



McELROY METAL, INC.
1500 Hamilton Road
Bossier City, LA 71111
(800) 562-3576

www.mcelroymetal.com
tjohnson@mcelroymetal.com

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.

The product described in this Uniform Evaluation Service (UES) Report has been evaluated as an alternative material, design or method of construction in order to satisfy and comply with the intent of the provision of the code, as noted in this report, and for at least equivalence to that prescribed in the code in quality, strength, effectiveness, fire resistance, durability and safety, as applicable, in accordance with IBC Section 104.11. This document shall only be reproduced in its entirety.





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 1⁵/₈-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.

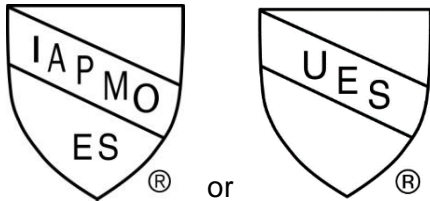
4.4 Mega-Rib Panel: The Mega-Rib is a through-fastened metal roof and wall covering that is rolled and pressure-formed from sheet steel complying with ASTM A792, Grade 50 (Class 1 or 4) or Grade 80 with an AZ50 aluminum-zinc alloy coating. The No. 24 gage panel minimum base-metal design thickness is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



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.

Brian Gerber, P.E., S.E.
Vice President, Technical Operations
Uniform Evaluation Service

Richard Beck, PE, CBO, MCP
Vice President, Uniform Evaluation Service

GP Russ Chaney
CEO, The IAPMO Group

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 Type	Load Type	Span in Feet															
		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	Load Type	Span in Feet															
		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 Type	Load Type	Span in Feet															
		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

GAGE	F_y (ksi)	SECTION PROPERTIES				TOP IN COMPRESSION			BOTTOM IN COMPRESSION		
		WEIGHT (psf)	V_a (kip/ft)	P_{a_end} (lb/ft)	P_{a_int} (lb/ft)	I_x (in ⁴ /ft)	S_x (in ³ /ft)	M_a (kip-in/ft)	I_x (in ⁴ /ft)	S_x (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_x 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 Type	Load Type	Span in Feet															
		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 Type	Load Type	Span in Feet															
		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	Load Type	Span in Feet															
		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 3 1/4 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 Type	Load Type	Span in Feet															
		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

GAGE	SECTION PROPERTIES					TOP IN COMPRESSION			BOTTOM IN COMPRESSION		
	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 3½ 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.

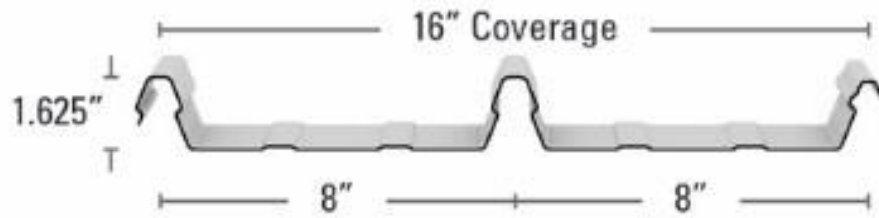


FIGURE 1—MIRAGE PANEL

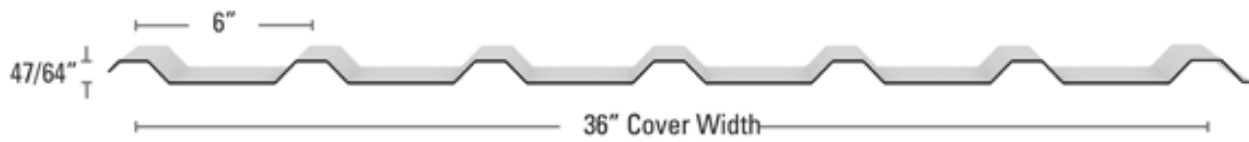


FIGURE 2—PBU-PANEL



FIGURE 3—U PANEL

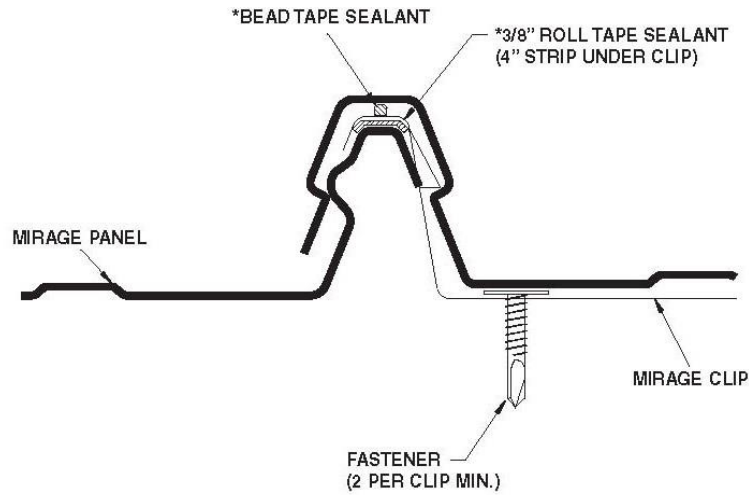


FIGURE 4 – MIRAGE SIDE LAP DETAIL

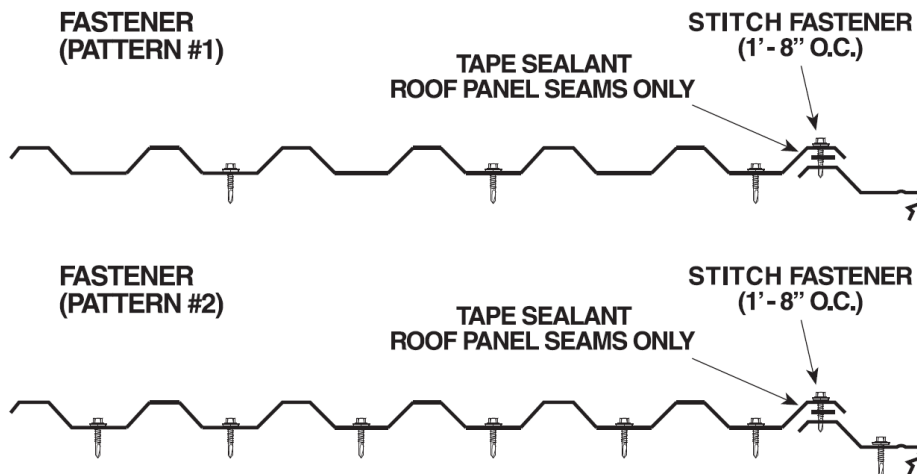
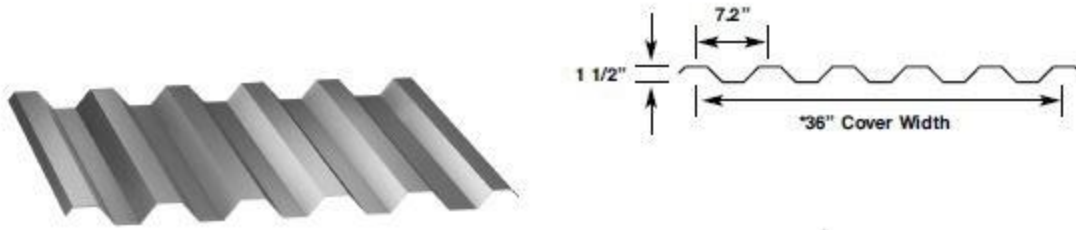


FIGURE 5 – TYPICAL FRAMING AND STITCH FASTENER PATTERNS



Mega-Rib

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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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:

- Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
- Structural Fastener to Supports: #12-14, 14.4 inches on center spacing across interior supports, 7.2 inches on center spacing across end supports
- 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.
- Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
- Structural Fasteners shall be located at the panel edge at each support
- Minimum 0.060 inch Thick Steel Supports
- Panels are not subject to uplift
- Insulation under the panel is outside the scope of this table
- 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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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

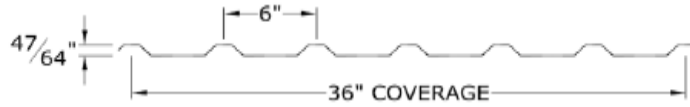
For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:

- Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
- Structural Fastener to Supports: #12-14, 14.4 inches on center spacing across interior supports, 7.2 inches on center spacing across end supports
- 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.
- Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
- Structural Fasteners shall be located at the panel edge at each support
- Minimum 0.060-inch-Thick Steel Supports
- Panels are not subject to uplift
- Insulation under the panel is outside the scope of this table
- 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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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

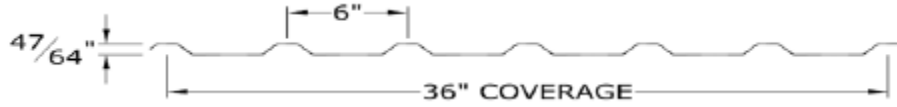
For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

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)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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

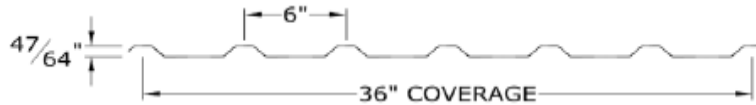
For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

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.									
Span (ft)	1-Span			2-Span			3-Span		
	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.									
Span (ft)	1-Span			2-Span			3-Span		
	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.									
Span (ft)	1-Span			2-Span			3-Span		
	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

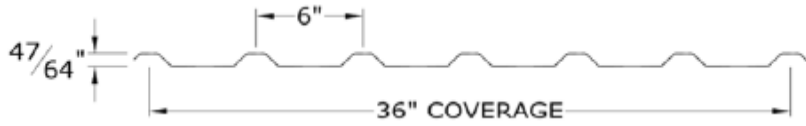
For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

Notes:

- Capacities are calculated in accordance with AISI S310-16, North American Standard for the Design of Profiled Steel Diaphragm Panels
- Structural Fastener to Supports: #12-14, 12 inches on center spacing across interior supports, 6 inches on center spacing across end supports
- 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.
- Stitch Fastener: #1/4-14 Laptek spaced as indicated in table
- Structural Fasteners shall be located at the panel edge at each support
- Minimum 0.060-inch-Thick Steel Supports
- Panels are not subject to uplift
- Insulation under the panel is outside the scope of this table
- 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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span Strength (lb/ft)		Stiffness (kip/in)	2-Span Strength (lb/ft)		Stiffness (kip/in)	3-Span Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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

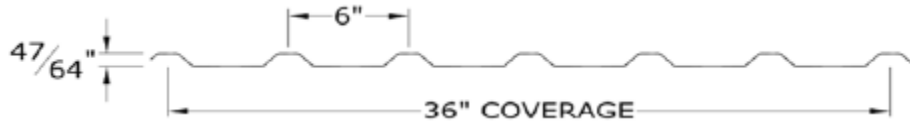
For SI: 1 inch =25.4 mm, 1 foot =305 mm, 1 ksi = 1 MPa, 1 lb/ft = 14.59 N/m, 1 kip/in = 1751 N/m

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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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.									
Span (ft)	1-Span			2-Span			3-Span		
	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)	Strength (lb/ft)		Stiffness (kip/in)
	Wind	Seismic		Wind	Seismic		Wind	Seismic	
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)
- L₁ = Distance to point where deflection is calculated (ft)
- P = Concentrated load (lbs)
- q_{ave} = Average diaphragm shear (lbs/ft)
- w = Uniform load (lbs/ft)
- Δ_w = Web deflection (in.)