this report. Water infiltration without underlayment is outside the scope of this report. Weather protection using underlayment for roofs, or water-resistive barrier for walls, shall comply with Section 3.0 of this report.

**2.8.4 Hail Resistance:** Hail resistance is outside the scope of this report.

**2.8.5 Wind-blown Debris Resistance:** Wind-blown debris resistance is outside the scope of this report.

**2.8.6 Fire-Resistance Rating:** Fire-resistance of walls is outside the scope of this report. Fire-resistance ratings, when required, shall be determined in accordance with IBC Section 703 or IRC Section R302.

**2.9** Mirage Panels, PBU-Panels, U-Panels, and Mega-Rib Panels are manufactured in Adelanto, California.

**3.0 PRODUCT USE**

**3.1 Mirage Panels:** Mirage Panels comply with IBC Section 1507.4 and IRC Section R905.10 as metal roof panels and are used as new roof coverings installed over solid or closely fitted sheathing complying with the applicable code listed in Section 1.0 of this report.

**3.1.1 Design:** The allowable uniform uplift wind loads for the Mirage Panel installed in accordance with the manufacturer's installation instructions are shown in Table 1 of this report.

**3.1.2 Installation:** Roof slope shall comply with IBC Section 1507.4.2.3 or IRC Section R905.10.2.3. Underlayment shall be installed in accordance with Section 1507.1.1 and Tables 1507.1.1(1), 1507.1.1(2), and 1507.1.1(3) of the IBC or Section R905.1.1 and Tables R905.1.1(1), R905.1.1(2), and R905.1.1(3) of the IRC for metal roof panels. Mirage Panels shall be installed in a continuous run without end-laps using the Mirage clips described in Section 4.1 of this report. The fasteners used to attach the Mirage clips to the sheathing or supports shall be two No.10-16 by 1-inch-long (25.4 mm) self-drilling, corrosion-resistant galvanized steel pancake head screws per clip, spaced as described in Table 1 of this report and through the roof sheathing to steel supports of minimum No.16 gage [0.0568 inch (1.44 mm)] framing having a minimum yield strength of 55 ksi (379 MPa) and complying with the applicable code in Section 1.0 of this report. As an option, sealant may be to the lap joints as shown in Figure 4 of this report. The sealant installation to the panel assembly shall be in accordance with the sealant manufacturer's installation instructions. Additional panel trim and accessories are provided to fit the specific needs of the jobsite.

**3.2 PBU-Panels and U-Panels:** PBU- and U-Panels comply with IBC Sections 1403.5, 1404.2. and 1507.4, and IRC Sections R703.3 and R905.10 as steel wall coverings and metal roof panels and are used as new roof and wall coverings installed directly to steel framing.

**3.2.1 Design:** The section properties, determined using AISI S100 design specifications, are shown in Table 5 (U-Panel) and Table 8 (PBU-Panel), of this report.

The allowable uniform positive and negative loads for the PBU- and U-Panels, installed in accordance with this report and the manufacturer's installation instructions directly to steel framing, are shown in Tables 2 to 4; and 6 and 7, respectively, of this report.

Panel attachments shall be designed to equal or exceed the design negative loads. The design shall comply with Section E of AISI S100-12 and is subject to approval of the building official.

The allowable horizontal and vertical diaphragm shear strengths and stiffnesses for the PBU- and U-Panels, installed in accordance with the manufacturer's installation instructions directly to steel framing, are shown in Tables 14 to 18 of this report. The tabulated values are for full-width panels. For cut panels, diaphragm shear strength and stiffness shall be evaluated in accordance with AISI S310. A load path to the foundation shall be provided for the uplift, shear, and compression forces as determined by the design professional and approved by the building official. Elements resisting shear wall forces contributed by multiple stories shall be designed for the sum of forces contributed by each story.

**3.2.2 Installation:** Roof slope shall comply with IBC Section 1507.4.2.1 or 1507.4.2.2; or IRC Section R905.10.2.1 or R905.10.2.2.

For walls, a water-resistive barrier shall be provided in accordance with IBC Sections 1403.2 and 1404.2 or IRC Section R703.2; flashing shall be provided in accordance with IBC Section 1405.4 or IRC Section R703.4.

PBU- and U-Panels shall be secured using No.12-14 by 1¼-inch long (32 mm) corrosion-resistant galvanized steel HWH self-drilling tapping screws spaced as shown in Figure 5 of this report and direct to the No.16 gage [0.0568 inch (1.44 mm)] steel supports having a minimum yield strength of 55 ksi (379 MPa) and complying with the applicable code in Section 1.0 of this report.

For installations directly over steel framing, PBU- and U-Panels shall be located in accordance with Tables 2 to 4; and 6 and 7, respectively, of this report.

The PBU-Panels and U-Panels shall be attached using galvanized steel or stainless-steel fasteners that are painted with corrosion-resistant coatings for sealant and a sealing cap for the stainless steel.

Sealant shall be applied for roof slopes of ½ units vertical in 12 units horizontal to 3 units vertical in 12 units horizontal (4 to 25 percent) to the lap joints. PBU- and U-Panels are installed in a continuous run with no end laps. The sealant installation to the panel assembly shall be in accordance with the sealant manufacturer's installation instructions. Both panel ends shall be secured to the steel supports with one screw placed midway at the panel's corrugation. The

fasteners being installed at the interior, have a screw installed in between alternate corrugations. In the two fastening patterns, the stitch fasteners are installed 1 foot, 8 inches (508 mm) on center at the corrugation's top at the side laps as illustrated in Figure 5 of this report. Additional panel trim and accessories are provided to fit the specific needs of the jobsite.

**3.3 Mega-Rib Panels:** Mega-Rib Panels comply with IBC Sections 1403.5, 1404.2. and 1507.4, and IRC Sections R703.3 and R905.10 as steel wall coverings and metal roof panels and are used as new roof and wall coverings installed directly to steel framing.

**3.3.1 Design:** Section properties determined in accordance with AISI S100 are shown in Table 11 of this report.

The allowable uniform positive and negative loads for the Mega-Rib Panels, installed in accordance with this report and the manufacturer's installation instructions directly to steel framing, are shown in Tables 9 and 10 of this report. Panel attachments shall be designed to equal or exceed the design negative loads. The design shall comply with Section E of AISI S100-12 and is subject to approval of the building official.

The allowable horizontal and vertical diaphragm shear strengths and stiffnesses for the Mega-Rib Panels, installed in accordance with the manufacturer's installation instructions directly to steel framing, are shown in Tables 12 and 13 of this report. The tabulated values are for full-width panels. For cut panels, diaphragm shear strength and stiffness shall be evaluated in accordance with AISI S310. A load path to the foundation shall be provided for the uplift, shear, and compression forces as determined by the design professional and approved by the building official. Elements resisting shear wall forces contributed by multiple stories shall be designed for the sum of forces contributed by each story.

**3.3.2 Installation:** Roof slope shall comply with IBC Section 1507.4.2.1 or 1507.4.2.2; or IRC Section R905.10.2.1 or R905.10.2.2. For installations directly over steel framing, Mega-Rib Panels shall be located in accordance with Tables 11 and 12 of this report.

For walls, a water-resistive barrier shall be provided in accordance with IBC 1403.2 or IRC Section R703.2; flashing shall be provided in accordance with IBC Section 1405.4 or IRC Section R703.4.

The Mega-Rib Panels shall be attached using galvanized steel or stainless-steel fasteners that are painted with corrosion-resistant coatings for sealant and a sealing cap for the stainless steel.

Sealant shall be applied for roof slopes of ½ units vertical in 12 units horizontal to 3 units vertical in 12 units horizontal (4 to 25 percent) to the lap joints. The sealant installation to the panel assembly shall be in accordance with the sealant manufacturer's installation instructions. Mega-Rib Panels are installed in a continuous run with no end laps. Both panel ends shall be secured to the steel supports with one screw placed midway at the panel's corrugation. The fasteners being installed at the interior, have a screw installed in between alternate corrugations. In the two fastening patterns, the stitch fasteners are installed 1 foot, 8 inches (508 mm) on center at the corrugation's top at the side laps as illustrated in Figure 5 of this report. Additional panel trim and accessories are provided to fit the specific needs of the jobsite.

## 4.0 PRODUCT DESCRIPTION

**4.1 Mirage Panel:** The Mirage Panel is a standing seam metal roof covering that is rolled and pressure-formed from sheet steel complying with ASTM A792, Grade 50 (Class 1 or 4) with an AZ50 or AZ55 aluminum-zinc alloy coating. The No. 24 gage panel minimum base-metal design thickness is 0.0224 inch (0.57 mm). The panel width is 16 inches (406 mm) and panel height is $1^{5}/_{8}$-inches (41.3 mm) with 8-inch-on-center (203 mm) ribs that are equally spaced between the taller profiles. The panels are available in lengths of 3 to 50 feet (0.9 m to 15.2 m) and delivered to the jobsite as shown in Figure 1 of this report.

The Mirage Clip is pressure-formed steel having a No.20 gage [0.0338-inch (0.86 mm)] minimum design base-metal thickness complying with ASTM A653 SS Grade 50 or ASTM A792 SS Grade 50.

**4.2 U-Panel:** The U-Panel is a through-fastened metal roof and wall covering that is rolled and pressure-formed from sheet steel complying with ASTM A792, Grade 50 (Class 1 or 4) or Grade 80 with an AZ50 aluminum-zinc alloy coating. The No. 24 gage panel minimum base-metal design thickness is 0.0224 inch (0.57 mm); and the 26 gage is 0.0176 inch (0.45 mm). The panel width is 36 inches (914 mm) and panel height is $^{43}/_{64}$ inch (17.1 mm) with 6-inch-on-center (152 mm) continuous corrugations. The panels are available in lengths of 3 to 45 feet (0.9 m to 13.7 m) long and delivered to the jobsite as shown in Figure 2 of this report.

**4.3 PBU-Panel:** The PBU-Panel is identical to the U-Panel, except the PBU-Panel has a purlin-bearing edge that provides reinforcement in the corrugation's side lap as illustrated in Figure 3 of this report.

**4.4 Mega-Rib Panel:** The Mega-Rib is a through-fastened metal roof and wall covering that is rolled and pressure-formed from sheet steel complying with ASTM A792, Grade 50 (Class 1 or 4) or Grade 80 with an AZ50 aluminum-zinc alloy coating. The No. 24 gage panel minimum base-metal design thickness is 0.0224 inch (0.57

mm); and the No. 26 gage is 0.0176 inch (0.45 mm). The panel width is 36 inches (914 mm) and its height is 1½ inches (38.1 mm) with 6-inch-on-center (152 mm) continuous corrugations. The panels are available in lengths of 3 to 40 feet (0.9 m to 13.7 m) long and delivered to the jobsite as shown in Figure 6 of this report.

## 5.0 IDENTIFICATION

Mirage Panel, U-Panel and PBU-Panel are identified with a label on the package of trim material or the pallet identifying the company name (McElroy Metal, Inc.), the product name, Adelanto, CA (Division 106), the IAPMO UES Marks of Conformity and the Evaluation Report Number (ER-270). Either Mark of Conformity may be used as shown below:

or

**IAPMO UES ER-270**

## 6.0 SUBSTANTIATING DATA

**6.1** Data in accordance with IAPMO Uniform ES EC 011-2019, Evaluation Criteria for Single Skin Roof and Wall Panels.

**6.2** Test results from laboratories in compliance with ISO/IEC 17025.

**6.3** Manufacturer's descriptive literature and installation instructions.

**6.4** IAPMO Uniform ES approved Quality Control Manual, in accordance with IAPMO Uniform ES ES-10 Quality Management System Review Procedures.

## 7.0 STATEMENT OF RECOGNITION

This evaluation report describes the results of research carried out by the IAPMO Uniform Evaluation Service on Mirage Panel, PBU-Panel and U-Panel manufactured in Adelanto, California to assess their conformance to the codes shown in Section 1.0 of this report and serves as documentation of the product's certification. Products are manufactured at the location noted in Section 2.9 of this report under a quality control program with periodic inspection under the surveillance program by IAPMO UES.

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**For additional information about this evaluation report please visit www.uniform-es.org or email at info@uniform-es.org**

**TABLE 1—ALLOWABLE UNIFORM UPLIFT FOR MIRAGE PANEL (psf)**

| MATERIAL – No. 24 gage / $F_y$ = 50 ksi | |
|---|---|
| **Span (ft)** | **Allowable Load (psf)[1]** |
| 1.5 | 92.1 |
| 2.0 | 86.4 |
| 2.5 | 80.8 |
| 3.0 | 75.1 |
| 3.5 | 69.5 |
| 4.0 | 63.8 |
| 4.5 | 58.2 |
| 5.0 | 52.5 |

For **SI:** 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

1. Allowable uniform uplift loads were calculated based upon equal span lengths between clips.

**TABLE 2 —ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 24 GAGE U-PANEL**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Span Type** | **Load Type** | **1.50** | **2.00** | **2.50** | **3.00** | **3.50** | **4.00** | **4.50** | **5.00** | **5.50** | **6.00** | **6.50** | **7.00** | **7.50** | **8.00** | **8.50** | **9.00** |
| Single | Positive Wind | 455 | 256 | 164 | 113 | 83 | 64 | 50 | 41 | 33 | 28 | 24 | 20 | 18 | 16 | 14 | 12 |
| | Negative Wind | 407 | 229 | 146 | 101 | 74 | 57 | 45 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Live | 455 | 256 | 164 | 113 | 83 | 64 | 50 | 41 | 33 | 28 | 24 | 20 | 18 | 16 | 14 | 12 |
| | Deflection (L/180) | 500 | 287 | 147 | 85 | 53 | 35 | 25 | 18 | 13 | 10 | 8 | 6 | 5 | 4 | 3 | 3 |
| | Deflection (L/240) | 500 | 215 | 110 | 63 | 40 | 26 | 18 | 13 | 10 | 7 | 6 | 5 | 4 | 3 | 2 | 2 |
| 2 Span | Positive Wind | 384 | 221 | 143 | 100 | 73 | 56 | 44 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Negative Wind | 424 | 246 | 159 | 111 | 82 | 63 | 50 | 40 | 33 | 28 | 24 | 20 | 18 | 15 | 14 | 12 |
| | Live | 384 | 221 | 143 | 100 | 73 | 56 | 44 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Deflection (L/180) | 500 | 500 | 298 | 172 | 108 | 72 | 51 | 37 | 28 | 21 | 16 | 13 | 11 | 9 | 7 | 6 |
| | Deflection (L/240) | 500 | 437 | 223 | 129 | 81 | 54 | 38 | 27 | 21 | 16 | 12 | 10 | 8 | 6 | 5 | 4 |
| 3 Span | Positive Wind | 469 | 273 | 177 | 124 | 92 | 70 | 56 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 |
| | Negative Wind | 500 | 302 | 197 | 138 | 102 | 78 | 62 | 50 | 42 | 35 | 30 | 26 | 22 | 19 | 17 | 15 |
| | Live | 469 | 273 | 177 | 124 | 92 | 70 | 56 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 |
| | Deflection (L/180) | 500 | 456 | 233 | 135 | 85 | 57 | 40 | 29 | 21 | 16 | 13 | 10 | 8 | 7 | 5 | 5 |
| | Deflection (L/240) | 500 | 342 | 175 | 101 | 63 | 42 | 30 | 21 | 16 | 12 | 9 | 7 | 6 | 5 | 4 | 3 |
| 4 Span | Positive Wind | 442 | 256 | 166 | 116 | 86 | 66 | 52 | 42 | 35 | 29 | 25 | 21 | 18 | 16 | 14 | 13 |
| | Negative Wind | 486 | 284 | 185 | 129 | 95 | 73 | 58 | 47 | 39 | 33 | 28 | 24 | 21 | 18 | 16 | 14 |
| | Live | 442 | 256 | 166 | 116 | 86 | 66 | 52 | 42 | 35 | 29 | 25 | 21 | 18 | 16 | 14 | 13 |
| | Deflection (L/180) | 500 | 484 | 248 | 143 | 90 | 60 | 42 | 31 | 23 | 17 | 14 | 11 | 9 | 7 | 6 | 5 |
| | Deflection (L/240) | 500 | 363 | 186 | 107 | 67 | 45 | 31 | 23 | 17 | 13 | 10 | 8 | 6 | 5 | 4 | 3 |

For **SI**: 1 inch = 2.54 mm; 1 foot = 305 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 3 —ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 26 GAGE U-PANEL, $F_y$ = 50 ksi**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Span** | **Load Type** | 1.50 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 |
| Single | Positive Wind | 329 | 185 | 118 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Negative Wind | 284 | 159 | 102 | 71 | 52 | 39 | 31 | 25 | 21 | 17 | 15 | 13 | 11 | 9 | 8 | 7 |
| | Live | 329 | 185 | 118 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Deflection | 499 | 210 | 107 | 62 | 39 | 26 | 18 | 13 | 10 | 7 | 6 | 4 | 3 | 3 | 2 | 2 |
| | Deflection | 374 | 158 | 80 | 46 | 29 | 19 | 13 | 10 | 7 | 5 | 4 | 3 | 2 | 2 | 2 | 1 |
| 2 Span | Positive Wind | 284 | 159 | 102 | 71 | 52 | 39 | 31 | 25 | 21 | 17 | 15 | 13 | 11 | 9 | 8 | 7 |
| | Negative Wind | 329 | 185 | 118 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Live | 284 | 159 | 102 | 71 | 52 | 39 | 31 | 25 | 21 | 17 | 15 | 13 | 11 | 9 | 8 | 7 |
| | Deflection | 500 | 425 | 217 | 125 | 79 | 53 | 37 | 27 | 20 | 15 | 12 | 9 | 8 | 6 | 5 | 4 |
| | Deflection | 500 | 318 | 163 | 94 | 59 | 39 | 27 | 20 | 15 | 11 | 9 | 7 | 6 | 4 | 4 | 3 |
| 3 Span | Positive Wind | 355 | 199 | 127 | 88 | 65 | 49 | 39 | 31 | 26 | 22 | 18 | 16 | 14 | 12 | 11 | 9 |
| | Negative Wind | 411 | 231 | 148 | 102 | 75 | 57 | 45 | 37 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Live | 355 | 199 | 127 | 88 | 65 | 49 | 39 | 31 | 26 | 22 | 18 | 16 | 14 | 12 | 11 | 9 |
| | Deflection | 500 | 332 | 170 | 98 | 62 | 41 | 29 | 21 | 16 | 12 | 9 | 7 | 6 | 5 | 4 | 3 |
| | Deflection | 500 | 249 | 127 | 73 | 46 | 31 | 21 | 15 | 12 | 9 | 7 | 5 | 4 | 3 | 3 | 2 |
| 4 Span | Positive Wind | 331 | 186 | 119 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Negative Wind | 384 | 216 | 138 | 96 | 70 | 54 | 42 | 34 | 28 | 24 | 20 | 17 | 15 | 13 | 11 | 10 |
| | Live | 331 | 186 | 119 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Deflection | 500 | 353 | 180 | 104 | 65 | 44 | 31 | 22 | 16 | 13 | 10 | 8 | 6 | 5 | 4 | 3 |
| | Deflection | 500 | 265 | 135 | 78 | 49 | 33 | 23 | 16 | 12 | 9 | 7 | 6 | 5 | 4 | 3 | 2 |

For **SI**: 1 inch = 2.54 mm; 1 foot = 305 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 4 —ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 26 GAGE U-PANEL, $F_y$ = 80 ksi**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span Type | Load Type | 1.50 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 |
| Single | Positive Wind | 367 | 206 | 132 | 91 | 67 | 51 | 40 | 33 | 27 | 22 | 19 | 16 | 14 | 12 | 11 | 10 |
| | Negative Wind | 313 | 176 | 112 | 78 | 57 | 44 | 34 | 28 | 23 | 19 | 16 | 14 | 12 | 11 | 9 | 8 |
| | Live | 367 | 206 | 132 | 91 | 67 | 51 | 40 | 33 | 27 | 22 | 19 | 16 | 14 | 12 | 11 | 10 |
| | Deflection | 466 | 196 | 100 | 58 | 36 | 24 | 17 | 12 | 9 | 7 | 5 | 4 | 3 | 3 | 2 | 2 |
| | Deflection | 349 | 147 | 75 | 43 | 27 | 18 | 12 | 9 | 7 | 5 | 4 | 3 | 2 | 2 | 1 | 1 |
| 2 Span | Positive Wind | 299 | 171 | 110 | 77 | 57 | 43 | 34 | 28 | 23 | 19 | 16 | 14 | 12 | 10 | 9 | 8 |
| | Negative Wind | 345 | 199 | 129 | 90 | 66 | 51 | 40 | 32 | 27 | 22 | 19 | 16 | 14 | 12 | 11 | 10 |
| | Live | 299 | 171 | 110 | 77 | 57 | 43 | 34 | 28 | 23 | 19 | 16 | 14 | 12 | 10 | 9 | 8 |
| | Deflection | 500 | 399 | 204 | 118 | 74 | 49 | 35 | 25 | 19 | 14 | 11 | 9 | 7 | 6 | 5 | 4 |
| | Deflection | 500 | 299 | 153 | 88 | 55 | 37 | 26 | 19 | 14 | 11 | 8 | 6 | 5 | 4 | 3 | 3 |
| 3 Span | Positive Wind | 367 | 212 | 137 | 96 | 71 | 54 | 43 | 35 | 28 | 24 | 20 | 17 | 15 | 13 | 12 | 10 |
| | Negative Wind | 421 | 245 | 160 | 112 | 82 | 63 | 50 | 41 | 33 | 28 | 24 | 21 | 18 | 16 | 14 | 12 |
| | Live | 367 | 212 | 137 | 96 | 71 | 54 | 43 | 35 | 28 | 24 | 20 | 17 | 15 | 13 | 12 | 10 |
| | Deflection | 500 | 312 | 160 | 92 | 58 | 39 | 27 | 20 | 15 | 11 | 9 | 7 | 5 | 4 | 4 | 3 |
| | Deflection | 500 | 234 | 120 | 69 | 43 | 29 | 20 | 15 | 11 | 8 | 6 | 5 | 4 | 3 | 3 | 2 |
| 4 Span | Positive Wind | 345 | 198 | 128 | 90 | 66 | 50 | 40 | 32 | 27 | 22 | 19 | 16 | 14 | 12 | 11 | 10 |
| | Negative Wind | 396 | 230 | 149 | 105 | 77 | 59 | 47 | 38 | 31 | 26 | 22 | 19 | 17 | 15 | 13 | 11 |
| | Live | 345 | 198 | 128 | 90 | 66 | 50 | 40 | 32 | 27 | 22 | 19 | 16 | 14 | 12 | 11 | 10 |
| | Deflection | 500 | 331 | 169 | 98 | 61 | 41 | 29 | 21 | 15 | 12 | 9 | 7 | 6 | 5 | 4 | 3 |
| | Deflection | 500 | 248 | 127 | 73 | 46 | 31 | 21 | 15 | 11 | 9 | 7 | 5 | 4 | 3 | 3 | 2 |

For **SI**: 1 inch = 2.54 mm; 1 foot = 305 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 5—EFFECTIVE SECTION PROPERTIES FOR U-PANEL**

| SECTION PROPERTIES | | | | | | TOP IN COMPRESSION | | | BOTTOM IN COMPRESSION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GAGE | $F_y$ (ksi) | WEIGHT (psf) | $V_a$ (kip/ft) | $P_{a\_end}$ (lbf/ft) | $P_{a\_int}$ (lbf/ft) | $I_x$ (in$^4$/ft) | $S_e$ (in$^3$/ft) | $M_a$ (kip-in/ft) | $I_x$ (in$^4$/ft) | $S_e$ (in$^3$/ft) | $M_a$ (kip-in/ft) |
| 24 | 50 | 1.10 | 1.0990 | 426.67 | 629.13 | 0.0263 | 0.0514 | 1.5387 | 0.018 | 0.0459 | 1.3747 |
| 26 | 50 | 0.87 | 0.8653 | 276.27 | 401.1 | 0.0193 | 0.0371 | 1.112 | 0.013 | 0.032 | 0.9593 |
| 26 | 80 | 0.85 | 0.9537 | 314.67 | 455.97 | 0.0180 | 0.0345 | 1.241 | 0.0123 | 0.0294 | 1.0573 |
| 29 | 80 | 0.67 | 0.5857 | 202.03 | 287.8 | 0.0127 | 0.0235 | 0.846 | 0.009 | 0.0208 | 0.747 |

For **SI:** 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

1. Section properties are calculated in accordance with the AISI S100 for the Design of Cold-Formed Steel Structural Members.
2. $V_a$ is the allowable shear
3. $P_a$ is the allowable load for web crippling on end and interior supports using a bearing length of 2 inches.
4. $I_x$ is for deflection determination.
5. $S_e$ is for bending.
6. $M_a$ is the allowable bending moment.
7. All values are for one foot of panel width.

**TABLE 6 — ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 24 GAGE U-PANEL PB**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Span Type** | **Load Type** | 1.50 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 |
| Single | Positive Wind | 462 | 260 | 166 | 115 | 84 | 65 | 51 | 41 | 34 | 28 | 24 | 21 | 18 | 16 | 14 | 12 |
| | Negative Wind | 406 | 228 | 146 | 101 | 74 | 57 | 45 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Live | 462 | 260 | 166 | 115 | 84 | 65 | 51 | 41 | 34 | 28 | 24 | 21 | 18 | 16 | 14 | 12 |
| | Deflection (L/180) | 500 | 291 | 149 | 86 | 54 | 36 | 25 | 18 | 14 | 10 | 8 | 6 | 5 | 4 | 3 | 3 |
| | Deflection (L/240) | 500 | 218 | 111 | 64 | 40 | 27 | 19 | 13 | 10 | 8 | 6 | 5 | 4 | 3 | 2 | 2 |
| 2 Span | Positive Wind | 387 | 222 | 143 | 100 | 74 | 56 | 44 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Negative Wind | 434 | 250 | 162 | 113 | 83 | 64 | 50 | 41 | 34 | 28 | 24 | 21 | 18 | 16 | 14 | 12 |
| | Live | 387 | 222 | 143 | 100 | 74 | 56 | 44 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Deflection (L/180) | 500 | 500 | 305 | 176 | 111 | 74 | 52 | 38 | 28 | 22 | 17 | 13 | 11 | 9 | 7 | 6 |
| | Deflection (L/240) | 500 | 447 | 229 | 132 | 83 | 55 | 39 | 28 | 21 | 16 | 13 | 10 | 8 | 6 | 5 | 4 |
| 3 Span | Positive Wind | 474 | 274 | 178 | 124 | 92 | 70 | 56 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 |
| | Negative Wind | 500 | 308 | 201 | 141 | 104 | 80 | 63 | 51 | 42 | 35 | 30 | 26 | 23 | 20 | 17 | 16 |
| | Live | 474 | 274 | 178 | 124 | 92 | 70 | 56 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 |
| | Deflection (L/180) | 500 | 467 | 239 | 138 | 87 | 58 | 41 | 29 | 22 | 17 | 13 | 10 | 8 | 7 | 6 | 5 |
| | Deflection (L/240) | 500 | 350 | 179 | 103 | 65 | 43 | 30 | 22 | 16 | 12 | 10 | 8 | 6 | 5 | 4 | 3 |
| 4 Span | Positive Wind | 446 | 257 | 167 | 116 | 86 | 66 | 52 | 42 | 35 | 29 | 25 | 21 | 18 | 16 | 14 | 13 |
| | Negative Wind | 498 | 289 | 188 | 132 | 97 | 74 | 59 | 48 | 39 | 33 | 28 | 24 | 21 | 18 | 16 | 14 |
| | Live | 446 | 257 | 167 | 116 | 86 | 66 | 52 | 42 | 35 | 29 | 25 | 21 | 18 | 16 | 14 | 13 |
| | Deflection (L/180) | 500 | 496 | 253 | 146 | 92 | 62 | 43 | 31 | 23 | 18 | 14 | 11 | 9 | 7 | 6 | 5 |
| | Deflection (L/240) | 500 | 372 | 190 | 110 | 69 | 46 | 32 | 23 | 17 | 13 | 10 | 8 | 7 | 5 | 4 | 4 |

For **SI**: 1 inch = 2.54 mm; 1 foot = 305 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 7 — ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 26 GAGE U-PANEL PB, $F_y$ = 80 ksi**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span Type | Load Type | 1.50 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 |
| Single | Positive Wind | 389 | 218 | 140 | 97 | 71 | 54 | 43 | 35 | 28 | 24 | 20 | 17 | 15 | 13 | 12 | 10 |
| | Negative Wind | 329 | 185 | 118 | 82 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Live | 389 | 218 | 140 | 97 | 71 | 54 | 43 | 35 | 28 | 24 | 20 | 17 | 15 | 13 | 12 | 10 |
| | Deflection (L/180) | 500 | 211 | 108 | 62 | 39 | 26 | 18 | 13 | 10 | 7 | 6 | 4 | 4 | 3 | 2 | 2 |
| | Deflection (L/240) | 375 | 158 | 81 | 46 | 29 | 19 | 13 | 10 | 7 | 5 | 4 | 3 | 3 | 2 | 2 | 1 |
| 2 Span | Positive Wind | 317 | 181 | 116 | 81 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Negative Wind | 369 | 212 | 137 | 95 | 70 | 54 | 42 | 34 | 28 | 24 | 20 | 17 | 15 | 13 | 12 | 10 |
| | Live | 317 | 181 | 116 | 81 | 60 | 46 | 36 | 29 | 24 | 20 | 17 | 15 | 13 | 11 | 10 | 9 |
| | Deflection (L/180) | 500 | 429 | 220 | 127 | 80 | 53 | 37 | 27 | 20 | 15 | 12 | 10 | 8 | 6 | 5 | 4 |
| | Deflection (L/240) | 500 | 322 | 165 | 95 | 60 | 40 | 28 | 20 | 15 | 11 | 9 | 7 | 6 | 5 | 4 | 3 |
| 3 Span | Positive Wind | 390 | 224 | 145 | 101 | 74 | 57 | 45 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Negative Wind | 451 | 262 | 170 | 119 | 88 | 67 | 53 | 43 | 35 | 30 | 25 | 22 | 19 | 17 | 15 | 13 |
| | Live | 390 | 224 | 145 | 101 | 74 | 57 | 45 | 36 | 30 | 25 | 21 | 18 | 16 | 14 | 12 | 11 |
| | Deflection (L/180) | 500 | 336 | 172 | 99 | 62 | 42 | 29 | 21 | 16 | 12 | 9 | 7 | 6 | 5 | 4 | 3 |
| | Deflection (L/240) | 500 | 252 | 129 | 74 | 47 | 31 | 22 | 16 | 12 | 9 | 7 | 5 | 4 | 3 | 3 | 2 |
| 4 Span | Positive Wind | 366 | 210 | 135 | 94 | 69 | 53 | 42 | 34 | 28 | 23 | 20 | 17 | 15 | 13 | 11 | 10 |
| | Negative Wind | 424 | 245 | 159 | 111 | 82 | 63 | 50 | 40 | 33 | 28 | 24 | 20 | 18 | 15 | 14 | 12 |
| | Live | 366 | 210 | 135 | 94 | 69 | 53 | 42 | 34 | 28 | 23 | 20 | 17 | 15 | 13 | 11 | 10 |
| | Deflection (L/180) | 500 | 357 | 182 | 105 | 66 | 44 | 31 | 22 | 17 | 13 | 10 | 8 | 6 | 5 | 4 | 3 |
| | Deflection (L/240) | 500 | 268 | 137 | 79 | 50 | 33 | 23 | 17 | 12 | 9 | 7 | 6 | 5 | 4 | 3 | 2 |

For **SI**: 1 inch = 2.54 mm; 1 foot = 305 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 8—EFFECTIVE SECTION PROPERTIES FOR PBU-PANEL**

| SECTION PROPERTIES | | | | | | TOP IN COMPRESSION | | | BOTTOM IN COMPRESSION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GAGE | $F_y$ (ksi) | WEIGHT (psf) | $V_a$ (lbf/ft) | $P_{a\_end}$ (lbf/ft) | $P_{a\_int}$ (lbf/ft) | $I_x$ (in$^4$/ft) | $S_e$ (in$^3$/ft) | $M_a$ (kip-in/ft) | $I_x$ (in$^4$/ft) | $S_e$ (in$^3$/ft) | $M_a$ (kip-in/ft |
| 24 | 50 | 1.13 | 1.1933 | 463.47 | 683.4 | 0.0267 | 0.0522 | 1.56 | 0.0187 | 0.0459 | 1.3733 |
| 26 | 50 | 0.90 | 0.9087 | 300.17 | 435.67 | 0.0197 | 0.0377 | 1.13 | 0.0133 | 0.0336 | 1.0067 |
| 26 | 80 | 0.90 | 1.0973 | 360.1 | 522.8 | 0.0193 | 0.0365 | 1.313 | 0.0133 | 0.0309 | 1.117 |
| 29 | 80 | 0.71 | 0.6353 | 219.6 | 312.6 | 0.013 | 0.024 | 0.8613 | 0.0093 | 0.0219 | 0.787 |

For **SI:** 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Section properties are calculated in accordance with the AISI S100 for the Design of Cold-Formed Steel Structural Members.
2. $V_a$ is the allowable shear
3. $P_a$ is the allowable load for web crippling on end and interior supports using a bearing length of 2 inches (5.08 mm).
4. $I_x$ is for deflection determination.
5. $S_e$ is for bending.
6. $M_a$ is the allowable bending moment.
7. All values are for one foot of panel width.

**TABLE 9 — ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 24 GAGE MEGA-RIB PANEL**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span | Load Type | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 |
| Single | Positive Wind | 149 | 114 | 90 | 73 | 60 | 50 | 43 | 37 | 32 | 28 | 25 | 22 | 20 | 18 | 16 | 15 |
| | Negative Wind | 132 | 101 | 80 | 64 | 53 | 45 | 38 | 33 | 28 | 25 | 22 | 20 | 17 | 16 | 14 | 13 |
| | Live | 149 | 114 | 90 | 73 | 60 | 50 | 43 | 37 | 32 | 28 | 25 | 22 | 20 | 18 | 16 | 15 |
| | Deflection | 185 | 124 | 87 | 63 | 47 | 36 | 28 | 23 | 18 | 15 | 12 | 10 | 9 | 7 | 6 | 5 |
| | Deflection | 139 | 93 | 65 | 47 | 35 | 27 | 21 | 17 | 14 | 11 | 9 | 8 | 6 | 5 | 5 | 4 |
| 2 Span | Positive Wind | 128 | 99 | 78 | 63 | 52 | 44 | 38 | 32 | 28 | 25 | 22 | 19 | 17 | 16 | 14 | 13 |
| | Negative Wind | 144 | 111 | 88 | 71 | 59 | 50 | 42 | 37 | 32 | 28 | 25 | 22 | 20 | 18 | 16 | 15 |
| | Live | 128 | 99 | 78 | 63 | 52 | 44 | 38 | 32 | 28 | 25 | 22 | 19 | 17 | 16 | 14 | 13 |
| | Deflection | 441 | 296 | 207 | 151 | 113 | 87 | 69 | 55 | 44 | 37 | 30 | 25 | 22 | 18 | 16 | 14 |
| | Deflection | 331 | 222 | 155 | 113 | 85 | 65 | 51 | 41 | 33 | 27 | 23 | 19 | 16 | 14 | 12 | 10 |
| 3 Span | Positive Wind | 159 | 123 | 97 | 79 | 65 | 55 | 47 | 40 | 35 | 31 | 27 | 24 | 22 | 20 | 18 | 16 |
| | Negative Wind | 178 | 137 | 109 | 89 | 74 | 62 | 53 | 46 | 40 | 35 | 31 | 28 | 25 | 22 | 20 | 18 |
| | Live | 159 | 123 | 97 | 79 | 65 | 55 | 47 | 40 | 35 | 31 | 27 | 24 | 22 | 20 | 18 | 16 |
| | Deflection | 346 | 231 | 162 | 118 | 89 | 68 | 54 | 43 | 35 | 28 | 24 | 20 | 17 | 14 | 12 | 11 |
| | Deflection | 259 | 173 | 122 | 89 | 66 | 51 | 40 | 32 | 26 | 21 | 18 | 15 | 12 | 11 | 9 | 8 |
| 4 Span | Positive Wind | 149 | 115 | 91 | 74 | 61 | 51 | 44 | 38 | 33 | 29 | 26 | 23 | 20 | 18 | 17 | 15 |
| | Negative Wind | 167 | 129 | 102 | 83 | 69 | 58 | 49 | 43 | 37 | 33 | 29 | 26 | 23 | 21 | 19 | 17 |
| | Live | 149 | 115 | 91 | 74 | 61 | 51 | 44 | 38 | 33 | 29 | 26 | 23 | 20 | 18 | 17 | 15 |
| | Deflection | 367 | 246 | 172 | 126 | 94 | 72 | 57 | 45 | 37 | 30 | 25 | 21 | 18 | 15 | 13 | 11 |
| | Deflection | 275 | 184 | 129 | 94 | 71 | 54 | 43 | 34 | 28 | 23 | 19 | 16 | 13 | 11 | 10 | 8 |

For SI: 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has NOT been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear and bending using Eq. C3.3.1-1 of AISI S100-12
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 3⅛ inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.
9. Web crippling values are determined from ASTM E72-98 testing.
10. Web crippling values are the more conservative value whether from analytical calculation or testing.
11. Load Tables are limited to a maximum allowable load of 500 psf.

**TABLE 10 —ALLOWABLE UNIFORM LOADS (PSF) FOR NO. 26 GAGE MEGA-RIB PANEL**

| | | Span in Feet | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Span Type | Load Type | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 | 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 |
| Single | Positive Wind | 110 | 84 | 66 | 54 | 44 | 37 | 32 | 27 | 24 | 21 | 18 | 16 | 14 | 13 | 12 | 11 |
| | Negative Wind | 93 | 71 | 56 | 46 | 38 | 31 | 27 | 23 | 20 | 17 | 15 | 14 | 12 | 11 | 10 | 9 |
| | Live | 110 | 84 | 66 | 54 | 44 | 37 | 32 | 27 | 24 | 21 | 18 | 16 | 14 | 13 | 12 | 11 |
| | Deflection | 124 | 83 | 58 | 42 | 32 | 24 | 19 | 15 | 12 | 10 | 8 | 7 | 6 | 5 | 4 | 4 |
| | Deflection | 93 | 62 | 44 | 32 | 24 | 18 | 14 | 11 | 9 | 7 | 6 | 5 | 4 | 4 | 3 | 3 |
| 2 Span | Positive Wind | 90 | 69 | 55 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 | 12 | 11 | 10 | 9 |
| | Negative Wind | 104 | 80 | 64 | 52 | 43 | 36 | 31 | 27 | 23 | 20 | 18 | 16 | 14 | 13 | 12 | 11 |
| | Live | 90 | 69 | 55 | 45 | 37 | 31 | 26 | 23 | 20 | 17 | 15 | 14 | 12 | 11 | 10 | 9 |
| | Deflection | 292 | 195 | 137 | 100 | 75 | 57 | 45 | 36 | 29 | 24 | 20 | 17 | 14 | 12 | 10 | 9 |
| | Deflection | 219 | 146 | 103 | 75 | 56 | 43 | 34 | 27 | 22 | 18 | 15 | 12 | 10 | 9 | 8 | 7 |
| 3 Span | Positive Wind | 110 | 85 | 68 | 55 | 46 | 39 | 33 | 28 | 25 | 22 | 19 | 17 | 15 | 14 | 12 | 11 |
| | Negative Wind | 127 | 99 | 79 | 64 | 54 | 45 | 39 | 33 | 29 | 25 | 23 | 20 | 18 | 16 | 15 | 13 |
| | Live | 110 | 85 | 68 | 55 | 46 | 39 | 33 | 28 | 25 | 22 | 19 | 17 | 15 | 14 | 12 | 11 |
| | Deflection | 228 | 153 | 107 | 78 | 58 | 45 | 35 | 28 | 23 | 19 | 15 | 13 | 11 | 9 | 8 | 7 |
| | Deflection | 171 | 114 | 80 | 58 | 44 | 34 | 26 | 21 | 17 | 14 | 11 | 10 | 8 | 7 | 6 | 5 |
| 4 Span | Positive Wind | 103 | 80 | 64 | 52 | 43 | 36 | 31 | 27 | 23 | 20 | 18 | 16 | 14 | 13 | 12 | 11 |
| | Negative Wind | 119 | 93 | 74 | 60 | 50 | 42 | 36 | 31 | 27 | 24 | 21 | 19 | 17 | 15 | 14 | 12 |
| | Live | 103 | 80 | 64 | 52 | 43 | 36 | 31 | 27 | 23 | 20 | 18 | 16 | 14 | 13 | 12 | 11 |
| | Deflection | 242 | 162 | 114 | 83 | 62 | 48 | 37 | 30 | 24 | 20 | 16 | 14 | 12 | 10 | 8 | 7 |
| | Deflection | 182 | 122 | 85 | 62 | 46 | 36 | 28 | 22 | 18 | 15 | 12 | 10 | 9 | 7 | 6 | 5 |

For SI: 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. C3.3.1-1 of the AISI S100-12.
7. Positive Wind and Live Load values are limited by web crippling using a minimum bearing length of 2 inches.
8. Web crippling values are determined using a ratio of the uniform load supported by the top flanges of the section.

**TABLE 11—EFFECTIVE SECTION PROPERTIES FOR MEGA-RIB PANEL**

| SECTION PROPERTIES | | | | | | TOP IN COMPRESSION | | | BOTTOM IN COMPRESSION | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| GAGE | $F_y$ (ksi) | WEIGHT (psf) | $V_a$ (kip/ft.) | $P_{a\_end}$ (lbs/ft.) | $P_{a\_int}$ (lbs/ft.) | $I_x$ ($in^4$/ft.) | $S_e$ ($in^3$/ft.) | $M_a$ (kip-in./ft.) | $I_x$ ($in^4$/ft.) | $S_e$ ($in^3$/ft.) | $M_a$ (kip-in./ft.) |
| 24 | 50.0 | 1.17 | 1.2580 | 233.13 | 643.31 | 0.0910 | 0.1098 | 2.7433 | 0.0890 | 0.0973 | 2.4300 |
| 26 | 80.0 | 0.93 | 0.6927 | 244.73 | 294.63 | 0.0613 | 0.06763 | 2.0287 | 0.0577 | 0.0575 | 1.7257 |

For **SI:** 1 inch = 2.54 mm; 1 ksi = 6.89 MPa; 1 psf = 48 Pa.

Notes:

1. Section properties are calculated in accordance with the 2016 AISI S-100, North American Specification for the Design of Cold-Formed Steel Structural Members.
2. $V_a$ is the allowable shear.
3. $P_a$ is the allowable load for web crippling on end and interior supports using a minimum bearing length of 3⅛ inches for No. 24 gage and 2 inches for No. 26 gage.
4. $I_x$ is for deflection determination.
5. $S_e$ is for bending.
6. $M_a$ is the allowable bending moment.
7. All values are for one foot of panel width.

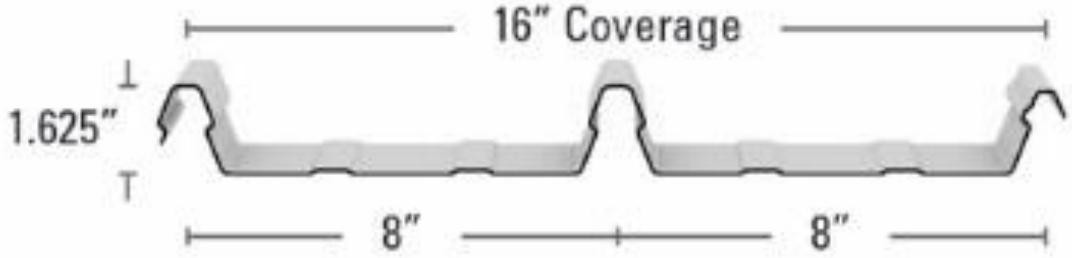



**FIGURE 1—MIRAGE PANEL**


**FIGURE 2—PBU-PANEL**


**FIGURE 3—U PANEL**

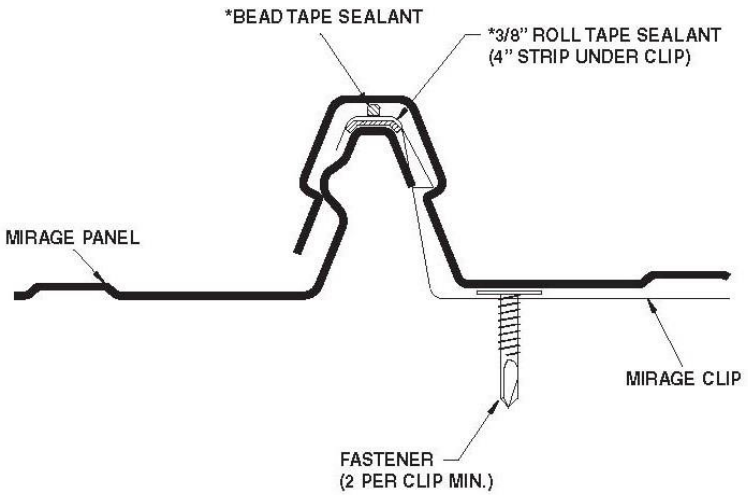



**FIGURE 4 – MIRAGE SIDE LAP DETAIL**

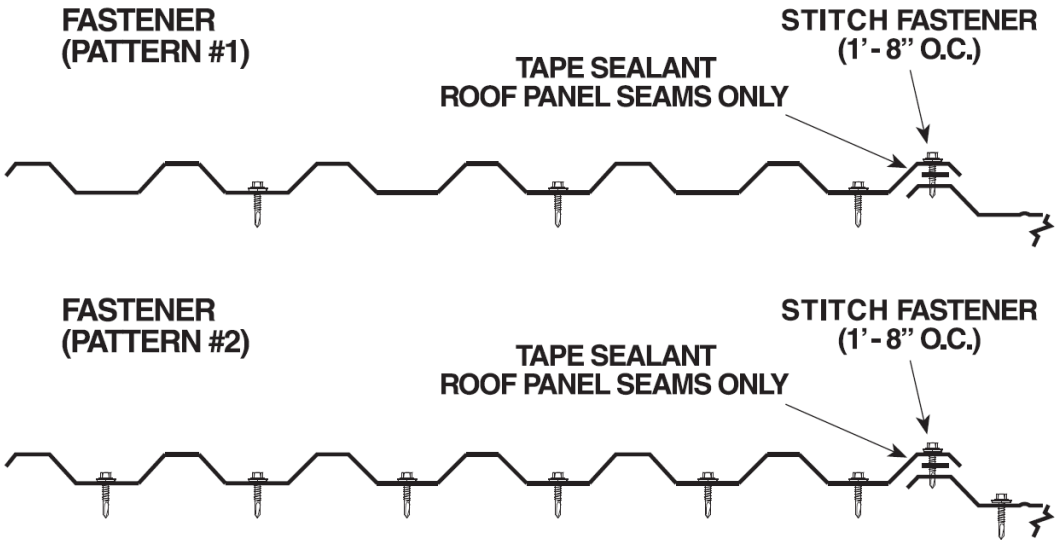



**FIGURE 5 – TYPICAL FRAMING AND STITCH FASTENER PATTERNS**

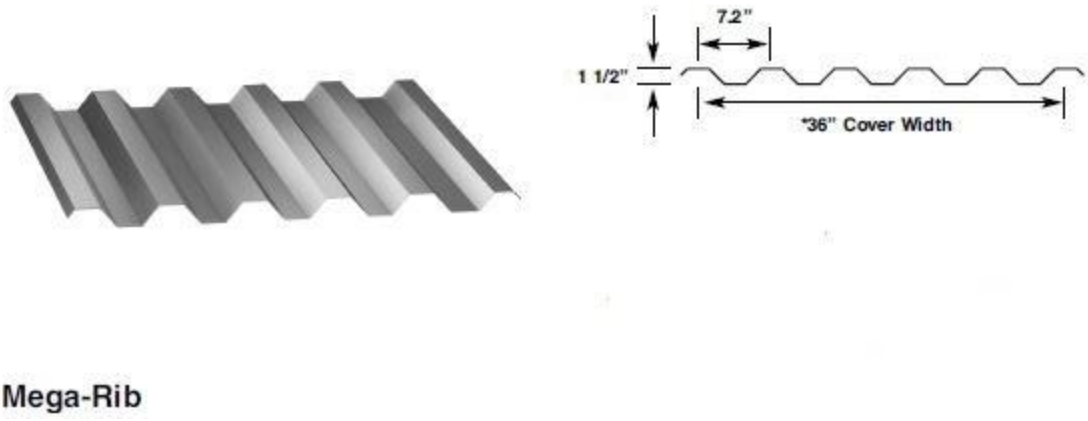



**FIGURE 6—MEGA-RIB PANEL**

**TABLE 12 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR MEGA-RIB NO. 24 GAGE, $F_y$ = 50 ksi**


Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 391.1 | 340.1 | 30.67 | 335.7 | 291.9 | 4.45 | 314.6 | 273.6 | 7.00 |
| 4 | 352.8 | 306.8 | 33.91 | 302.3 | 262.9 | 5.74 | 260.1 | 226.1 | 8.87 |
| 5 | 327.0 | 284.3 | 35.96 | 241.9 | 210.3 | 6.95 | 208.1 | 180.9 | 10.55 |
| 6 | 286.1 | 248.8 | 37.32 | 201.6 | 175.3 | 8.09 | 173.4 | 150.8 | 12.07 |
| 7 | 245.2 | 213.2 | 38.26 | 172.8 | 150.2 | 9.15 | 148.6 | 129.2 | 13.45 |
| 8 | 214.6 | 186.6 | 38.92 | 151.2 | 131.5 | 10.14 | 130.0 | 113.1 | 14.70 |

| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 352.4 | 306.4 | 29.59 | 288.3 | 250.7 | 4.41 | 264.2 | 229.7 | 6.88 |
| 4 | 319.8 | 278.1 | 32.61 | 267.9 | 233.0 | 5.68 | 249.1 | 216.6 | 8.71 |
| 5 | 267.7 | 232.8 | 32.89 | 238.5 | 207.4 | 6.83 | 208.1 | 180.9 | 10.26 |
| 6 | 257.2 | 223.6 | 34.21 | 201.6 | 175.3 | 7.93 | 173.4 | 150.8 | 11.63 |
| 7 | 245.2 | 213.2 | 35.18 | 172.8 | 150.2 | 8.89 | 148.6 | 129.2 | 12.83 |
| 8 | 214.6 | 186.6 | 35.92 | 151.2 | 131.5 | 9.86 | 130.0 | 113.1 | 14.04 |

| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 307.4 | 267.3 | 28.19 | 262.1 | 227.9 | 4.38 | 245.9 | 213.8 | 6.83 |
| 4 | 283.1 | 246.2 | 31.02 | 226.2 | 196.7 | 5.60 | 220.5 | 191.8 | 8.56 |
| 5 | 267.7 | 232.8 | 32.89 | 221.2 | 192.3 | 6.77 | 204.7 | 178.0 | 10.06 |
| 6 | 229.1 | 199.2 | 32.27 | 201.5 | 175.3 | 7.79 | 173.4 | 150.8 | 11.25 |
| 7 | 225.2 | 195.8 | 33.32 | 172.8 | 150.2 | 8.71 | 148.6 | 129.2 | 12.41 |
| 8 | 199.9 | 173.8 | 32.17 | 151.2 | 131.5 | 9.55 | 130.0 | 113.1 | 13.44 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:

1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 14.4 inches on center spacing across interior supports, 7.2 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060 inch Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 13 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR MEGA-RIB NO. 26 GAGE, $F_y$ =80 ksi**


## Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 301.4 | 262.1 | 20.04 | 255.8 | 222.5 | 2.50 | 238.6 | 207.5 | 4.01 |
| 4 | 269.4 | 234.2 | 23.03 | 231.1 | 201.0 | 3.26 | 209.4 | 182.1 | 5.16 |
| 5 | 247.9 | 215.6 | 25.16 | 194.8 | 169.4 | 3.99 | 167.6 | 145.7 | 6.23 |
| 6 | 230.4 | 200.3 | 26.72 | 162.3 | 141.1 | 4.69 | 139.6 | 121.4 | 7.23 |
| 7 | 197.5 | 171.7 | 27.90 | 139.1 | 121.0 | 5.35 | 119.7 | 104.1 | 8.16 |
| 8 | 172.8 | 150.3 | 28.82 | 121.7 | 105.9 | 5.99 | 104.7 | 91.1 | 9.04 |

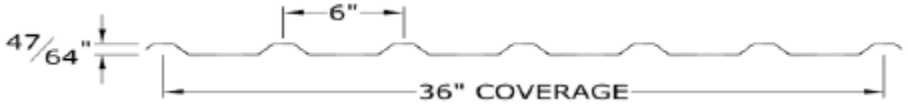
| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 272.0 | 236.5 | 19.52 | 220.4 | 191.6 | 2.49 | 201.1 | 174.9 | 3.96 |
| 4 | 244.5 | 212.6 | 22.35 | 202.7 | 176.3 | 3.24 | 187.7 | 163.2 | 5.10 |
| 5 | 203.7 | 177.2 | 23.43 | 179.4 | 156.0 | 3.94 | 167.6 | 145.7 | 6.12 |
| 6 | 194.4 | 169.1 | 24.89 | 162.3 | 141.1 | 4.63 | 139.6 | 121.4 | 7.05 |
| 7 | 187.7 | 163.2 | 26.03 | 139.1 | 121.0 | 5.25 | 119.7 | 104.1 | 7.91 |
| 8 | 172.8 | 150.3 | 26.94 | 121.7 | 105.9 | 5.88 | 104.7 | 91.1 | 8.75 |

| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 238.6 | 207.5 | 18.82 | 201.1 | 174.9 | 2.48 | 187.7 | 163.2 | 3.95 |
| 4 | 217.2 | 188.9 | 21.50 | 172.1 | 149.6 | 3.21 | 166.8 | 145.0 | 5.04 |
| 5 | 203.7 | 177.2 | 23.43 | 166.8 | 145.0 | 3.92 | 153.7 | 133.7 | 6.04 |
| 6 | 173.8 | 151.2 | 23.72 | 152.3 | 132.4 | 4.57 | 137.4 | 119.5 | 6.89 |
| 7 | 169.8 | 147.7 | 24.87 | 139.1 | 121.0 | 5.18 | 119.7 | 104.1 | 7.72 |
| 8 | 150.4 | 130.8 | 24.52 | 121.7 | 105.9 | 5.75 | 104.7 | 91.1 | 8.48 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:
1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 14.4 inches on center spacing across interior supports, 7.2 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 14 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR U-PANEL No. 24 GAGE, $F_y$ =50 ksi**




## Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 440.9 | 383.4 | 41.88 | 359.10 | 312.2 | 11.16 | 327.70 | 285.0 | 16.21 |
| 4 | 392.2 | 341.0 | 43.71 | 324.00 | 281.7 | 13.77 | 276.30 | 240.3 | 19.26 |
| 5 | 359.6 | 312.7 | 44.48 | 263.30 | 229.0 | 15.97 | 221.10 | 192.2 | 21.65 |
| 6 | 325.1 | 282.7 | 44.76 | 219.40 | 190.8 | 17.84 | 184.20 | 160.2 | 23.58 |
| 7 | 278.6 | 242.3 | 44.81 | 188.10 | 163.5 | 19.46 | 157.90 | 137.3 | 25.15 |
| 8 | 234.0 | 212.0 | 44.74 | 164.60 | 143.1 | 20.87 | 138.20 | 120.1 | 26.46 |

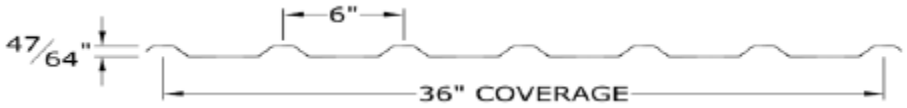
| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 398.8 | 346.8 | 40.26 | 307.1 | 267.0 | 10.95 | 272.4 | 236.9 | 15.64 |
| 4 | 356.5 | 310.0 | 41.92 | 282.7 | 245.8 | 13.46 | 255.8 | 222.5 | 18.54 |
| 5 | 296.6 | 257.9 | 40.54 | 249.9 | 217.3 | 15.37 | 221.1 | 192.2 | 20.52 |
| 6 | 282.0 | 245.2 | 40.93 | 219.4 | 190.8 | 17.16 | 184.2 | 160.2 | 22.02 |
| 7 | 271.3 | 235.9 | 41.14 | 188.1 | 163.5 | 18.42 | 157.9 | 137.3 | 23.18 |
| 8 | 234.0 | 212.0 | 41.25 | 164.6 | 143.1 | 19.77 | 138.2 | 120.1 | 24.49 |

| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 351.4 | 305.6 | 38.24 | 279.1 | 242.7 | 10.81 | 252.8 | 219.8 | 15.39 |
| 4 | 317.8 | 276.4 | 39.79 | 238.5 | 207.4 | 13.05 | 225.6 | 196.1 | 17.93 |
| 5 | 296.6 | 257.9 | 40.54 | 231.7 | 201.5 | 15.11 | 208.8 | 181.5 | 19.80 |
| 6 | 252.8 | 219.8 | 38.61 | 211.6 | 184.0 | 16.56 | 184.2 | 160.2 | 20.80 |
| 7 | 246.0 | 213.9 | 38.98 | 188.1 | 163.5 | 17.73 | 157.9 | 137.3 | 21.90 |
| 8 | 217.8 | 189.4 | 36.99 | 164.6 | 143.1 | 18.67 | 138.2 | 120.1 | 22.80 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:
1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 15 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR U-PANEL No. 26 GAGE, $F_y$ =50 ksi**




Allowable Diaphragm Shear

Stitch Screw Spacing = 12" o.c.

| | 1-Span | | | 2-Span | | | 3-Span | | |
|---|---|---|---|---|---|---|---|---|---|
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 331.9 | 288.6 | 29.30 | 266.40 | 231.6 | 6.54 | 241.5 | 210.0 | 9.88 |
| 4 | 292.5 | 254.4 | 31.70 | 238.30 | 207.2 | 8.26 | 217.1 | 188.8 | 12.10 |
| 5 | 266.3 | 231.6 | 33.09 | 206.90 | 179.9 | 9.78 | 173.7 | 151.0 | 13.97 |
| 6 | 247.8 | 215.5 | 33.93 | 172.40 | 149.9 | 11.14 | 144.7 | 125.9 | 15.55 |
| 7 | 218.9 | 190.4 | 34.45 | 147.80 | 128.5 | 12.36 | 124.1 | 107.9 | 16.90 |
| 8 | 171.0 | 166.6 | 34.78 | 129.30 | 112.4 | 13.46 | 108.6 | 94.4 | 18.07 |

Stitch Screw Spacing = 16" o.c.

| | 1-Span | | | 2-Span | | | 3-Span | | |
|---|---|---|---|---|---|---|---|---|---|
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 301.2 | 261.9 | 28.40 | 228.9 | 199.0 | 6.46 | 201.8 | 175.5 | 9.64 |
| 4 | 266.6 | 231.8 | 30.63 | 208.6 | 181.4 | 8.13 | 187.6 | 163.1 | 11.78 |
| 5 | 221.0 | 192.1 | 30.60 | 183.4 | 159.5 | 9.52 | 170.3 | 148.1 | 13.43 |
| 6 | 208.7 | 181.4 | 31.41 | 172.4 | 149.9 | 10.83 | 144.7 | 125.9 | 14.77 |
| 7 | 199.7 | 173.7 | 31.97 | 147.8 | 128.5 | 11.88 | 124.1 | 107.9 | 15.88 |
| 8 | 171.0 | 166.6 | 32.37 | 129.3 | 112.4 | 12.93 | 108.6 | 94.4 | 17.02 |

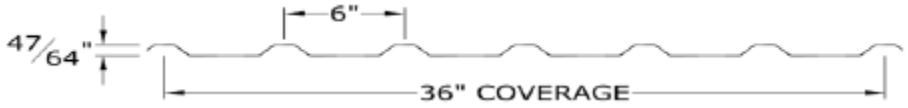
Stitch Screw Spacing = 20" o.c.

| | 1-Span | | | 2-Span | | | 3-Span | | |
|---|---|---|---|---|---|---|---|---|---|
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 267.1 | 232.2 | 27.25 | 208.9 | 181.7 | 6.40 | 187.9 | 163.4 | 9.53 |
| 4 | 238.8 | 207.7 | 29.34 | 177.2 | 154.1 | 7.96 | 166.1 | 144.4 | 11.50 |
| 5 | 221.0 | 192.1 | 30.60 | 170.5 | 148.2 | 9.41 | 152.7 | 132.8 | 13.08 |
| 6 | 187.9 | 163.4 | 29.86 | 154.9 | 134.7 | 10.56 | 136.1 | 118.3 | 14.14 |
| 7 | 181.7 | 158 | 30.49 | 143.7 | 124.9 | 11.55 | 124.1 | 107.9 | 15.19 |
| 8 | 160.6 | 139.7 | 29.38 | 129.3 | 112.4 | 12.39 | 108.6 | 94.4 | 16.08 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:
1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 16 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR U-PANEL No. 26 GAGE, $F_y$ =80 ksi**




Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 328.9 | 286.0 | 27.99 | 263.50 | 229.1 | 6.13 | 238.7 | 207.6 | 9.29 |
| 4 | 289.5 | 251.8 | 30.43 | 235.40 | 204.7 | 7.75 | 215.7 | 187.6 | 11.42 |
| 5 | 263.4 | 229.0 | 31.86 | 206.00 | 179.2 | 9.20 | 173.0 | 150.4 | 13.22 |
| 6 | 244.9 | 213.0 | 32.75 | 171.70 | 149.3 | 10.50 | 144.1 | 125.3 | 14.75 |
| 7 | 213.6 | 189.6 | 33.31 | 147.20 | 128.0 | 11.67 | 123.6 | 107.4 | 16.07 |
| 8 | 163.5 | 163.5 | 33.68 | 128.80 | 112.0 | 12.73 | 108.1 | 94.0 | 17.22 |

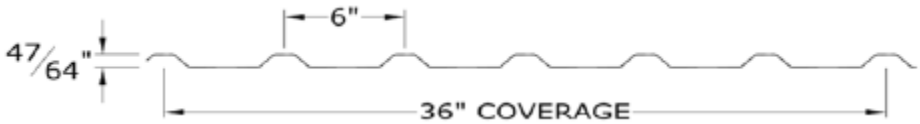
| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 298.5 | 259.6 | 27.16 | 226.6 | 197.0 | 6.06 | 199.6 | 173.6 | 9.08 |
| 4 | 264.0 | 229.6 | 29.43 | 206.2 | 179.3 | 7.64 | 185.3 | 161.2 | 11.13 |
| 5 | 218.7 | 190.2 | 29.51 | 181.2 | 157.5 | 8.97 | 168.1 | 146.2 | 12.73 |
| 6 | 206.3 | 179.4 | 30.37 | 171.7 | 149.3 | 10.23 | 144.1 | 125.3 | 14.04 |
| 7 | 197.4 | 171.6 | 30.96 | 147.2 | 128.0 | 11.24 | 123.6 | 107.4 | 15.13 |
| 8 | 163.5 | 163.5 | 31.39 | 128.8 | 112.0 | 12.26 | 108.1 | 94.0 | 16.24 |

| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 265.0 | 230.4 | 26.10 | 206.9 | 179.9 | 6.01 | 185.9 | 161.7 | 8.98 |
| 4 | 236.6 | 205.8 | 28.21 | 175.3 | 152.4 | 7.49 | 164.2 | 142.8 | 10.87 |
| 5 | 218.7 | 190.2 | 29.51 | 168.5 | 146.5 | 8.87 | 150.8 | 131.1 | 12.41 |
| 6 | 185.9 | 161.7 | 28.90 | 153.0 | 133.1 | 9.98 | 134.3 | 116.8 | 13.46 |
| 7 | 179.6 | 156.2 | 29.55 | 141.8 | 123.3 | 10.94 | 123.6 | 107.4 | 14.50 |
| 8 | 158.8 | 138.1 | 28.53 | 128.8 | 112.0 | 11.76 | 108.1 | 94.0 | 15.38 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:
1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 17 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR U-PANEL PB, No. 24 GAGE, Fy =50 ksi**




Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 440.9 | 383.4 | 41.88 | 359.10 | 312.2 | 11.16 | 327.70 | 285.0 | 16.21 |
| 4 | 392.2 | 341.0 | 43.71 | 324.00 | 281.7 | 13.77 | 276.30 | 240.3 | 19.26 |
| 5 | 359.6 | 312.7 | 44.48 | 263.30 | 229.0 | 15.97 | 221.10 | 192.2 | 21.65 |
| 6 | 325.1 | 282.7 | 44.76 | 219.40 | 190.8 | 17.84 | 184.20 | 160.2 | 23.58 |
| 7 | 278.6 | 242.3 | 44.81 | 188.10 | 163.5 | 19.46 | 157.90 | 137.3 | 25.15 |
| 8 | 234.0 | 212.0 | 44.74 | 164.60 | 143.1 | 20.87 | 138.20 | 120.1 | 26.46 |

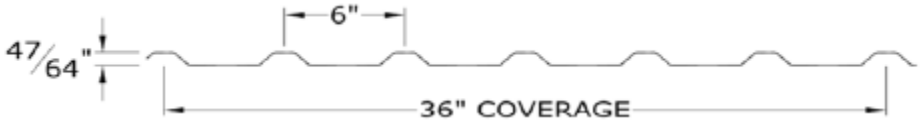
| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 398.8 | 346.8 | 40.26 | 307.1 | 267.0 | 10.95 | 272.4 | 236.9 | 15.64 |
| 4 | 356.5 | 310.0 | 41.92 | 282.7 | 245.8 | 13.46 | 255.8 | 222.5 | 18.54 |
| 5 | 296.6 | 257.9 | 40.54 | 249.9 | 217.3 | 15.37 | 221.1 | 192.2 | 20.52 |
| 6 | 282.0 | 245.2 | 40.93 | 219.4 | 190.8 | 17.16 | 184.2 | 160.2 | 22.02 |
| 7 | 271.3 | 235.9 | 41.14 | 188.1 | 163.5 | 18.42 | 157.9 | 137.3 | 23.18 |
| 8 | 243.8 | 212.0 | 41.25 | 164.6 | 143.1 | 19.77 | 138.2 | 120.1 | 24.49 |

| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 351.4 | 305.6 | 38.24 | 279.1 | 242.7 | 10.81 | 252.8 | 219.8 | 15.39 |
| 4 | 317.8 | 276.4 | 39.79 | 238.5 | 207.4 | 13.05 | 225.6 | 196.1 | 17.93 |
| 5 | 296.6 | 257.9 | 40.54 | 231.7 | 201.5 | 15.11 | 208.8 | 181.5 | 19.80 |
| 6 | 252.8 | 219.8 | 38.61 | 211.6 | 184.0 | 16.56 | 184.2 | 160.2 | 20.80 |
| 7 | 246.0 | 213.9 | 38.98 | 188.1 | 163.5 | 17.73 | 157.9 | 137.3 | 21.90 |
| 8 | 217.8 | 189.4 | 36.99 | 164.6 | 143.1 | 18.67 | 138.2 | 120.1 | 22.80 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:
1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 18 – ALLOWABLE (ASD) DIAPHRAGM STRENGTH AND STIFFNESS FOR U-PANEL PB, No. 26 GAGE, Fy =80 ksi**




## Allowable Diaphragm Shear

| Stitch Screw Spacing = 12" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 340.2 | 295.8 | 29.30 | 273.00 | 237.4 | 6.54 | 247.60 | 215.3 | 9.88 |
| 4 | 299.8 | 260.7 | 31.70 | 244.20 | 212.4 | 8.26 | 222.50 | 193.5 | 12.10 |
| 5 | 273 | 237.4 | 33.09 | 212.10 | 184.4 | 9.78 | 178.00 | 154.8 | 13.97 |
| 6 | 254 | 220.9 | 33.93 | 176.70 | 153.7 | 11.14 | 148.40 | 129.0 | 15.55 |
| 7 | 223.3 | 195.1 | 34.45 | 151.50 | 131.7 | 12.36 | 127.20 | 110.6 | 16.90 |
| 8 | 171.0 | 170.7 | 34.78 | 132.50 | 115.3 | 13.46 | 111.30 | 96.8 | 18.07 |

| Stitch Screw Spacing = 16" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 308.7 | 268.4 | 28.40 | 234.6 | 204.0 | 6.46 | 206.9 | 179.9 | 9.64 |
| 4 | 273.3 | 237.6 | 30.63 | 213.8 | 185.9 | 8.13 | 192.3 | 167.2 | 11.78 |
| 5 | 226.5 | 196.9 | 30.60 | 188.0 | 163.4 | 9.52 | 174.6 | 151.8 | 13.43 |
| 6 | 213.9 | 186 | 31.41 | 176.7 | 153.7 | 10.83 | 148.4 | 129 | 14.77 |
| 7 | 204.7 | 178 | 31.97 | 151.5 | 131.7 | 11.88 | 127.2 | 110.6 | 15.88 |
| 8 | 171.0 | 170.7 | 32.37 | 132.5 | 115.3 | 12.93 | 111.3 | 96.8 | 17.02 |

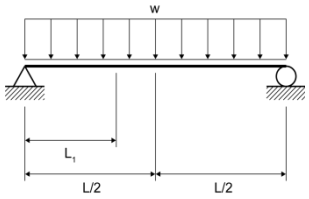
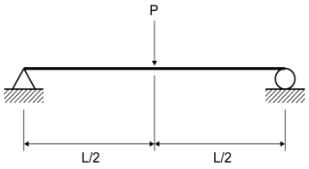
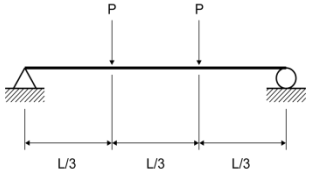
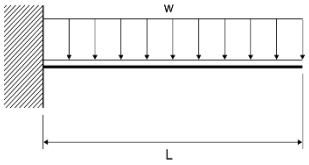
| Stitch Screw Spacing = 20" o.c. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1-Span | | | 2-Span | | | 3-Span | | |
| Span (ft) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) | Strength (lb/ft) Wind | Strength (lb/ft) Seismic | Stiffness (kip/in) |
| 3 | 273.8 | 238.1 | 27.25 | 214.1 | 6.4 | 10.81 | 192.6 | 167.5 | 9.53 |
| 4 | 244.8 | 212.9 | 29.34 | 181.6 | 7.96 | 13.05 | 170.3 | 148.1 | 11.50 |
| 5 | 226.5 | 196.9 | 30.60 | 174.7 | 9.41 | 15.11 | 156.5 | 136.1 | 13.08 |
| 6 | 192.6 | 167.5 | 29.86 | 158.8 | 10.6 | 16.56 | 139.5 | 121.3 | 14.14 |
| 7 | 186.2 | 161.9 | 30.49 | 147.3 | 11.55 | 17.73 | 127.2 | 110.6 | 15.19 |
| 8 | 164.6 | 143.2 | 29.38 | 132.5 | 12.39 | 18.67 | 111.3 | 96.8 | 16.08 |

For **SI**: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:

1. Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
2. Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
3. Fastener spacing at edge panels parallel to deck ribs = (1) #12-14 per panel span at the support location. Fastener spacing between supports shall be no greater than stitch screw spacing.
4. Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
5. Structural Fasteners shall be located at the panel edge at each support
6. Minimum 0.060-inch-Thick Steel Supports
7. Panels are not subject to uplift
8. Insulation under the panel is outside the scope of this table
9. Safety Factors for ASD are in accordance with AISI S310-16 Table B1.1 for wind and seismic

**TABLE 19 – DIAPHRAGM SHEAR WEB DEFLECTION EQUATIONS**

| Type of Loading | Loading Condition | Shear Deflection | |
|---|---|---|---|
| Simple Beam at Center | Uniform Load, w | $\Delta_w = \frac{wL^2}{8bG'}$ |   |
| Simple Beam at $L_1$ | Uniform Load, w | $\Delta_w = \frac{q_{ave}L_1}{G'}$ | |
| Simple Beam at center | Point Load, P | $\Delta_w = \frac{PL}{4bG'}$ |   |
| Simple Beam at 1/3 points | Point Loads, P | $\Delta_w = \frac{PL}{3bG'}$ |   |
| Cantilever Beam at End | Uniform Load, w | $\Delta_w = \frac{WL^2}{2bG'}$ |   |
| Cantilever Beam at End | Point Load, P | $\Delta_w = \frac{PL}{bG'}$ |   |

Where:

b = Depth of diaphragm (ft)
G' = Stiffness factor (kips/in)
L = Diaphragm Length (ft)
$L_1$ = Distance to point were deflection is calculated (ft)
P = Concentrated load (lbs)
$q_{ave}$ = Average diaphragm shear (lbs/ft)
w = Uniform load (lbs/ft)
$\Delta_w$ = Web deflection (in.)