

PREMIER STRUCTURAL SANDWICH PANELS

PREMIER INDUSTRIES, INC./
dba PREMIER BUILDING SYSTEMS
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TACOMA, WASHINGTON 98402

1.0 SUBJECT

Premier Structural Sandwich Panels.

2.0 DESCRIPTION

2.1 General:

Premier Structural Sandwich Panels are factory-assembled sandwich panels consisting of expanded polystyrene (EPS) cores with oriented strand board (OSB) facings produced at locations listed in Table 1. The panels are used as load-bearing wall, roof and floor components, and fire-resistive construction under 1997 *Uniform Building Code*™ (UBC) and the 2000 *International Residential Code*™ (IRC). Panels are produced in widths ranging from 4 feet (1219 mm) to 8 feet (2438 mm), and lengths ranging from 8 feet (2438 mm) to 24 feet (7315 mm). The panels are manufactured in a Type S, Type I and Type L panel configuration, as shown in Figures 1, 2 and 3, respectively.

2.1.1 Type S Panel: The core for the Type S panel is recessed along the panel sides to receive nominal 4-inch-wide (102 mm) OSB splines, and recessed on the ends to receive solid-sawn SPF dimensional lumber sized to match the core thickness.

2.1.2 Type I panel: The Type I panel is recessed along the sides to receive I-joint splines with 2¹/₄-inch-wide (57.15 mm) wood flanges and 7¹/₁₆-inch-thick (11.1 mm) OSB webs; and recessed on the ends to receive nominal 2-inch-thick (51 mm) solid-sawn dimensional lumber sized to match the core thickness.

2.1.3 Type L Panel: The Type L panel is recessed along the panel sides and ends to receive nominal 2-inch-thick (51 mm) solid-sawn hem-fir dimensional lumber sized to match the core thickness.

2.2 Materials:

2.2.1 Core: Core material is EPS foam plastic, with thicknesses ranging from 3¹/₂ inches (89 mm) to 11¹/₄ inches (285 mm). The EPS core Type I or Type IX has a minimum density of 0.95 pcf (15.2 kg/m³) or 1.8 pcf (28.8 kg/m³), respectively, and is recognized in ICBO ES Evaluation Report ER-3414.

2.2.2 Facing: Panel facing material ranges from 7¹/₁₆-inch-thick (11.1 mm) to 3¹/₄-inch-thick (19.1 mm), APA-rated Exposure 1 OSB, complying with UBC Standard 23-3 (USDOC PS 2-93) and an approved quality control manual.

2.2.3 Adhesive: The facing material is bonded to the EPS core material with a Type II, Class 2, laminating adhesive cured under pressure, as noted in the approved quality control manual.

2.2.4 Splines: Splines for the Type S panel are nominal 4-inch-wide-by-7¹/₁₆-inch-thick (102 mm by 11.1 mm) OSB material. Type I splines are I-joists with 2¹/₄-inch-wide (57.15 mm) wood flanges and 7¹/₁₆-inch-thick (11.1 mm) OSB webs, sized in depth to match the core thickness. The I-joists shall be Jager Super-I (JSI) Series 20, recognized in ICBO ES evaluation report PFC-4447. Type L splines are nominal 2-inch-thick (51 mm), solid-sawn, hem-fir dimensional lumber, sized in depth to match the core thickness. See Figures 1 through 3.

2.2.5 PBS Screws: Premier Building Systems (PBS) steel screws feature 3¹/₁₆-inch (4.8 mm) shank diameters and 5¹/₈-inch-diameter (15.9 mm) bugle heads in various lengths. The threaded portion of the shank extends 2 inches (51 mm) from the tip, with a 3¹/₃₂-inch (2.4 mm) thread pitch.

2.3 Installation:

The Premier panels are connected to each other along their edges with field-installed OSB splines, I-joint splines or dimensional lumber splines. The OSB facings are attached to the splines with 8d box nails, spaced at 6 inches (152 mm) on center, or equivalent.

Top and bottom plates are dimensional lumber, sized to match the core thickness, and fastened to the panel facing with 8d box nails spaced at 6 inches (152 mm) on center or equivalent. An EPS-compatible sealant is applied along butting EPS core surfaces and any dimensional lumber surfaces, and along the bottom of the panel base plate before panel placement. Typical installation details are in Figures 4 through 14.

2.4 Allowable Loads for Panels:

Allowable transverse loads, combined axial and wind loads, header loads and racking shear loads are noted in Tables 2 through 11.

2.5 Openings:

Openings up to 10 feet (3048 mm) wide are permitted with panel headers under conditions stated in this section, provided allowable loads do not exceed those noted in Tables 8 and 9 of this report. Headers must have minimum 7¹/₁₆-inch-thick (11.1 mm) facings and 3¹/₂-inch-thick (89 mm) cores. Joints are permitted, provided the 2-by dimensional lumber top and bottom plates are continuous and connected to the facings with 8d common or box nails spaced 6 inches (152 mm) on center, or equivalent. Minimum bearing at supports is 1¹/₂ inches (38 mm), and both OSB faces must be supported. The minimum width of panel between openings is 12 inches (305 mm). For other conditions, conventional framing techniques with headers are to be used.

2.6 Thermal Barrier:

One-half-inch-thick (12.7 mm), regular gypsum wallboard must be fastened to the interior face of the Premier panels with 5d wallboard nails, or minimum 1¹/₄-inch-long (31.7 mm), No. 6, Type S or Type W drywall screws, in accordance with Table 25-G of the UBC or Table R702.3.5 of the IRC, using

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16-inch-on-center (406.4 mm) framing spacing guidelines. Other thermal barriers covered in ICBO ES evaluation reports are permitted, provided the respective evaluation report recognizes such use and provides details of installation over the panels.

2.7 Panel Cladding:

2.7.1 Roof Covering: The roof covering must comply with Chapter 15 of the UBC or Chapter 901 of the IRC or a current ICBO ES evaluation report, except that roofs with hot-asphalt or hot-coal tar pitch are prohibited. Underlayment and flashing must be installed in accordance with the applicable code.

2.7.2 Wall Covering: Panels are required to be covered with an approved wall covering. The wall covering may be any recognized in the applicable code or in a current ICBO ES evaluation report. Panels are considered weather-resistive barriers and do not require building paper except where cementitious plaster is used. Where portland cement plaster is used, compliance with Section 2506.4 of the UBC is necessary. All exterior panel joints must be sealed with a compatible acrylic latex caulk.

2.8 One-hour Fire-resistive Wall Assemblies:

2.8.1 Premier Type S Wall Panels:

Premier Type S wall panels, consisting of 3³/₈-, 5¹/₂- or 7¹/₄-inch-thick (86, 140 or 184 mm) EPS cores, laminated between two sheets of 7¹/₁₆-inch-thick (11.1 mm) OSB, and with two layers of 5⁵/₈-inch-thick (15.9 mm), Type X, gypsum wallboard complying with ASTM C 36 on each side of each panel, are considered one-hour fire-resistive wall assemblies.

Seven-sixteenth-inch-thick (11.1 mm), nominal 4-inch-wide (102 mm) OSB splines are installed vertically between vertical joints on each edge of panels. Splines are secured to face of OSB boards with a bead of wood-to-wood construction adhesive and 1⁵/₈-inch-long (41.3 mm), Type S, steel screws, spaced 6 inches (152 mm) on center along the edge of adjoining faces. Plates of nominal 2-inch-thick (51 mm), No. 2, Douglas fir lumber are installed at top and bottom wall assembly precut-channels. OSB face boards are secured to end plates with a bead of wood-to-wood construction adhesive and 8d box nails spaced 8 inches (203 mm) on center along edges of both faces. An EPS compatible caulk is to be applied to all spline and plate surfaces in contact with the EPS core.

The double layers of 5⁵/₈-inch-thick (15.9 mm) gypsum wallboard must be installed vertically, with the base layer placed over the Premier panel and with vertical joints staggered 16 inches (406 mm) minimum from Premier panel spline joints. The base layer is attached with 1⁵/₈-inch-long (41.3 mm), No. 6, Type S screws spaced at 24 inches (610 mm) on center vertically and 16 inches (406 mm) on center horizontally. The wallboard face layer is installed over the base layer with joints staggered 16 inches (406 mm) minimum and fastened through the base layer onto the panel with 2-inch-long (51 mm), No. 6, Type S screws spaced at 12 inches (305 mm) on center vertically and 16 inches (406 mm) on center horizontally, staggering the fasteners 6 inches (152 mm) from the base layer screws. Face layers of gypsum wallboard must have joints taped and screw heads treated with joint compound. See Figure 13.

Where the panels are exposed to the exterior, the exterior gypsum wallboard shall be replaced with 5⁵/₈-inch-thick (15.9 mm), Type X, water-resistant core gypsum sheathing in compliance with ASTM C 79.

The maximum allowable axial load is 1,833 pounds per linear foot (26 762 N/m) for fire-resistive wall assemblies.

2.8.2 Premier Type L Wall Panels:

Premier Type L wall panels, consisting of 5¹/₂- or 7¹/₂-inch-thick (140 or 184 mm) EPS cores, laminated between two

sheets of 7¹/₁₆-inch-thick (11.1 mm) OSB, and overlaid with a single layer of 5⁵/₈-inch-thick (15.9 mm) proprietary Type SG-C gypsum wallboard (manufactured by Standard Gypsum) on each side of each panel, are considered one-hour fire-resistive wall assemblies.

The EPS cores are laminated between the two layers of OSB with Ashland Chemical Company adhesive. Single vertical 2x stud splines (No. 2 Grade, hem-fir or better) are installed into panel recess edges and secured to the OSB with 6d common or 8d box nails spaced 6 inches (152 mm) on center. A single 2x bottom plate and a double 2x top plate (No. 2 Grade hem-fir or better) are installed in the bottom and top panel recesses, respectively. The OSB faces are fastened to the plates with 6d common or 8d box nails at 6 inches (152 mm) on center. Each panel is joined together at the vertical 2x stud splines with 16d sinker nails at 24 inches (610 mm) on center and staggered along the stud length. The lower top plate is fastened to the stud ends with 16d sinker nails, and the upper top plate is fastened to the first top plate with 16d sinker nails at 16 inches (406 mm) on center and staggered along the top plate length. An EPS compatible caulk is to be applied to all stud and plate surfaces in contact with the EPS core.

A single layer of 5⁵/₈-inch-thick (15.9 mm), proprietary Type SG-C gypsum wallboard is installed onto both faces of the wall and secured to the OSB with 6d cupped-head wallboard nails, 1⁵/₈ inches (41.3 mm) long, spaced 8 inches (203 mm) on center along the wall perimeter, 12 inches (305 mm) on center vertically, and 16 inches (406 mm) on center horizontally. The joints in the gypsum wallboard are treated with compound and paper tape. See Figure 13.

Where the panels are exposed to the exterior, the exterior gypsum wallboard shall be replaced with 5⁵/₈-inch-thick (15.9 mm), Type X, water-resistant core gypsum sheathing complying with ASTM C 79.

The maximum allowable axial load is 2,200 pounds per linear foot (32 100 N/m) for fire-resistive wall assemblies.

2.9 Unrestrained One-hour Fire-resistive Floor/Ceiling, or Roof/Ceiling Assembly:

Premier panels with minimum 7¹/₄-inch-thick (184 mm) cores may be used as a one-hour floor-ceiling and/or roof-ceiling assembly. The ceiling side (exposed face) must be protected with two layers of 5⁵/₈-inch-thick (15.9 mm), Type X gypsum wallboard, complying with ASTM C 36. The base layer is applied with the joints parallel to the spline joints, offset by 24 inches (610 mm), with 1¹/₄-inch-long (31.8 mm), Type S drywall screws spaced 12 inches (305 mm) on center, in rows spaced 24 inches (610 mm) on center. A face layer is then applied at right angles to the base layer with 2-inch-long (51 mm), Type S drywall screws spaced 12 inches (305 mm) on center in rows spaced 16 inches (406 mm) on center. The exposed joints are then taped and covered with joint compound complying with ASTM C 474 and C 475. All exposed screw heads are also covered with joint compound. See Figure 15.

The floor-ceiling and roof-ceiling assemblies have allowable spans based on Tables 2 through 4.

2.10 Identification:

The Premier Structural panel bears a stamp noting the product name, panel EPS core density, certification number, plant identification number, evaluation report number (ICBO ES PFC-5002) and label of the quality control agency (Underwriters Laboratories Inc.).

3.0 EVIDENCE SUBMITTED

Data in accordance with the ICBO ES Acceptance Criteria for Sandwich Panels (AC04), dated April 2001; fire tests to UBC Standards 7-1 (ASTM E 119) and 26-3 (UL 1715); structural calculations; a quality control manual; and installation instructions.

4.0 FINDINGS

That the Premier Structural Sandwich Panels described in this report comply with the 1997 *Uniform Building Code*™ and the 2000 *International Residential Code*™, subject to the following conditions:

- 4.1 Panels are fabricated and erected in accordance with this report and the manufacturer's instructions.
- 4.2 Remaining portions of the structure are designed and constructed in accordance with other applicable ICBO ES reports or the code.
- 4.3 Structural calculations and plans for the building are submitted to the building official for approval.
- 4.4 Panels are limited to allowable loads noted in this report.

4.5 Panels with openings comply with this report.

4.6 Panels must be separated from the building interior by an approved thermal barrier, such as minimum 1/2-inch-thick (12.7 mm) gypsum wallboard installed in accordance with Section 2.6 of this report.

4.7 Panels are only used in buildings of Type V construction.

4.8 One-hour fire-resistive assemblies are as described in Sections 2.8 and 2.9 of this report.

4.9 Premier Structural panels are fabricated at Fife, Washington and Phoenix, Arizona, with quality control inspections by Underwriters Laboratories Inc. (AA-668).

This report is subject to re-examination in one year.

TABLE 1

LOCATIONS OF PREMIER INDUSTRIES, INC./dba	LOCATION NUMBERS FOR PRODUCT IDENTIFICATION
Premier Building Systems 4609 70th Ave. E Fife, Washington 98371-2465	PB-31
Premier Building Systems 3434 West Papago Street Phoenix, Arizona 85009-6733	PB-32

TABLE 2—ALLOWABLE TRANSVERSE LOADS FOR PREMIER TYPE S PANELS (psf)^{1,5}

PANEL CORE THICKNESS (inches)	DEFLECTION	PANEL SPAN (feet)								
		8	10	12	14	16	18	20	22	24
3 ^{1/2} ²	L/360	38	28	21	16	10	N/A	N/A	N/A	N/A
	L/240	54	43	32	24	16				
	L/180	61*	57	45	34	21				
5 ^{1/2} ²	L/360	49	38	30	24	18	14	11	N/A	N/A
	L/240	78	57	45	32	28	22	16		
	L/180	80*	60*	46*	40*	34*	29	21		
7 ^{1/4} ³	L/360	59	60	41	34	26	20	15	13	11
	L/240	84	75*	60	50	39	31	23	19	18
	L/180	85*	75*	69*	60*	50*	41	31	27	24
9 ^{1/4} ⁴	L/360	78	64	53	41	33	27	22	20	17
	L/240	86*	65*	57*	51*	46*	41	34	29	25
	L/180	86*	65*	57*	51*	46*	42*	39*	37*	34
11 ^{1/4} ⁴	L/360	94*	75	51	49	47	38	28	24	21
	L/240	94*	76*	59*	65*	51*	45*	39*	36	31
	L/180	94*	76*	59*	65*	51*	45*	39*	36*	33*

For SI: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 pound = 4.45 N, 1 psf = 47.9 Pa.

¹An asterisk with a number indicates ultimate/3 for the capacity.

²Three-and-one-half-inch and 5^{1/2}-inch core panels limited to 12-foot span for roof.

³Seven and one quarter inches limited to 14-foot span for roofs.

⁴Nine and one quarter inches and 11^{1/4} inches limited to 16-foot span for roofs.

⁵Floor panels shall have a minimum 3/4-inch top facing or a minimum 7/16-inch top facing overlaid with minimum 7/16-inch finish flooring perpendicular to the panels.

TABLE 3—ALLOWABLE TRANSVERSE LOADS FOR PREMIER TYPE I PANELS (psf)^{1,3}

PANEL CORE THICKNESS (inches)	DEFLECTION	PANEL SPAN (feet)									
		4 ²	8	10	12	14	16	18	20	22	24
7 ¹ / ₄ ³	L/360	122	134	92	60	48	40	29	21	19	16
	L/240	318*	148*	107*	90	70	58	42	31	27	23
	L/180	318*	148*	107*	92*	85	77	48	40	36	30
9 ¹ / ₄ ⁴	L/360	185	164*	124*	71	66	60	48	33	29	24
	L/240	318*	164*	124*	107*	96*	84*	70	49	43	36
	L/180	318*	164*	124*	107*	96*	84*	76*	69	56	47
11 ¹ / ₄ ⁴	L/360	244	143*	103*	84	83	77*	61	42	37	32
	L/240	318*	143*	103*	93*	85*	77*	68*	59*	54*	47
	L/180	318*	143*	103*	93*	85*	77*	68*	59*	54*	49*

For **SI**: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 pound = 4.45 N, 1 psf = 47.9 Pa.

¹An asterisk with a number indicates ultimate/3 for the capacity.

²Four-foot span is a minimum two-span condition.

³Floor panels shall have a minimum ³/₄-inch top facing or a minimum ⁷/₁₆-inch top facing overlaid with minimum ⁷/₁₆-inch finish flooring perpendicular to the panels.

TABLE 4—ALLOWABLE TRANSVERSE LOADS FOR PREMIER TYPE L PANELS (psf)^{1,2,3}

PANEL CORE THICKNESS (inches)	DEFLECTION	PANEL SPAN (feet)									
		4 ³	8	10	12	14	16	18	20	22	24
3 ¹ / ₂	L/360	98	45	32	24	16	11	N/A	N/A	N/A	N/A
	L/240	215	67	47	34	24	16				
	L/180	298*	90	61	44	34	22				
5 ¹ / ₂	L/360	241	128	57	41	33	25	20	15	N/A	N/A
	L/240	288*	182*	86	60	49	37	29	22		
	L/180	288*	182*	112*	79	65	49	39	29		
7 ¹ / ₄	L/360	241	168	80	65	54	42	33	24	N/A	N/A
	L/240	288*	188*	126	99	81	61	49	34		
	L/180	288*	188*	133*	117*	105	80	62	44		
9 ¹ / ₄	L/360	274	188*	116	100	80	62	47	35	32	28
	L/240	326*	188*	147*	134*	120	92	70	52	46	41
	L/180	326*	188*	147*	134*	121*	108*	93	68	61	53
11 ¹ / ₄	L/360	327*	188*	167*	140	116	90	75	57	47	36
	L/240	327*	188*	167*	153*	132*	110*	97*	83*	69	53
	L/180	327*	188*	167*	153*	132*	110*	97*	83*	83*	70

For **SI**: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 pound = 4.45 N, 1 psf = 47.9 Pa.

¹An asterisk with a number indicates ultimate/3 for the capacity.

²2X's are Douglas fir No. 2 or equivalent.

³Four-foot-span is a minimum two-span condition.

⁴Floor panels shall have a minimum ³/₄-inch top facing or a minimum ⁷/₁₆-inch top facing overlaid with minimum ⁷/₁₆-inch finish flooring perpendicular to the panels.

TABLE 5—ALLOWABLE AXIAL LOADS FOR PREMIER TYPE S PANELS (plf)^{1,2}

PANEL CORE THICKNESS (inches)	PANEL HEIGHT (feet)					
	8	10	12	16	20	24
3 ¹ / ₂	3500	2553	2452	2118	N/A	N/A
5 ¹ / ₂	4250	4042	3373	3922	2817	N/A
7 ¹ / ₄	4917	4325	4473	4194	3496	3067
9 ¹ / ₄	4200	4200	4200	4200	3389	3247
11 ¹ / ₄	3890	3890	3890	3890	3890	3333

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

¹Axial loads represent ultimate divided by a safety factor of 3.

²For fire-resistive assembly described in Section 2.8.1, axial load cannot exceed 1,833 pounds per linear foot.

TABLE 6—ALLOWABLE AXIAL LOADS FOR PREMIER TYPE L PANELS (plf)^{1,2}

PANEL CORE THICKNESS (inches)	PANEL SPAN (feet)					
	8	10	12	16	20	24
3 ¹ / ₂	4723	3903	3094	2350	N/A	N/A
5 ¹ / ₂	5849	5889	4278	4311	2933	N/A
7 ¹ / ₄	6850	6111	5556	5181	4835	4082
9 ¹ / ₄	5470	5470	5470	5470	5470	4250
11 ¹ / ₄	4500	4333	4167	3750	3750	3333

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

¹Axial loads represent ultimate load divided by a safety factor of 3.

TABLE 7—ALLOWABLE POINT LOADS FOR PREMIER WALL PANELS (pounds)

ITEM	1 ¹ / ₂ -INCH MINIMUM BEARING WIDTH	3-INCH MINIMUM BEARING WIDTH
Standard detail	2040	2450
Additional cap plate	4030	4678

For **SI**: 1 foot = 304.8 mm, 1 inch = 25.4 mm, 1 plf = 14.6 N/m, 1 pound = 4.45 N.

TABLE 8—ALLOWABLE HEADER LOADS (plf)—NO SPLINES

HEADER DEPTH	DEFLECTION	HEADER SPAN (feet)			
		4	6	8	10
12	L/480	740	385	229	142
	L/360	740	385	229	142
	L/240	740	385	229	142
18	L/480	798	574	385	311
	L/360	798	574	385	311
	L/240	798	574	385	311
24	L/480	886	629	429	361
	L/360	886	629	429	361
	L/240	886	629	429	361

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

¹All values represent ultimate load divided by a safety factor of 3.

TABLE 9—ALLOWABLE HEADER LOADS (plf)—WITH OSB SPLINES

HEADER DEPTH (inches)	DEFLECTION	HEADER SPAN (feet)			
		4	6	8	10
12	L/480	345	243	156	99
	L/360	450	295	190	125
	L/240	630	382	236*	153*
18	L/480	705	388	254	235
	L/360	750*	482*	302*	281*
	L/240	750*	482*	302*	281*
24	L/480	698	555*	368*	350*
	L/360	895*	555*	368*	350*
	L/240	895*	555*	368*	350*

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

¹An asterisk with a number indicates ultimate/3 for the capacity.

TABLE 10—PREMIER PANEL ALLOWABLE SHEAR WALL LOADS^{1,2,3}

PANEL TYPE ⁶	MINIMUM OSB FACE THICKNESS (inches)	ATTACHMENTS ⁴				SHEAR (plf)
		2× Framing		Splines		
		Size/Type	Spacing (inches)	Size/Type	Spacing (inches)	
L or S	7/16	8d nail	6	8d nail	6	300
S	7/16	8d nail	4	No. 6 screw	4	600 ⁵

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹Framing lumber is Douglas fir–larch having a specific gravity of 0.50 or greater.

²Panels with 7/16-inch-thick OSB (and thicker) faces, fastened with 8d nails at 6 inches on center and Type S or W drywall screws, are satisfactory alternatives to the plywood bracing specified in Section 2320.11.3 of the UBC and Section R602.10.3.3 of the IRC.

³Minimum panel width is four feet. The maximum panel height-to-width ratio is 3¹/₂:1.

⁴All nails are 8d box nails. All screws are No. 6 × 1¹/₄-inch-long Type S or Type W drywall screws.

⁵Two top plates are required. Attachments are placed through each top plate.

⁶Panels have a minimum 1 pcf EPS core density.

TABLE 11—PREMIER PANEL ALLOWABLE DIAPHRAGM CAPACITIES^{1,5}

MINIMUM OSB FACE THICKNESS (inches)	ATTACHMENTS						SHEAR (plf)
	Panel Supports		Panel Joints Top Only		Diaphragm Perimeter Top and Bottom		
	SIZE/TYPER ⁶	SPACING (inches)	SIZE/TYPER	SPACING (inches)	SIZE/TYPER	SPACING (inches)	
7/16	PBS screw	12	8d nail	3	8d nail	6	435 ²
7/16	PBS screw	3	8d nail	2	8d nail	4	540 ³
7/16	PBS screw	2	8d nail	1 ¹ / ₂	8d nail	3	750 ⁴

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.6 N/m.

¹The maximum diaphragm length-to-width ratio is 4¹/₂:1.

²The deflection of the 36-foot span for the diaphragm at 435 plf was 0.41 inch.

³The deflection of the 36-foot span for the diaphragm at 540 plf was 0.37 inch.

⁴The deflection of the 36-foot span for the diaphragm at 750 plf was 0.37 inch.

⁵The center third of the diaphragm only requires typical minimum fastener spacings (i.e., PBS screws at 12 inches on center, 8d nails at 6 inches on center top and bottom or 3 inches on center top only).

⁶PBS screws shall be long enough to embed 2 inches (51 mm), minimum, into lumber with a minimum specific gravity of 0.43.

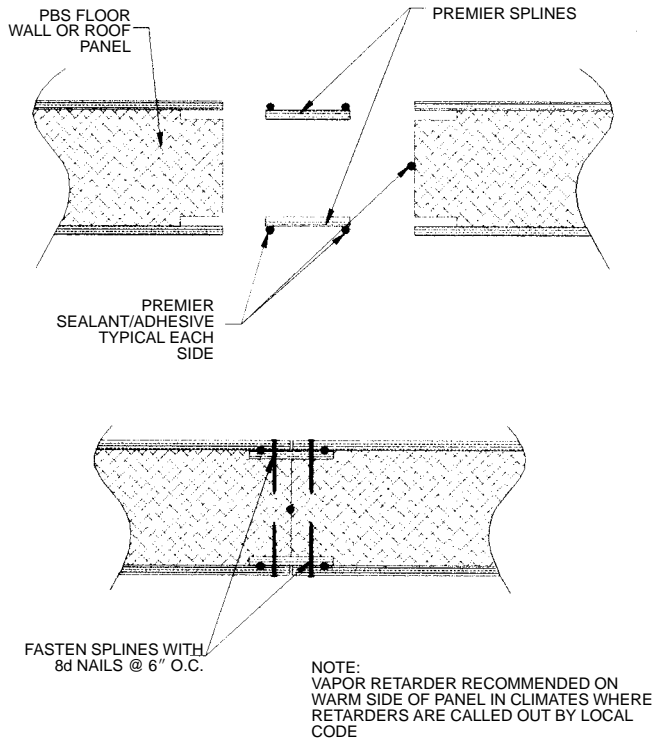


FIGURE 1

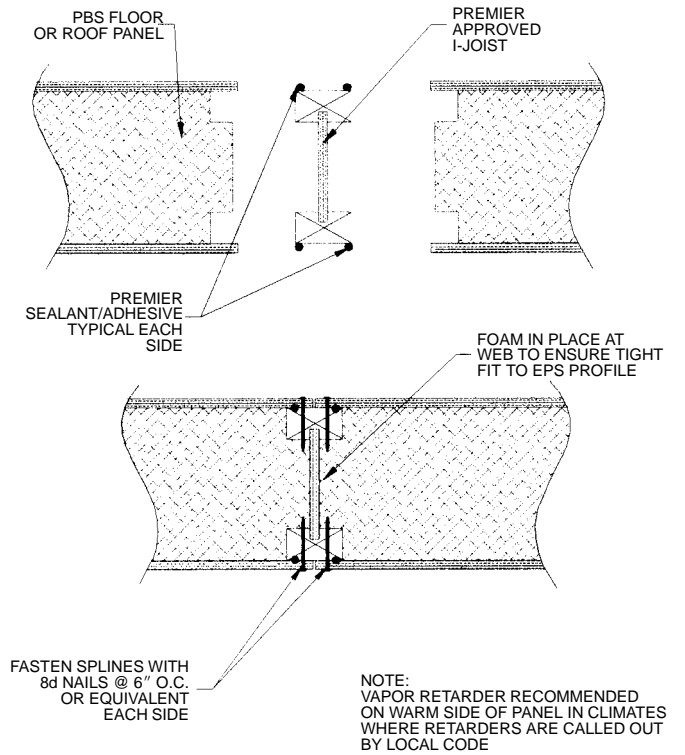


FIGURE 2

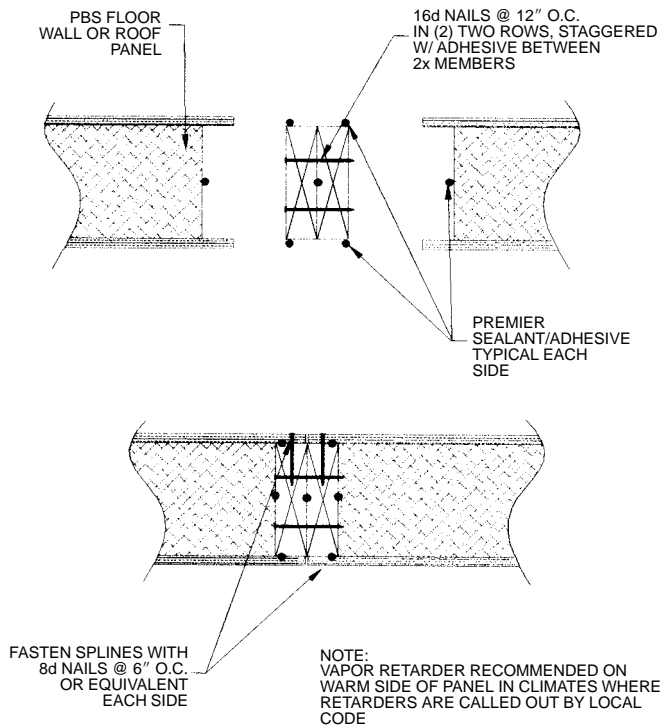


FIGURE 3

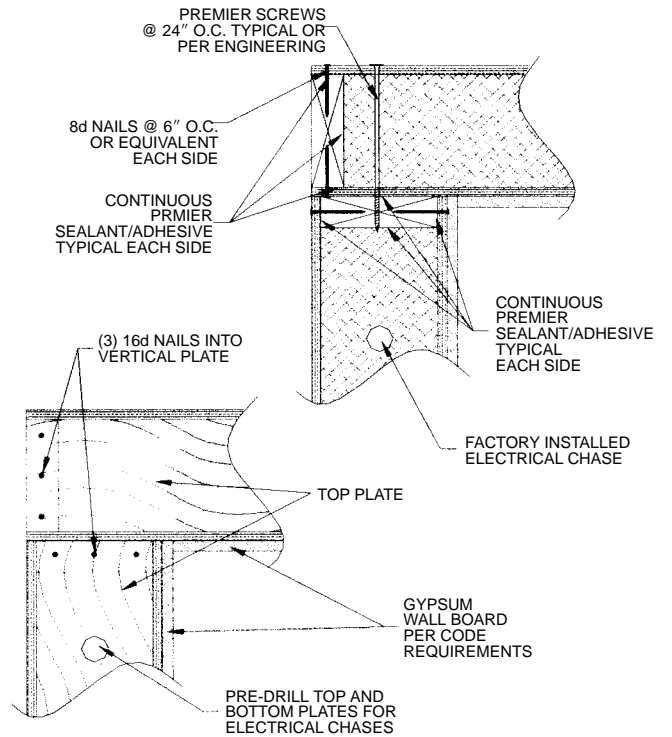


FIGURE 4

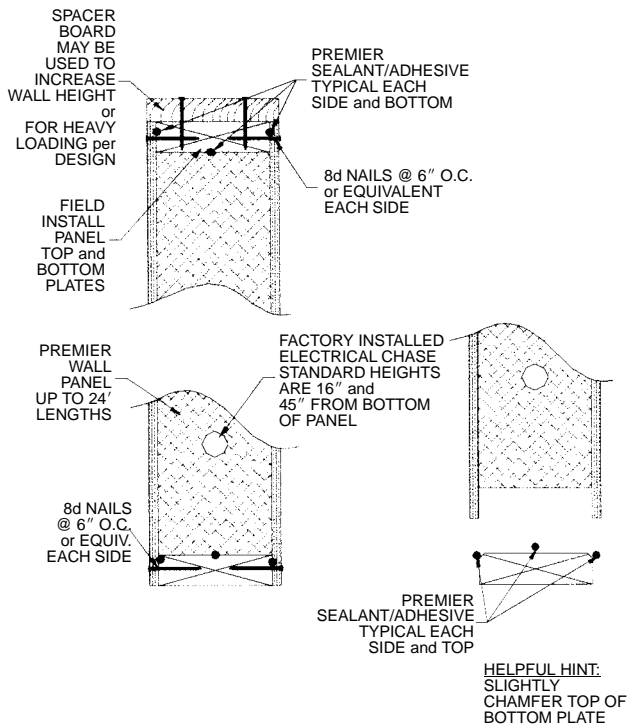


FIGURE 5

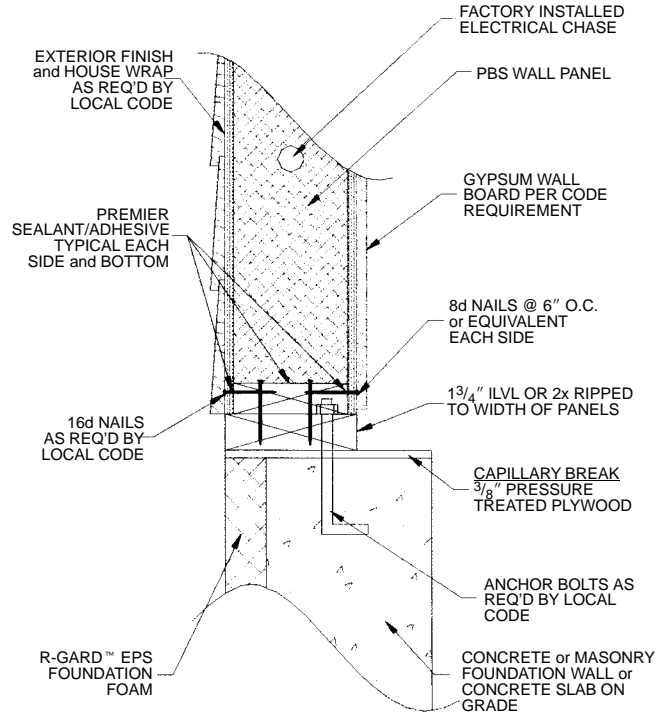


FIGURE 6

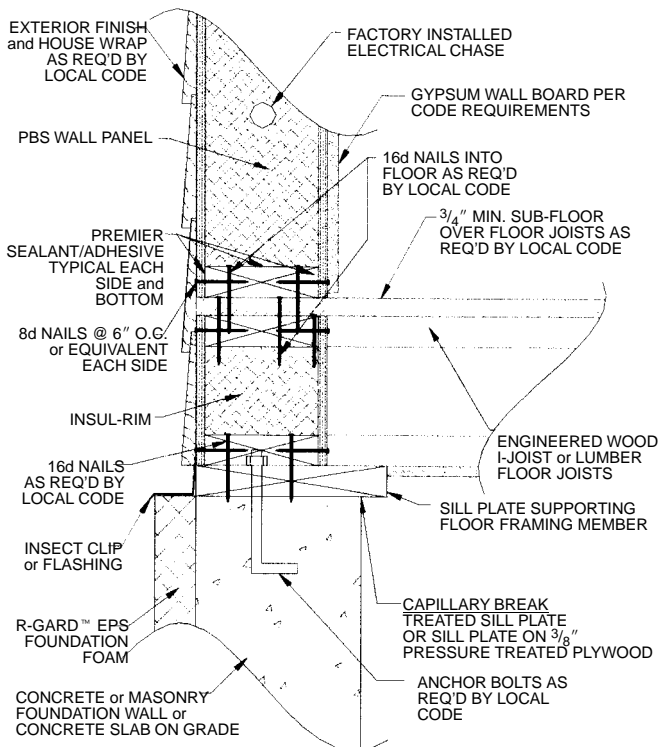


FIGURE 7

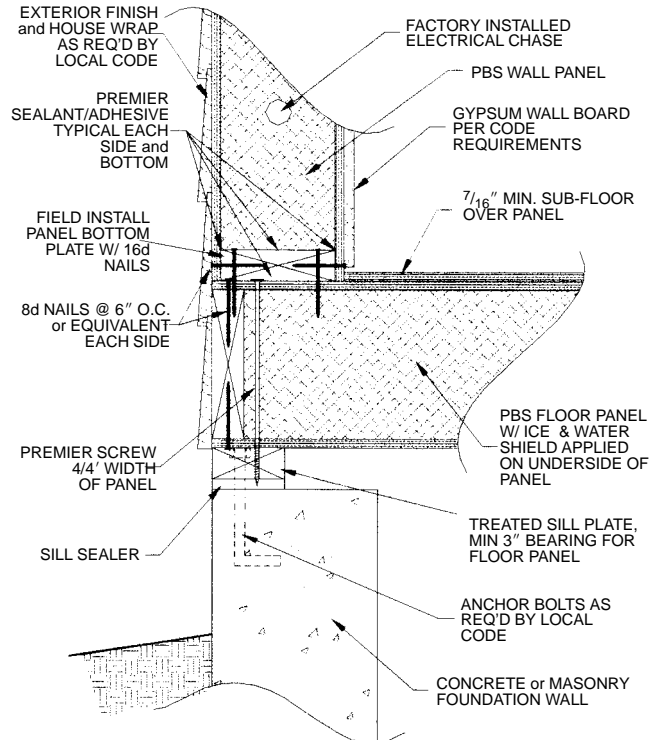


FIGURE 8

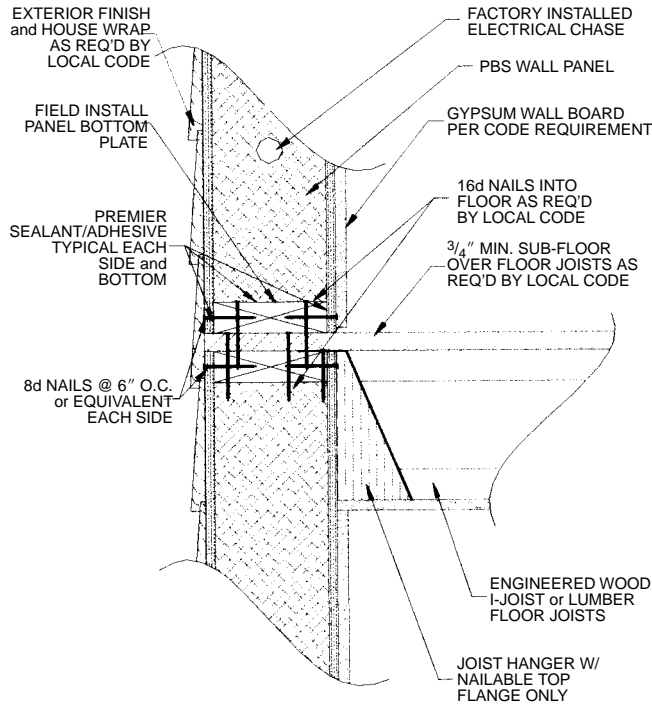


FIGURE 9

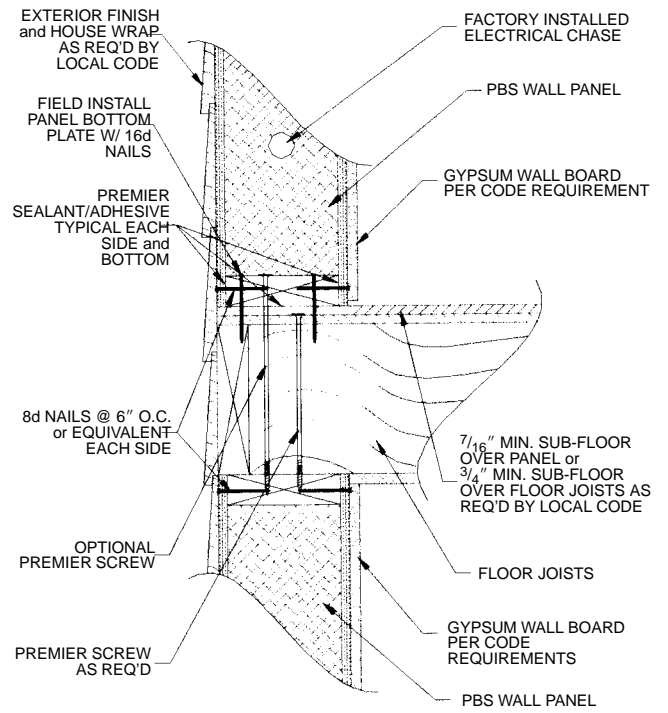


FIGURE 10

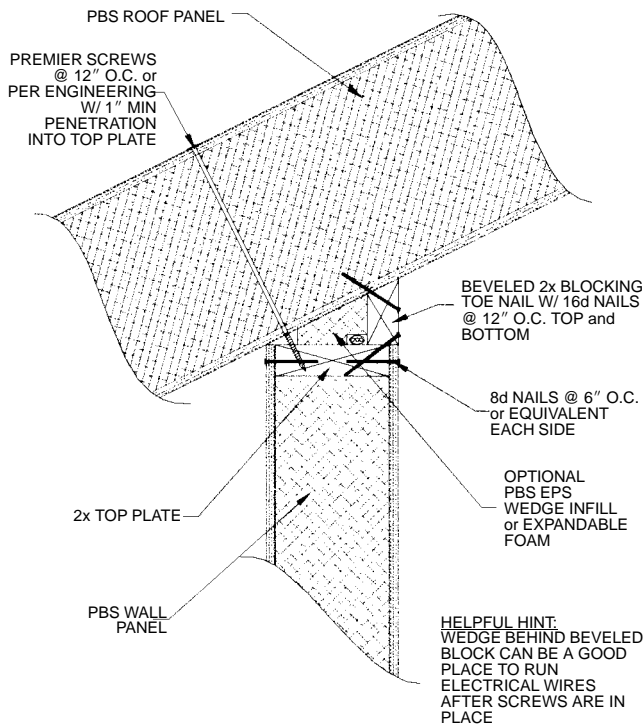


FIGURE 11

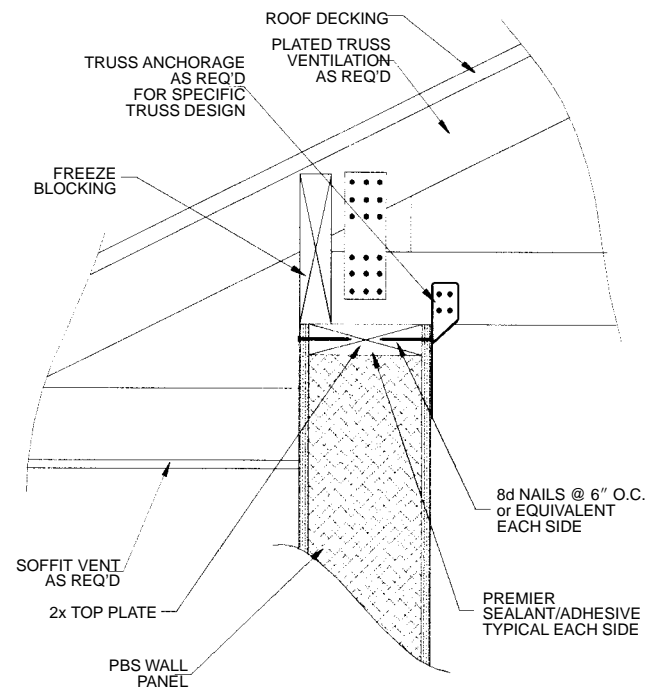


FIGURE 12

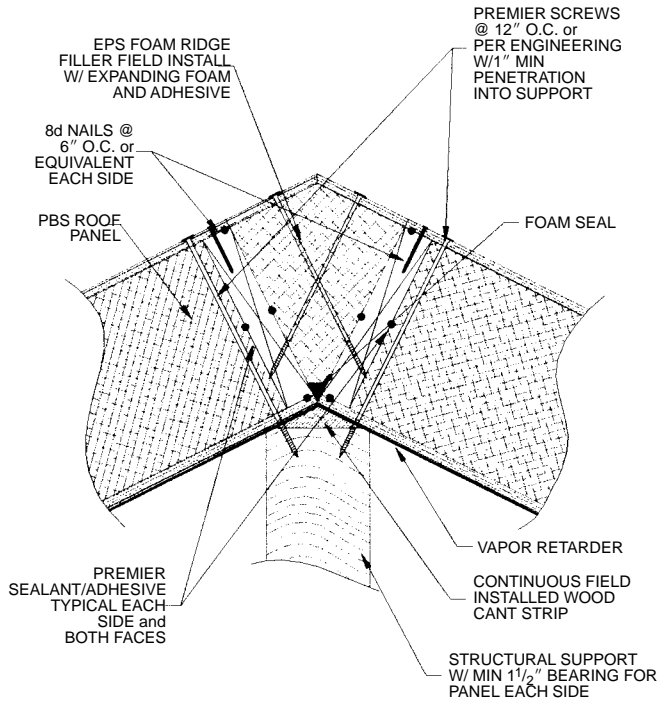


FIGURE 13

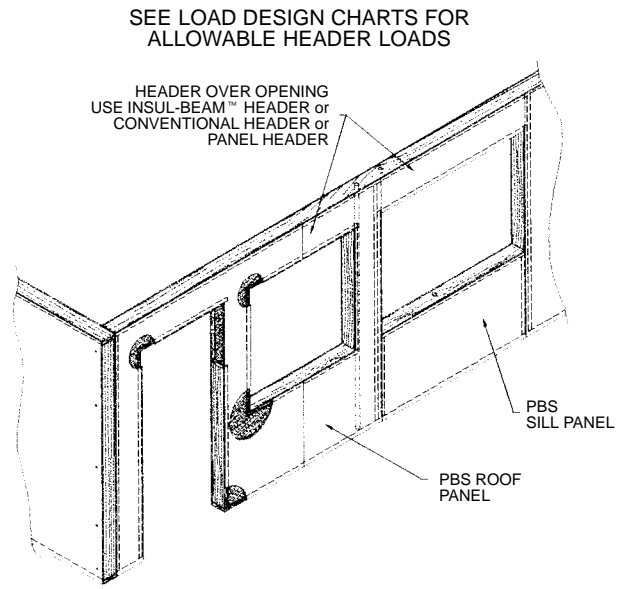


FIGURE 14