Listing Report: **PRS032808-3**

PRODUCT: Premier Building Systems Structural Insulated Panels
DIVISION: Wood and Plastics (06)
SECTION: Structural Panels (06 12 16)

Report Holder
Insulfoam, a Carlisle Company
17001 Fish Point Road
Prior Lake, Minnesota 55372

Manufacturing Locations
Insulfoam, a Carlisle Company
4609 70th Avenue East
Fife, Washington 98424

Insulfoam, a Carlisle Company
1155 Business Park Drive, Bldg. A
Dixon, CA 95620

1. SUBJECT

Premier Building Systems' Type S, Type I, and Type L Wall, Roof, Floor, and Header Structural Insulated Panels.

Wall Panels: 8-ft to 24-ft tall, 3-1/2-in to 11-1/4-in core thickness

Floor and Roof Panels: 8-ft to 24-ft long, 3-1/2-in to 11-1/4-in core thickness

Header Panels: 12-in, 18-in, and 24-in depths, 3-1/2-in core thickness to 7-1/4-in core thickness for spans of 4-ft to 10 ft

2. SCOPE

NTA, Inc. has evaluated the above product(s) for compliance with applicable sections of the following codes:

- 2006, 2009 International Building Code (IBC)
- 2006, 2009 International Residential Code (IRC)
- Hourly Fire Rated Assembly

NTA, Inc. has evaluated the above product(s) in accordance with:

- NTA IM14 Structural Insulated Panel Evaluation
- NTA IM36 Quality System Requirements

NTA, Inc. has evaluated the following properties of the above product(s):

- Structural performance under axial, transverse, and racking loads.
- Surface burning characteristics and self-ignition temperature.

3. USES

3.1. General. *Premier Building Systems' Structural Insulated Panels* are structural insulated roof, wall, and floor panels capable of resisting transverse, axial and in-plane shear loads.

3.2. Construction Types. *Premier Building Systems' Structural Insulated Panels* shall be considered combustible building elements when determining the Type of Construction in accordance with 2006, 2009 IBC Chapter 6.(NACU1)

3.3. Fire Resistive Assemblies. *Premier Building Systems Structural Insulated Panels* may be used as part of a fire-rated assembly if suitable evidence and details are submitted and approved by the authority having jurisdiction.(ACU15) A summary of fire rated assemblies constructed using *Premier Building Systems Structural Insulated Panels* is provided in Table 12.

4. DESCRIPTION

4.1. General. *Premier Building Systems' Structural Insulated Panels* are factory-assembled, engineered-wood-faced, structural insulated panels (SIP) with an expanded polystyrene (EPS) foam core. The panels are intended for use as load-bearing or non-load bearing wall panels, roof panels, floor panels and headers. Panels are available in 3 ½ inch core thickness through 11 ¼ inch core thicknesses. The panels are custom made to the specifications for each use and are assembled under factory-controlled conditions. The maximum panel size is 10 ft wide and up to 24 ft in length.

4.2. Materials

4.2.1. Facing. The facing consists of two single-ply oriented strand board (OSB) facings a minimum of 7/16-inch thick conforming to APA PR-N610 and DOC PS 2-92, Exposure 1, Rated Sheathing with a span index of 24/16. Panels may be manufactured with the facing strength axis oriented either parallel or perpendicular to the direction of span of the SIP provided the appropriate strength values are used.

4.2.2. Core. The core material is ASTM C578, Type I EPS foam. The foam is manufactured in 4-ft x 4-ft x 8-ft buns which are cut to size during the SIP manufacturing process. The foam core has a flame spread rating not exceeding 25 and a smoke-developed rating not exceeding 450 when tested in accordance with ASTM E84.

4.2.3. Adhesive. Facing materials are adhered to the core material using a structural adhesive. The adhesive is applied during the lamination process in accordance with the in-plant quality control manual.

4.2.4. Material Sources. The facing, core and adhesive used in the construction of *Premier Building Systems' Structural Insulated Panels* shall be composed only of materials from approved sources as identified in Table 13.

4.2.5. Splines. *Premier Building Systems' Structural Insulated Panels* are interconnected with surface splines or block splines (Type S panels), engineered structural splines (Type I panels), or dimensional lumber splines (Type L panels).

4.2.5.1. Surface Splines. Surface splines (Figure 1) consist of 3-inch or 4-inch wide by 7/16-inch thick or thicker, OSB facing material. At each panel joint, one surface spline is inserted into each of two tight-fitting slots in the core. The slots in the core are located just inside the facing.

4.2.5.2. Block Splines. Block splines (Figure 1) are manufactured in the same manner as the overall SIP panel except with an overall thickness that is 1-inch less than the overall thickness of the panel to be joined.

4.2.5.3. Structural Splines. Structural splines consist of one or more plies of dimensional lumber or an engineered wood product (Figure 1). Acceptable sources for engineered wood products are listed in Table 13.

5. DESIGN

5.1. Overall Structural System. The scope of this report is limited to the evaluation of the SIP panel component. Panel connections and other details related to incorporation of the panel into the overall structural system of a building are beyond the scope of this report.(NACU3)

5.2. Design Approval. Where required by the authority having jurisdiction, structures using *Premier Building Systems' Structural Insulated Panels* shall be designed by a registered design professional. Construction documents, including engineering calculations and drawings providing floor plans, window details, door details, and connector details, shall be submitted to the code official when application is made for a permit. The individual preparing such documents shall posses the necessary qualifications as required by the applicable code and the professional registration laws of the state where the construction is undertaken. Approved construction documents shall be available at all times on the jobsite during installation.(NACU4)

5.3. Design Loads. Design loads to be resisted by the SIP panels shall be as required under the applicable building code. Loads on the panels shall not exceed the loads noted in this report.

5.4. Allowable Loads. Allowable axial, transverse, and in-plane shear loads shall be selected from Tables 1 through 11. Calculations demonstrating that the loads applied are less than the allowable loads described in this report shall be submitted to the code official for approval.(NACU5) For loading conditions not specifically addressed herein structural members designed in accordance with accepted engineering practice shall be provided to meet applicable code requirements.

5.5. Axial Loads may be applied in accordance with sections 5.5.1 or 5.5.2

5.5.1 Uniform Loads. Axial loads may be applied to the SIP panel through continuous members such as structural insulated panels or repetitive members spaced at regular intervals of 24-inches on center, or less. Such members shall be fastened to a rim board or similar member to distribute the load along the top of the SIP panel.

5.5.2 Concentrated Loads. Where a rim board or similar member is not provided, the reaction at the end of each member shall not exceed the concentrated loads provided in Table 6.

5.6. Eccentric and Side Loads. Axial loads shall be applied concentrically to the top of the SIP panel. Loads shall not be applied eccentrically to one side of the panel unless approved by the registered design professional.(ACU14)

5.7. Openings. Except as provided in Table 7 and Table 8, openings in panels shall be reinforced with wood or steel designed in accordance with accepted engineering practice to resist all loads applied to the opening as required by the adopted code. Details for door and window openings shall be provided to clarify the manner of supporting axial, transverse and/or racking shear loads at openings. Such details shall be shown on approved design documents and subject to approval by the local authority having jurisdiction.(ACU8)

5.8. In-Plane Shear Design. Shear walls utilizing block, surface, or lumber splines shall be sized to resist all code required wind and seismic loads without exceeding the allowable loads provided in Table 9 and Table 10. Shear wall chords, holdowns, and connections to transfer shear forces between the wall and surrounding structure shall be designed in accordance with accepted engineering practice.

5.8.1. Seismic Design Categories A, B and C. The use of the shear wall configurations in Table 9 is limited to structures in Seismic Design Categories A, B and C. Where SIPs are used to resist seismic forces the following factors shall be used for design: Response Modification Coefficient, R = 2.0; System Overstrength Factor, Ω_0= 2.5; Deflection Amplification Factor, C_d = 2.0.(ACU17) The maximum panel height-to-width ratio of such walls shall be 2:1.(ACU18)

5.8.2. Seismic Design Categories D, E and F. The shear wall configurations in Table 10 are permitted in Seismic Design Categories D, E and F. Such walls shall be designed using the seismic design coefficients and limitations provided in ASCE 7-05 for light-framed walls sheathed with wood structural panels rated for shear resistance (SFRS A13). These SIPs shall use the following factors for design: Response Modification Coefficient, R = 6.5; System Overstrength Factor, Ω_0 = 3.0; Deflection Amplification Factor, C_d = 4.0.(ACU17) The maximum panel height-to-width ratio of such walls shall be 2:1 for Type L panels and 1:1 for Type S panels.(ACU18)

5.8.3. Adhesives and Sealants. Adhesives and sealants shall not be applied at wood-to-wood or spline-to-facing interfaces in shear walls in Seismic Design Categories D, E and F. Adhesives and sealants may be applied to wood-to-foam or facing-to-foam interfaces. Flexible SIP tape may be applied over panel joints.

5.9. Horizontal Diaphragms. Horizontal diaphragms utilizing surface splines shall be sized to resist all code required wind and seismic loads without exceeding the allowable loads provided in Table 11. Diaphragm chords and connections to transfer shear forces between the diaphragm and surrounding structure shall be designed in accordance with accepted engineering practice. The maximum diaphragm length-to-width ratio of shall not exceed those specified in table 11 for resisting wind or seismic loads.

5.10. Combined Loads. Panels subjected to any combination of transverse, axial or in-plane shear loads shall be analyzed utilizing a straight line interaction in accordance with *NTA IM14 TIP 01 SIP Design Guide*.

6. INSTALLATION

6.1. General. *Premier Building Systems' Structural Insulated Panels* shall be fabricated, identified and erected in accordance with this report, the approved construction documents and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report shall govern. Approved construction documents shall be available at all times on the jobsite during installation.(NACU7)

6.2. Splines. *Premier Building Systems' Structural Insulated Panels* are interconnected at the panel edges through the use of a spline. The spline type may be of any configuration listed in Section 4.2.5, as required by the specific design. The spline shall be secured in place with not less than 0.113-in. x 2.50-in. smooth shank nails (0.275-in. head diameter), 6-in. on-center, or an approved equivalent fastener. All joints shall be sealed in accordance with the SIP manufacturer's installation instructions. Alternate spline connections may be required for panels subjected to in-plane shear forces. Such panels shall be interconnected as required in Table 9, Table 10, and Table 11, or as directed by the designer.

6.3. Plates. The top and bottom of the plates of the panels shall be 1.5-inch thick dimensional lumber or engineered lumber sized to match the core thickness of the panel. The plates shall be secured using not less than 0.113-in. x 2.50-in. nails (0.275-in. head diameter) spaced 6-inches on center, on both sides of the panel, or an approved equivalent fastener.

6.4. Cutting and Notching. No field cutting or routing of the panels shall be permitted except as shown on approved drawings. (NACU6)

6.5. Protection from Decay. SIPs that rest on exterior foundation walls shall not be located within 8-inches from exposed earth. SIPs supported by concrete or masonry that is in direct contact with earth shall be protected from the concrete or masonry by a moisture barrier.(ACU6)

6.6. Protection from Termites. In areas subject to damage from termites, SIP panels shall be protected from termites using an approved method. Panels shall not be installed below grade or in contact with earth.(ACU7)

6.7. Heat-Producing Fixtures. Heat-producing fixtures shall not be installed in the panels unless protected by a method approved by the code official or documented in test reports. This limitation shall not be interpreted to prohibit heat-producing elements with suitable protection.(NACU9)

6.8. Reserved

6.9. Voids and Holes

6.9.1 Voids in Core. In lieu of openings designed in accordance with section 5.7, the following voids are permitted. Voids may be provided in the panel core during fabrication at predetermined locations only. Voids parallel to the panel span shall be limited to a single 1.5-inch maximum (outside diameter) hole. Such voids shall be spaced a minimum of 4-feet on center, measured perpendicular to the panel span. Two ½-inch diameter holes may be substituted for the single 1.5-inch hole provided they are maintained parallel and within 2-inches of each other.(ACU12)

Voids perpendicular to the panel span (parallel to the support) shall be limited to a 1.5-inch maximum (outside diameter) hole placed not closer than 16-inches from the support. Additional voids in the same direction shall be spaced not less than 28-inches on center.

6.9.2 Holes in Panels. Holes may be placed in panels during fabrication at predetermined locations only. Holes shall be limited to 4-inches x 4-inches square. The minimum distance between holes shall not be less than 4-feet on center measured perpendicular to the panel span and 24-inches on center measured parallel to the panel span. Not more than three holes shall be provided in a single line of holes parallel to the panel span. The holes may intersect voids permitted elsewhere in this report. (ACU16)

6.10. Panel Cladding

6.10.1 Roof Covering. The roof covering, underlayment and flashing shall be installed in accordance with the applicable code(s). All roofing materials must be installed in accordance with the manufacturer's installation instructions. Roof material requiring the application of heat during installation shall be reviewed by the designer of record.

6.10.2 Exterior Wall Covering. Panels shall be covered on the exterior by a water-resistive barrier as required by the applicable code. The water-resistive barrier shall be attached with flashing in such a manner as to provide a continuous water-resistive barrier behind the exterior wall veneer.(ACU10) The exterior facing of the SIP wall shall be covered with weather protection as required by the adopted building code or other approved materials.(ACU11)

6.10.3 Interior Wall Covering. The SIP panel foam plastic core shall be separated from the interior of the building by an approved thermal barrier of ½-in. gypsum wallboard or equivalent thermal barrier.(ACU9)

7. CONDITIONS OF USE

Premier Building Systems' Structural Insulated Panels as described in this report comply with the codes listed in Section 2.0, subject to the following conditions:

7.1. Installation complies with this report and the approved construction documents.

7.2. This report applies only to the panel thicknesses specifically listed herein.(ACU3)

7.3. In use panel heights/spans shall not exceed the values listed herein. Extrapolation beyond the values listed herein is not permitted.(ACU2)

7.4. The panels are manufactured in the production facility(ies) noted in this report.(NACU8)

8. EVIDENCE SUBMITTED

NTA, Inc. has examined the following evidence to evaluate this product:

8.1. Review of plant quality assurance manual

8.2. Plant certification inspection of manufacturer's production facilities, test procedures, frequency and quality control sampling methods, test equipment and equipment calibration procedures, test records, dates and causes of failures when applicable.

8.3. Qualification test data in accordance with NTA *Standard Evaluation Plan 14.1* (IM14 SEP01).

8.4. Follow-up quality assurance audits of the production facility(ies).

8.5. Follow-up testing in accordance with NTA, Inc. *Inspection Method 14.0* (IM14).

Evaluation evidence and data are on file with NTA, Inc. NTA, Inc.is accredited by the International Accreditation Service (IAS) as follows:
ISO17020 Inspection Agency (AA-682)
ISO17025 Testing Laboratory (TL-259)
ISO Guide 65 Product Certification Agency (PCA-102)

The scope of accreditation related to testing, inspection or product certification pertain only to the test methods and/or standard referenced therein. Design parameters and the application of building code requirements, such as special inspection, have not been reviewed by IAS and are not covered in the accreditation. Product evaluations are performed under the direct supervision of Professional Engineers licensed in all jurisdictions within the United States as required by the building code and state engineering board rules.

9. FINDINGS

All products referenced herein are manufactured under an in-plant Quality Assurance program to insure that the production quality meets or exceeds the requirements of the codes noted herein and the criteria as established by NTA, Inc. Furthermore, panels must comply with the conditions of this report.

This report expires one year from the issue date noted below.

10. IDENTIFICATION

Each eligible panel shall be permanently marked to provide the following information:

a) The NTA, Inc. listing mark, shown below
b) NTA's Listing No. PRS032808-3
c) In-plant quality assurance stamp
d) Identifier for production facility
e) Project or batch number.

LISTED
PRS032808-3

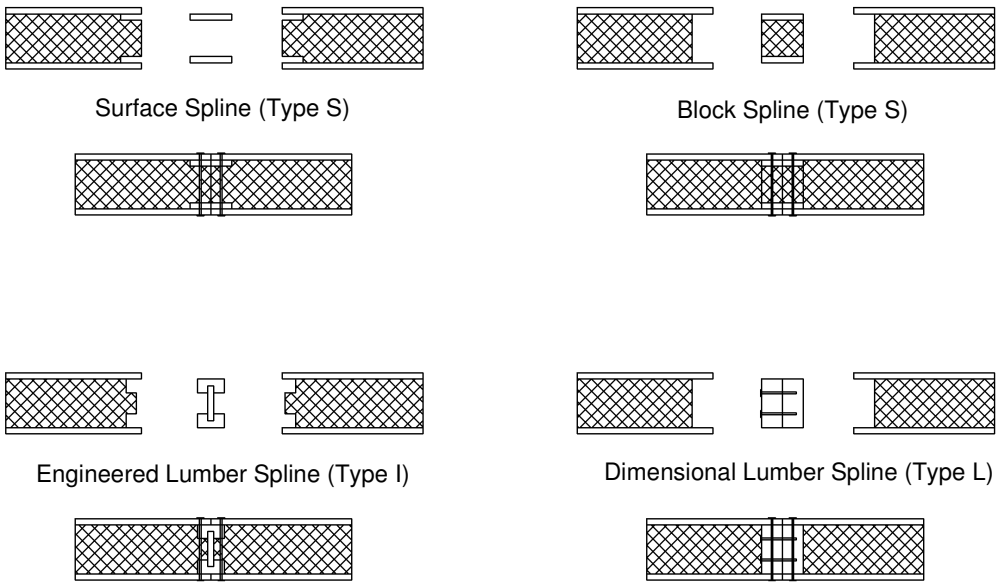

Figure 1: SIP Spline Types

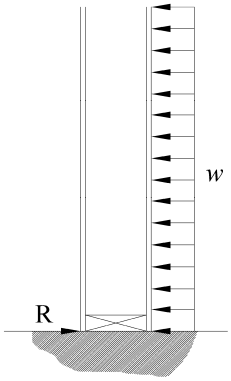

Figure 2: Zero Bearing Support

Table 1: Maximum Allowable Uniform Transverse Load (psf) – Type S Panels[1,3]

Panel Core Thickness (in)	Deflection Limit[2]	Panel Span (ft)									
		4[4]	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**
3.5	L/360	100	43	29	21	16	10				
	L/240	143	60	42	33	25	16				
	L/180	143*	61*	57	46	34	22				
5.5	L/360	105	52	39	30	24	18	15	11		
	L/240	162	78	58	36	32	28	22	16		
	L/180	191*	80*	60*	46*	40	34	29	21		
7.25	L/360	120	61	60	42	34	26	21	15	13	11
	L/240	179*	85*	75*	61	50	39	31	23	21	18
	L/180	179*	85*	75*	69*	60*	50*	42	31	28	24
9.25	L/360	131	80	66	52	43	33	28	22	20	18
	L/240	168*	86*	71*	57*	51*	46*	42*	34	30	26
	L/180	168*	86*	71*	57*	51*	46*	42*	39*	37*	34*
11.25	L/360	132	94*	76*	51	50	48	38	28	24	20
	L/240	163*	94*	76*	59*	55*	51*	45*	39*	36*	31
	L/180	163*	94*	76*	59*	55*	51*	45*	39*	36*	33*

[1] Splines consist of OSB surface splines not less than 7/16" thick inserted below the facing on each side of the panel. Table values assume a simply supported panel with 1.5-inches of continuous bearing on facing at supports. Permanent loads, such as dead load, shall not exceed 0.25 times the tabulated load.

[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code.

[3] Tabulated values for 8-ft walls apply to panels constructed with the OSB strength axis oriented either parallel or perpendicular to supports. Tabulated values for other lengths are based on the strong-axis of the facing material oriented parallel to the span direction.

[4] Panels spanning 4-ft. shall be a minimum of 8-ft long spanning a minimum of two 4-ft spans. No single span condition is allowed.

[5] For wall panel capacities utilizing a zero bearing configuration, shown in figure 2, multiply the allowable uniform load in table 1 by Cv=0.86.

*An asterisk (*) indicates the value shown is governed by the average peak load divided by 3.

Table 2: Maximum Allowable Uniform Transverse Load (psf) – Type I Panels[1,3]

Panel Core Thickness (in)	Deflection Limit[2]	Panel Span (ft)									
		4[4]	8	10	12	14	16	18	20	22	24
7.25	L/360	132	136	93	60	50	40	31	21	19	16
	L/240	318*	148*	107*	91	75	59	45	31	27	23
	L/180	318*	148*	107*	92*	87	78	60	41	36	30
9.25	L/360	197	164*	124*	72	67	61	48	34	29	24
	L/240	336*	164*	124*	107*	96	84*	70	49	43	36
	L/180	336*	164*	124*	107*	96	84*	76	65	56	47
11.25	L/360	258	143*	103*	86	83	77*	61	42	37	32
	L/240	318*	143*	103*	93*	85	77*	68	59*	54	46
	L/180	318*	143*	103*	93*	85	77*	68	59*	54	49*

[1] Splines consist of one wood I-beam, 2.25" wide flange (minimum) with a depth equal to the core thickness, spaced not to exceed 48-inches on center. Table values assume a simply supported panel with 1.5-inches of continuous bearing on facing at supports. Permanent loads, such as dead load, shall not exceed 0.25 times the tabulated load.
[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code.
[3] Tabulated values for 8-ft walls apply to panels constructed with the OSB strength axis oriented either parallel or perpendicular to supports. Tabulated values for other lengths are based on the strong-axis of the facing material oriented parallel to the span direction.
[4] Panels spanning 4-ft. shall be a minimum of 8-ft long spanning a minimum of two 4-ft spans. No single span condition is allowed.
*An asterisk (*) indicates the value shown is governed by the average peak load divided by 3.

Table 3: Maximum Allowable Uniform Transverse Load (psf) – Type L Panels[1,3]

Panel Core Thickness (in)	Deflection Limit[2]	Panel Span (ft)									
		4[4]	8	10	12	14	16	18	20	22	24
3.5	L/360	103	45	33	24	18	11				
	L/240	225	68	47	34	26	17				
	L/180	297*	91	61	45	34	23				
5.5	L/360	307*	129	57	42	34	25	20	15		
	L/240	307*	182*	87	61	49	37	30	22		
	L/180	307*	182*	112*	80	65	49	39	29		
7.25	L/360	253	171	82	66	54	41	32	23		
	L/240	288*	188*	128	100	81	61	48	35		
	L/180	288*	188*	133*	117*	105	80	63	45		
9.25	L/360	286	188*	117	101	80	58	47	36	32	27
	L/240	326*	188*	147*	134*	120	90	71	52	47	41
	L/180	326*	188*	147*	134*	121	108*	93	68	61	53
11.25	L/360	327*	188*	167*	141	116	91	75	58	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

[1] Splines consist of #2 or better, Hem-Fir, 1.5" wide with a depth equal to the core thickness, spaced to provide not less than two members for every 48-inches of panel width. Table values assume a simply supported panel with 1.5-inches of continuous bearing on facing at supports. Permanent loads, such as dead load, shall not exceed 0.25 times the tabulated load.

[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code.

[3] Tabulated values for 8-ft walls apply to panels constructed with the OSB strength axis oriented either parallel or perpendicular to supports. Tabulated values for other lengths are based on the strong-axis of the facing material oriented parallel to the span direction.

[4] Panels spanning 4-ft. shall be a minimum of 8-ft long spanning a minimum of two 4-ft spans. No single span condition is allowed.

*An asterisk (*) indicates the value shown is governed by the average peak load divided by 3.

Table 4: Maximum Allowable Uniform Axial Load (plf) – Type S Panels[1,2,3,4]

Panel Core Thickness (in)	Panel Span (ft)					
	8	10	12	16	20	24
3.5	3500	2553	2453	2117		
5.5	4250	4043	3373	3923	2817	2183
7.25	4917	4327	4473	4197	3497	3067
9.25	4600	4414	4228	4417	3389	3248
11.25	3889	3959	4028	4408	3837*	3333

[1] Splines consist of OSB surface splines not less than 7/16" thick inserted below the facing on each side of the panel. Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[2] Uniform Axial loads may be applied in accordance with Section 5.5.1. Concentrated point loads shall be addressed in accordance with Section 5.5.2 and Table 6.
[3] Both facings must bear on the supporting foundation or structure.
[4] Tabulated values for 8-ft walls apply to panels constructed with the OSB strength axis oriented either parallel or perpendicular to supports.
* Limited by 1/8-in. deflection (compression)

Table 5: Maximum Allowable Uniform Axial Loads (plf) – Type L Panels[1,2,3,4]

Panel Core Thickness (in)	Panel Span (ft)					
	8	10	12	16	20	24
3.5	4723	3903	3273	2623		
5.5	5850	5890	4277	4310	2933	2837
7.25	6807	6110	5557	5180	4837	4083
9.25	5473	5709	5946	5948	4729*	4250
11.25	5667	5474	5281	5775*	4729*	4223

[1] Splines consist of #2 or better, Hem-Fir, 1.5" wide with a depth equal to the core thickness, spaced to provide not less than two members for every 48-inches of panel width. Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[2] Axial loads shall be applied concentrically to the top of the panel through repetitive members spaced not more than 24-inches on center. Such members shall be fastened to a rim board or similar member to distribute along the top of the SIP panel.
[3] Both facings must bear on the supporting foundation or structure.
[4] Tabulated values for 8-ft walls apply to panels constructed with the OSB strength axis oriented either parallel or perpendicular to supports.
* Limited by 1/8-in. deflection (compression)

Table 6: Maximum Allowable Point Loads (lbs) – Type S Panels[1,2,3,4]

Top Plate Configuration	1.5" Minimum Bearing Width	3" Minimum Bearing Width
Single 2x4 #2 or Better Hem-Fir Plate	2040	2450
Single 2x4 #2 or Better Hem-Fir Plate with 1-1/8" wide, 1.3E Rim Board Cap Plate	4030	4678

[1] Top plate secured to facings as required in Section 6.3
[2] Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[3] Concentrated loads shall be applied concentrically to the top of the panel.
[4] Tabulated values are based on the strong-axis of the facing material oriented parallel to the span direction.

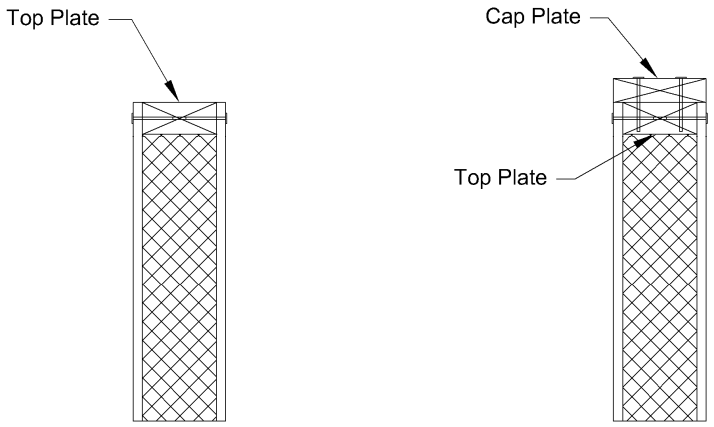

Figure 3: Top Plate Configurations

Table 7: Maximum Allowable Uniform SIP Header Vertical Loads (plf)
3-1/2 through 11-1/4-inch Core Thickness[1,2]

Header Depth[3] (in)	Deflection Limit[4]	Header Span (ft)			
		4	6	8	10
12	L/480	740	384	228	142
	L/360	740	384	229	142
	L/240	740	384	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

[1] Vertical loads only. Lateral loads shall be transferred to the edges of the openings through continuous plate(s) designed in accordance with accepted engineering practice. Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[2] Tabulated values are based on the strong-axis of the facing material oriented perpendicular to the direction of header span.
[3] Minimum depth of facing above opening.
[4] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code.

Table 8: Maximum Allowable Uniform Header Loads (plf)
(Panel Splice a minimum of 6-in. from edge of opening) 3-1/2 through 11-1/4-inch Core Thickness[1,2]

Header Depth[3] (in)	Deflection Limit[4]	Header Span (ft)			
		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	556	368	350
	L/360	896	556	368	350
	L/240	896	556	368	350

[1] Vertical loads only. Lateral loads shall be transferred to the edges of the openings through continuous plate(s) designed in accordance with accepted engineering practice. Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[2] Tabulated values are based on the strong-axis of the facing material oriented perpendicular to the direction of header span.
[3] Minimum depth of facing above opening.
[4] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code.

Table 9: Allowable In-Plane Shear Strength (Pounds per Foot) for SIP Shear Walls 3.5-in. through 11.25-in. core thickness (Wind and Seismic Loads in Seismic Design Categories A, B and C)[1,2]

Spline Type[3]	Framing Minimum SG[4]	Minimum Facing Connections[2]			Shear Strength (plf)
		Chord[2]	Plate[2]	Spline[3]	
Block, Surface or Lumber Spline (Type S, Type L)	0.50	0.113"x 2-1/2" nails, 6" oc	0.113"x 2-1/2" nails, 6" oc	(3-inch wide spline) 0.113"x 2-1/2" nails, 6" oc	410
	0.50	0.113"x 2-3/8" nails, 6" oc stagger (2 rows)	0.113"x 2-3/8" nails, 6" oc	0.113"x 2-3/8" nails, 6" oc	460
	0.42	0.113"x 2-3/8" nails, 6" oc stagger (2 rows)	0.113"x 2-3/8" nails, 6" oc stagger (2 rows)	0.113"x 2-3/8" nails, 4" oc	700
	0.42	0.148"x 2-3/8" nails, 6" oc stagger (2 rows)	0.148"x 2-3/8" nails, 3" oc	0.148"x 2-3/8" nails, 3" oc stagger (2 rows)	1000

[1] Maximum in-plane shear dimension ratio shall not exceed 2:1 (height : width) for resisting wind or seismic loads.
[2] Chords, holdowns, and connections to other structural elements must be designed by a registered design professional in accordance with accepted engineering practice.
[3] Spline type at interior panel-to-panel joints only, solid chord members are required at each end of each shearwall segment.
[4] Required connections must be made on each side of the panel. Dimensional or engineered lumber shall have an equivalent specific gravity not less than specified.

Table 10: Allowable In-Plane Shear Strength (Pounds per Foot) for SIP Shear Walls (Seismic Loads in Seismic Design Categories D, E and F)[1,2]

Spline Type[3]	Framing Minimum SG[4]	Minimum Facing Connections[2]			Shear Strength (plf)
		Chord[2]	Plate[2]	Spline[3]	
Block, Surface, or Lumber Spline (Type S, Type L)	0.50	0.113"x 2-1/4" nails, 6" oc	0.113"x 2-1/4" nails, 3" oc	(7/16" thick, 3-inch wide spline) 0.113"x 2-1/4" nails, 6" oc	360
	0.50	0.113"x 2-1/4" nails, 6" oc	0.113"x 2-1/4" nails, 6" oc	(3/4" thick, 3-inch wide spline) 0.113"x 2-1/4" nails, 6" oc	360
Block, Surface, or Lumber Spline (Type S, Type L)	0.50	0.113" x 2-3/8" nails, 3" oc Staggered (3/8" edge distance and 3/4" edge distance)	0.113" x 2-3/8" round head nails, 3" oc Staggered (3/8", 3/4" edge distance)	(23/32" thick, 3-inch wide spline) 0.113" x 2-3/8" nails, 3" oc Staggered (3/8" edge distance and 3/4" edge distance)	720
Block, Surface, or Lumber Spline (Type S, Type L)	0.50	0.113" x 2-3/8" nails, 2" oc Staggered (3/8" edge distance and 3/4" edge distance)	0.113" x 2-3/8" round head nails, 2" oc Staggered (3/8", 3/4" edge distance)	(23/32" thick, 3-inch wide spline) 0.113" x 2-3/8" nails, 2" oc Staggered (3/8" edge distance and 3/4" edge distance)	920

[1] Maximum in-plane shear dimension ratio are defined in Section 5.8.2.
[2] Chords, holdowns, and connections to other structural elements must be designed by a registered design professional in accordance with accepted engineering practice.
[3] Spline type at interior panel-to-panel joints only, solid chord members are required at each end of each shearwall segment.
[4] Required connections must be made on each side of the panel. Dimensional or engineered lumber shall have an equivalent specific gravity not less than specified.

Table 11: Maximum Allowable In-Plane Shear (Pounds per Foot)
For Diaphragms Subjected to Wind or Seismic Loading[1]

Minimum Connections[2]				Shear Strength (plf)	Max. Aspect Ratio
Interior Supports[2] (Figure 4a)	Surface Spline[3] (Figure 4b)	Boundary[4] (Figure 4c)			
		Support	Spline		
PBS #14 Panel Screw with 1-in. penetration 12" oc	0.113"x2.5" nails, 3" oc 7/16-in.x 4-in. OSB Spline	PBS #14 Panel Screw with 1-in. penetration 12" oc	0.113"x2.5" nails, 6" oc	430	4:1
PBS #14 Panel Screw with 1-in. penetration 12" oc	0.113"x2.5" nails, 3" oc, 2 rows, staggered 7/16-in.x 4-in. OSB Spline	PBS #14 Panel Screw with 1-in. penetration 3" oc	0.113"x2.5" nails, 4" oc	530	4:1
PBS #14 Panel Screw with 1-in. penetration 2" oc	0.113"x2.5" nails, 3" oc, 2 rows, staggered 7/16-in.x 4-in. OSB Spline	PBS #14 Panel Screw with 1-in. penetration 2" oc	0.113"x2.5" nails, 1.5" oc	750	4:1
PBS #14 Panel Screw with 1-in. penetration 4" oc	0.113"x2.5" nails, 3" oc, 2 rows, staggered 7/16-in.x 4-in. OSB Spline	PBS #14 Panel Screw with 1-in. penetration 4" oc	0.113"x2.5" nails, 3" oc	915	3:1
PBS #14 Panel Screw with 1-in. penetration 4" oc	0.113"x2.5" nails, 6" oc, 2 rows, staggered 23/32-in.x 4-in. OSB Spline	PBS #14 Panel Screw with 1-in. penetration 4" oc	0.113"x2.5" nails, 6" oc	1130	3:1

[1] The maximum diaphragm length-to-width ratio of shall not exceed 4:1. Load may be applied parallel to continuous panel joints.
[2] Interior supports shall be spaced not to exceed 12-ft on center and have a minimum width of 3.5-in. and a specific gravity of 0.43 or greater. Specified fasteners are required on both sides of panel joint where panels are joined over a support. See Figure 4a.
[3] Top spline only, at interior panel-to-panel joints. Specified fasteners are required on both sides of panel joint. See Figures 4b.
[4] Boundary spline shall be solid 1.5-inch wide, minimum, and have a specific gravity of 0.43 or greater. Boundary supports shall have a minimum width of 3.5-in. and a specific gravity of 0.43 or greater. Specified spline fasteners are required through both facings. See Figure 4c.

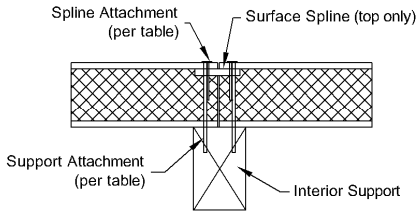

Figure 4a: Interior Support

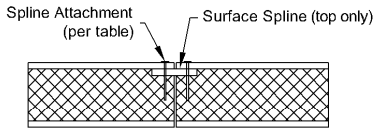

Figure 4b: Surface Spline

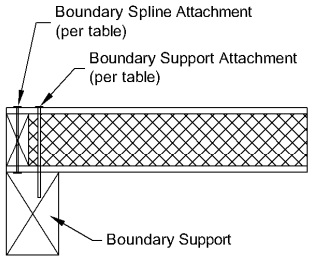

Figure 4c: Boundary

Figure 4: Diaphragm Connection Types

Table 12: Fire Rated Assemblies[1]

Designation	Orientation	Type	Rating	Directory
U524	Vertical	Bearing Wall	1-Hour	Underwriters Laboratories
P517	Horizontal	Ceiling	1-Hour	Underwriters Laboratories
P822	Horizontal	Floor/Ceiling	1-Hour	Underwriters Laboratories
PRS021109-24	Vertical	Bearing Wall	1-Hour	NTA, Inc.
PRS021109-23	Horizontal	Ceiling	1-Hour	NTA, Inc.

[1] Construction details and assembly status shall be obtained from the fire resistance directory of the noted organization. NTA, Inc. assemblies may be obtained from www.ntainc.com.

Table 13: Approved Material Sources

Facing	Core	Adhesive	Engineered Type I Spline
Ainsworth Lumber Co. Ltd. Suite 3194 Bentall 4 1055 Dunsmuir Street Vancouver BC, Canada V7X 1L3 100 Mile House, BC (Mill #445)	Insulfoam Treated ASTM C578 Type I EPS Foam Dixon, California	Rohm & Haas Chemicals, LLC 2531 Technology Drive Elgin, IL 60124 Mor-Ad M652	Jager Industries, Inc. 6839 44th Street, SE Calgary, Alberta T2C2C9 JSI 20 Series Joists
Tolko Industries, Ltd. 3203 30th Avenue Vernon BC, Canada V1T 6M1 Meadow Lake, SK (Mill#492)	Insulfoam Treated ASTM C578 Type I EPS Foam Kent, Washington	Ashland Specialty Chemical Company 5200 Blazer Parkway Dublin, OH 43017 ISOSET® EPI WD3-A322 with ISOSET CX47	Superior Wood Systems 1301 Garfield Avenue Superior, Wisconsin 54880 24 and 34 Series I-Joists