



New Frontier Structures, Inc.

ALLOWABLE AXIAL LOADS (PLF)

- New Frontier Structural Insulated Building Panels are made of two equal layers of 7/16" OSB glue laminated to a solid core of EPS foam.
- Rated structural sheathing used in the panels comply with the requirements of United States Voluntary Product Standard PS 2-92 (UBC Standard 23-3) for 7/16 inch thick (11.1mm) Structural I, Exposure 1, faced sheathing with a span index of 24/16, and the requirements in the sandwich panel manufacturer's quality control manual.
- Each structural panel has a core of 1.0 pcf nominal bulk density EPS foam [0.95pcf (15.2kg.m3) minimum], adhered to the sheathing using a qualified lamination adhesive outlined in the sandwich panel manufacturer's quality control manual.

SANDWICH PANEL DIMENSIONS

Skin Thickness	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)
Core Thickness	3-5/8" (92.08mm)	5 - 5/8" (142.88mm)	7 - 3/8" (187.33mm)	9 - 3/8" (238.13mm)	11 - 3/8" (288.93mm)
Panel Depth	4 - 1/2" (114.30mm)	6 - 1/2" (165.1mm)	8 - 1/4" (209.55mm)	10 - 1/4" (260.35mm)	12 - 1/4" (311.15mm)

WALL HEIGHT	ALLOWABLE AXIAL LOAD (DEAD LOAD + LIVE LOAD) (PLF= Pounds Per Lineal Foot)				
	8' - 0" 2.44 Mtrs. 2438 mm	2,529	2,662	2,706	2,750
10' - 0" 3.05 Mtrs. 3048 mm	2,397	2,588	2,676	2,721	2,735
12' - 0" 3.66 Mtrs. 3658 mm	2,250	2,529	2,618	2,676	2,706
14' - 0" 4.27 Mtrs. 4267 mm	2,059	2,426	2,559	2,632	2,676
16' - 0" 4.88 Mtrs. 4877 mm	1,838	2,309	2,485	2,574	2,632
18' - 0" 5.5 Mtrs. 5486 mm	1,603	2,176	2,397	2,515	2,588
20' - 0" 6.1 Mtrs. 6096 mm	1,382	2,029	2,294	2,441	2,529
22' - 0" 6.71 Mtrs. 6706 mm	1,162	1,868	2,176	2,368	2,471
24' - 0" 7.32 Mtrs. 7315 mm	956	1,691	2,044	2,265	2,397

For SI: 1inch = 25.4 mm, 1 foot = 304.8 mm, 1 plf = 14.6 N/m

1. Allowable loads are based on axial loads being applied over entire panel thickness.
2. All values are normal-duration loads. No increases for other load durations are allowed
3. All values listed are for single-span panels with supports at the top and bottom.
4. All axial loads can be applied with a maximum eccentricity equal to one-sixth (1/6th) of the panel thickness and a 5 psf perpendicular load.
5. Additional axial loading can be achieved by adding dimensional lumber, LVL's, wood I-beams, etc., at the panel joints as splines. The structural engineer for any particular project can determine this loading increase with calculations that can be provided with each project when necessary.

Table A-1 Axial loads on Sandwich Panels



New Frontier Structures, Inc.

ALLOWABLE TRANSVERSE LOADS (PSF)

- New Frontier Structural Insulated Building Panels are made of two equal layers of 7/16" OSB glue laminated to a solid core of EPS foam.
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- Each structural panel has a core of 1.0 pcf nominal bulk density EPS foam [0.95pcf (15.2kg.m3) minimum], adhered to the sheathing using a qualified lamination adhesive outlined in the sandwich panel manufacturer's quality control manual.

SANDWICH PANEL DIMENSIONS

Skin Thickness	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)	7/16" (11.113mm)
Core Thickness	3-5/8" (92.08mm)	5 - 5/8" (142.88mm)	7 - 3/8" (187.33mm)	9 - 3/8" (238.13mm)	11 - 3/8" (288.93mm)
Panel Depth	4 - 1/2" (114.30mm)	6 - 1/2" (165.1mm)	8 - 1/4" (209.55mm)	10 - 1/4" (260.35mm)	12 - 1/4" (311.15mm)

ALLOWABLE TRANSVERSE LOAD

(DEAD + LIVE) (psf)

PANEL SPAN	Deflection LIMIT	ALLOWABLE TRANSVERSE LOAD (DEAD + LIVE) (psf)				
8' - 0"	L / 180	69 s	103 s	133 s	152 s	168 s
2.44 Meters	L / 240	69 s	103 s	133 s	152 s	168 s
2438 mm	L / 360	51 d	81 d	106 d	136 d	111 d
10' - 0"	L / 180	55 s	82 s	105 s	120 s	133 s
3.05 Meters	L / 240	53 d	82 s	105 s	120 s	133 s
3048 mm	L / 360	35 d	58 d	78 d	101 d	124 d
12' - 0"	L / 180	45 s	67 s	87 s	99 s	110 s
3.66 Meters	L / 240	38 d	64 d	87 s	99 s	110 s
3658 mm	L / 360	25 d	43 d	59 d	77 d	96 d
14' - 0"	L / 180	25 d	43 d	61 d	80 s	80 s
4.27 Meters	L / 240	18 d	32 d	45 d	61 d	76 d
4267 mm	L / 360	12 d	22 d	30 d	40 d	51 d
16' - 0"	L / 180	18 d	33 d	48 d	65 d	64 s
4.88 Meters	L / 240	14 d	25 d	36 d	48 d	62 d
4877 mm	L / 360	9 d	17 d	24 d	32 d	41 d
18' - 0"	L / 180	14 d	26 d	38 d	52 d	50 m
5.5 Meters	L / 240	11 d	20 d	28 d	39 d	50 d
5486 mm	L / 360	7 d	13 d	19 d	26 d	34 d
20' - 0"	L / 180	11 d	21 d	31 d	42 m	41 m
6.1 Meters	L / 240	8 d	16 d	23 d	32 d	41 m
6096 mm	L / 360	5 d	10 d	15 d	21 d	28 d
22' - 0"	L / 180	9 d	17 d	25 d	35 m	34 m
6.71 Meters	L / 240	7 d	13 d	19 d	27 d	34 m
6706 mm	L / 360	4 d	8 d	13 d	18 d	23 d
24' - 0"	L / 180	7 d	14 d	21 d	29 m	29 m
7.32 Meters	L / 240	5 d	10 d	15 d	22 d	29 m
7315 mm	L / 360	3 d	7 d	10 d	15 d	19 d

- Values shown in tables are the allowable dead load plus live load.
- Controlling conditions: "s"=shear, "m"=bending, "d"=deflection
- Minimum Bearing required is 3"
- Deflection criteria are L/180 for roof loads with a pitch 6/12 or greater, L/240 for roof load with a pitch less than 6/12 and L/360 for floor loads
- All loads are for normal duration loads. No duration factors are allowed.
- For permanent or long-duration (> 6 mo.) use 1/2 the tabulated load to minimize creep deflection.
- Additional load capacity can be achieved by using dimensional lumber, LVL or wood I-beam splines at the panel joints.

Table T-1 Transverse Loads on Sandwich Panels



New Frontier Structures, Inc.

ALLOWABLE SHEARWALL LOADS (PLF)

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- Each structural panel has a core of 1.0 pcf nominal bulk density EPS foam [0.95pcf (15.2kg.m3) minimum], adhered to the sheathing using a qualified lamination adhesive outlined in the sandwich panel manufacturer's quality control manual.

SANDWICH PANEL DIMENSIONS

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ALLOWABLE SHEARWALL CAPACITIES (PLF)
(PLF = POUNDS PER LINEAL FOOT)

OSB SPLINE, EACH FACE					
4 1/2" Panel	170	170	170	170	170
6 1/2" thru 12 1/4" Panel	155	155	155	155	155
2x SOLID WOOD SPLINE at 24 in o.c.	2x4 SPLINE 480	2x6 SPLINE 480	2x8 SPLINE 480	2x10 SPLINE 480	2x12 SPLINE 480

- Panel nailing to boundary and solid wood spline members is 8d common nails or 14 gauge staples with 7/16 crown x 1 3/4" long at 6" o.c..
- OSB spline nailing is 8d common nails, 6 gage wood screws x 1 1/4" long or 14 gauge staples with 7/16 crown x 1 3/4" long at 6" o.c..
- Boundary and solid wood spline members shall have a specific gravity of 0.5 or greater.
- The connection of the load carrying member to the top plate of the panel wall needs to be designed to adequately transfer the load to the panel.
- The connection of the bottom plate of the panel wall to the rim joist or sill needs to be designed to adequately transfer the load.
- Maximum height to width ratio is 3 1/2:1(Wood Spline), 1:1 (OSB Spline) for seismic zones 0, 1, 2, and 3.
- Maximum height to width ratio is 2:1(Wood Spline), 1:1 (OSB Spline) for seismic zone 4.
- Higher shear values can be obtained with closer nail spacing. The structural engineer for Precision Panel Structures, Inc. can determine the shear increase.

Table S-1 Shear wall Loads on Sandwich Panels