EVALUATOR
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MANUFACTURING LOCATION
The Murus Company
3234 Route 549
Mansfield, PA 16933

1. SUBJECT

1.1 ***Murus EPS Structural Insulated Panels*. Roof Panels 8-ft to 24-ft long, 4-5/8-in. to 15-in. thick**

2. SCOPE

The Evaluator has evaluated the above product(s) for compliance with the applicable sections of the following codes:

2.1 Florida Building Code Eighth Edition (2023), Building

2.2 State of Florida Rule 61 G 20-3, FAC, Product Approval

2.3 Compliance Method: Evaluation Report from a Licensed Florida Professional Engineer

2.4 The Evaluator has evaluated the above product for structural performance under transverse loads.

3. USES

3.1 General. *Murus Structural Insulated Panels* are used as structural insulated roof panels capable of resisting transverse and in-plane shear diaphragm loads.

3.2 Construction Types. *Structural Insulated Panels* shall be considered combustible building elements when determining the Type of Construction in accordance with the Florida Building Code Eighth Edition (2023) Building Chapter 6.

3.3 High Velocity Hurricane Zone. Panels 6-1/2 in. and thicker have been evaluated for use in the High Velocity Hurricane Zone (HVHZ) in Risk Categories 1, 2, and 3. 4-5/8-in. thick panels have not been evaluated for impact resistance and are limited to use outside of the HVHZ.

3.4 Fire Resistive Assemblies. *Structural Insulated Panels* shall not be used as part of a fire-rated assembly unless suitable evidence and details are submitted and approved by the authority having jurisdiction.

4. DESCRIPTION

4.1 General. *Structural Insulated Panels* are factory-assembled, engineered-wood-faced, structural insulated panels (SIPs) with an expanded polystyrene (EPS) foam core. The product is intended for use as a roof panel.

Structural Insulated Panels are available in 4-5/8-in. through 15-in. overall thicknesses and are custom made to the specifications for each use. The maximum product size is 8-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-in. thick conforming to DOC PS 2-10, Exposure 1, Rated Sheathing with a span index of 24/16. Panels may be manufactured with the facing strength axis oriented in either direction with respect to the direction of product bending provided the appropriate design values are used.

4.2.2 Core. The core material is EPS foam plastic insulation conforming to ASTM C578, Type I. The foam core, up to 4-in. thickness, 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 thin-film adhesive. The adhesive is applied during the lamination process in accordance with the in-plant quality system documentation.

4.2.4 Material Sources. The facing, core and adhesive used in the construction of *Structural Insulated Panels* must be materials from approved sources as identified in the in-plant quality system documentation.

4.2.5 Splines. *Structural Insulated Panels* are interconnected with surface splines or block splines (Fig. 1). Connections using dimensional lumber splines or engineered structural splines are not specifically addressed in this report and must be designed in accordance with accepted engineering practice to meet applicable code requirements.

4.2.5.1 Surface Splines. Surface splines (Figure 1) consist of 3-in. wide by 7/16-in. thick or thicker OSB. 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 SIP except with an overall thickness that is 1 in. less than the overall thickness of the panels to be joined.

4.2.5.3 I-Joist Splines. Structural capacities for prefabricated wood I-joists splines (Figure 1) shall be established and monitored in accordance with ASTM D5055 with properties equal to or greater than those shown in Table 3. The overall depth of the joist is 1-in. less than the overall thickness of the panels to be joined.

5. DESIGN

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

5.2 Design Approval. Structures using *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 possess 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 always available on the jobsite during installation.

5.3 Design Loads. Design loads to be resisted by the product shall be as required under the applicable code. Loads on the panels shall not exceed the loads noted in this report. Where loading conditions result in superimposed stresses, the sum of the ratio of actual loads over allowable loads shall not exceed one. 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.

5.4 Allowable Loads. Allowable transverse, and in-plane shear loads may be calculated using the panel properties provided in Tables 1 and 2 or selected from Tables 4 through 9. 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 Openings. Openings in panels are permitted when the header depth is at least 12 in., the interior opening is reinforced with lumber or steel and the panels are not used to resist in-plane shear loads. Joints between SIPs are not permitted within 6 in. of the end of the header and are not permitted within the header. Allowable loads for maximum header spans of 36 in. may be selected from Table 7. Allowable loads for maximum header spans of 72 in. may be selected from Table 8. Openings in panels beyond the scope of this report 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 in-plane shear loads at openings. Such details shall be subject to approval by the local authority having jurisdiction.

5.6 Horizontal Diaphragms. Horizontal diaphragms shall be sized to resist all code required wind and seismic loads without exceeding the allowable loads provided herein. 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 shall not exceed 3:1.

5.7 Combined Loads. Panels subjected to any combination of transverse or in-plane shear loads shall be analyzed utilizing a straight-line interaction.

6. INSTALLATION

6.1 General. *Structural Insulated Panels* shall be fabricated, identified, and erected in accordance with this report, the approved construction documents and the applicable codes. 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 always available on the jobsite during installation.

6.2 Splines. *Structural Insulated Panels* are interconnected at the panel edges using 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 0.131-in. x 2-1/2-in. nails, spaced 6 in. on center on both sides of the panel, 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 exactly as required in Table 9 or as directed by the designer.

6.3 Plates. The end plates of the panels shall be dimensional or engineered lumber sized to match the core thickness of the panel. The plates shall be secured using not less than 0.131-in. x 2-1/2-in. nails, spaced 6 in. 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 construction documents.

6.5 Protection from Decay. SIPs that rest on exterior foundation walls shall not be located within 8 in. of 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.

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

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.

6.8 Plumbing Installation Restrictions. Plumbing and waste lines may extend at right angles through the panels but are not permitted axially within the core. Lines shall not interrupt splines or panel plates unless approved by a registered design professional.

6.9 Voids and Holes

6.9.1 Voids in Core. In addition to openings designed in accordance with section 5.5, 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 1-1/2-in. maximum diameter hole. Such voids shall be spaced a minimum of 4-ft on center measured perpendicular to the panel span. Two 1/2-in. diameter holes may be substituted for the single 1-1/2-in. hole provided they are maintained parallel and within 2 in. of each other. Voids perpendicular to the panel span shall be limited to a single 1-1/2-in. maximum diameter hole placed not closer than 16 in. from the support. Additional voids in the same direction shall be spaced not less than 28 in. 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-in. by 4-in. square. The minimum distance between holes shall not be less than 4-ft on center measured perpendicular to the panel span and 24-in. on center measured parallel to the panel span. Not more than three holes shall be permitted in a single line parallel to the panel span. The holes may intersect voids permitted elsewhere in this report.

6.10 Panel Cladding

6.10.1 Roof Covering. The roof covering, underlayment and flashing shall comply with the applicable codes. All roofing materials must be installed in accordance with the manufacturer's installation instructions. The use of roof coverings requiring the application of heat during installation shall be reviewed and approved by a registered design professional.

6.11 Interior Finish. The SIP foam plastic core shall be separated from the interior of the building by an approved thermal barrier of 1/2-in. gypsum wallboard or equivalent thermal barrier where required by Florida Building Code Eighth Edition (2023) Building, Section 2603.4.

7. CONDITIONS OF USE

7.1 *Structural Insulated Panels* as described in this report comply with the codes listed in Section 2 above, subject to the following conditions:

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

7.3 This report applies only to the panel thicknesses specifically listed herein.

7.4 In-use panel heights/spans shall not exceed the values listed herein. Extrapolation beyond the values listed herein is not permitted.

7.5 The panels are manufactured in the production facilities listed in this report.

8. EVIDENCE SUBMITTED

The Evaluator has examined the following evidence to evaluate this product:

8.1 Test reports:

8.1.1 ASTM E72-02 Section 11, Transverse Load, NTA Test Laboratory, [FBC:TST3478], 6/30/2008, Test Report Numbers:

- **8.1.1.1** PSC021208-23, 48x96x4.625, Horizontal
- **8.1.1.2** PSC031308-4, 48x144x4.625, Vertical
- **8.1.1.3** PSC030508-8, 48x96x4.625, Vertical
- **8.1.1.4** PSC031208-1, 48x96x12.375, Vertical
- **8.1.1.5** PSC031208-2, 48x96x4.625, Horizontal
- **8.1.1.6** PSC031208-3, 48x96x12.375, Horizontal
- **8.1.1.7** PSC031208-4, 48x240x12.375, Vertical
- **8.1.1.8** PSC031208-6, 48x192x10.375, Vertical
- **8.1.1.9** PSC031208-7, 48x148x4.625, Vertical

8.1.2 ASTM E72-05 Section 11, Transverse Load, NTA Test Laboratory, [FBC:TST3478], 6/30/2008, Test Report Numbers:

- **8.1.2.1** PSC021208-10, 48x96x8.375, Horizontal
- **8.1.2.2** PSC021508-19, 48x96x4.625, Vertical
- **8.1.2.3** PSC031308-1, 48x240x8.375, Vertical
- **8.1.2.4** PSC031308-2, 48x216x6.625, Vertical
- **8.1.2.5** PSC120407-4, 48x96x8.375, Vertical

8.1.3 ASTM E72-10 Section 11, Transverse Load, NTA Test Laboratory, [FBC:TST3478], 9/23/11, Test Report Number MUR083109-36.

8.1.4 TAS 201-94, TAS 202-94 and TAS 203-94, NTA, Inc., [FBC:TST3478], Test Report Number SIPA091518-1, Florida P.E. Seal, Douglas Berger, FL 84578, 11/09/2018.

8.1.5 ASTM E455-10, Roof Diaphragm Load, NTA Test Laboratory, [FBC:TST3478], 05/11/2011, Test Report Numbers:

- **8.1.5.1** EPS040611-27 2-in. O.C. Fastening
- **8.1.5.2** EPS041111-13 4-in. O.C. Fastening
- **8.1.5.3** EPS040611-26 6-in. O.C. Fastening

8.1.6 ASTM E72-15 Section 11, Transverse Load, NTA Test Laboratory, [FBC:TST3478], Test Report Numbers:

- **8.1.6.1** SIPA031918-32 48x288x15, 08/31/2018
- **8.1.6.2** SIPA031918-33 48x96x15, 08/31/2018

8.1.7 ASTM E72-15 Section 11, Transverse Load with I-joist, NTA Test Laboratory, [FBC:TST3478], Test Report Number SIPA102116-5

8.1.8 ASTM E72-15 Section 11, Transverse Load with Panel Openings, NTA Test Laboratory, [FBC:TST3478], 08/26/2016, Test Report Numbers:

- **8.1.8.1** SIPA020216-36 Trans SAB 12d x 36w
- **8.1.8.2** SIPA020216-37 Trans SAB 12d x 72w
- **8.1.8.3** SIPA020216-38 Trans SAB 36d x 36w
- **8.1.8.4** SIPA020216-39 Trans SAB 36d x 72w
- **8.1.8.5** SIPA020216-40 Trans SAB
- **8.1.8.6** SIPA030216-18 Trans WAB 12d x 36w
- **8.1.8.7** SIPA030216-19 Trans WAB 12d x 72w
- **8.1.8.8** SIPA030216-20 Trans WAB 36d x 36w
- **8.1.8.9** SIPA030216-21 Trans WAB 36d x 72w
- **8.1.8.10** SIPA030216-22 Trans WAB

Table 1: Basic Properties[1]

Property	Weak-Axis Bending	Strong-Axis Bending
Allowable Tensile Stress, F_t (psi)	245	495
Allowable Compressive Stress, F_c (psi)	340	580
Elastic Modulus (Bending), E_b (psi)	738900	658800
Shear Modulus, G (psi)	270	405
Allowable Core Shear Stress, F_v (psi)	4.5	5.0
Core Compressive Modulus, E_c (psi)	360	360
Reference Depth, h_o (in.)	4.625	4.625
Shear Depth Factor Exponent, m	0.84	0.86

[1] All properties are based on a minimum panel width of 24-in.

Table 2: Section Properties

Panel Thickness, h (in.)	Core Thickness, c (in.)	Dead Weight, w_d (psf)	Facing Area, A_f (in.^{2}/ft)	Shear Area, A_v (in.^{2}/ft)	Moment of Inertia, I (in.^{4}/ft)	Section Modulus, S (in.^{3}/ft)	Radius of Gyration, r (in.)	Centroid -to- Facing Dist., y_c (in.)
4.625	3.75	3.2	10.5	50.3	46.0	19.9	2.09	2.31
6.50	5.625	3.3	10.5	72.8	96.5	29.7	3.03	3.25
8.25	7.375	3.5	10.5	93.8	160.2	38.8	3.91	4.13
10.25	9.375	3.6	10.5	117.8	252.7	49.3	--	--
12.25	11.375	3.8	10.5	141.8	366.3	59.8	--	--
15	14.125	4.0	10.5	174.8	556.7	74.2	--	--

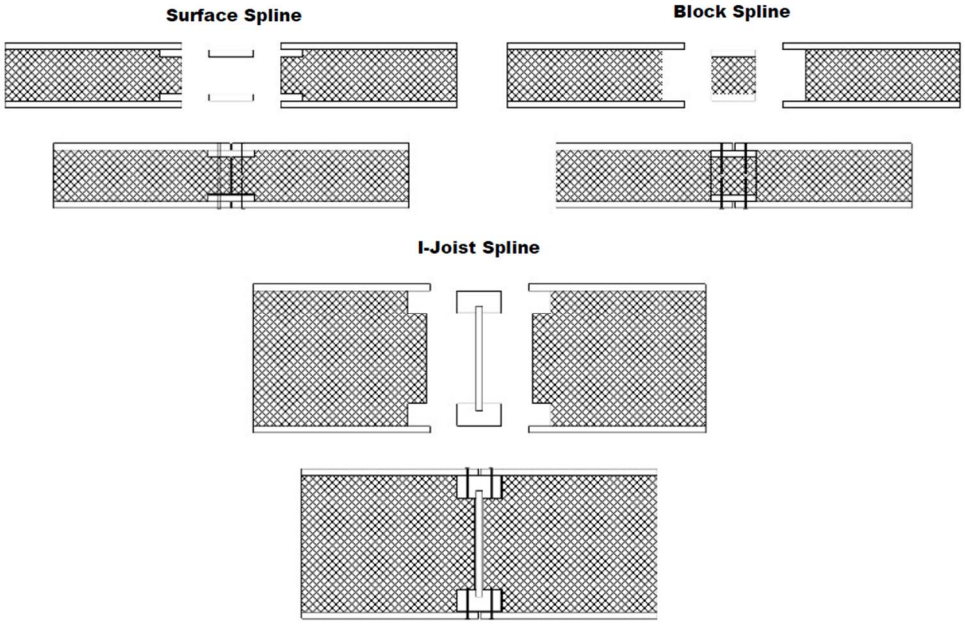

Figure 1: SIP Spline Types

Table 3: Minimum I-Joist Properties for Use as Reinforcements[1]

Depth (in.)	Stiffness, EI (lb_f-in^2) x 10^6	Moment Capacity, M (lb_f-ft)	Shear Capacity, V (lb_f)	Coefficient of Shear Deflection, K (lb_f) x 10^6
9.25	185	2715	1155	4.81
11.25	296	3410	1405	5.85
14	482	4270	1710	7.28

[1] Properties shall be established and monitored in accordance with ASTM D5055 or equivalent.

Table 4: Allowable Uniform Transverse Loads (psf) [1, 4, 5]

Panel Length (ft)	4-5/8-in. SIP thickness			6-1/2-in. SIP thickness			8-1/4-in. SIP thickness		
	Deflection Limit[2]			Deflection Limit[2]			Deflection Limit[2]		
	L/180	L/240	L/360	L/180	L/240	L/360	L/180	L/240	L/360
8 WAB[3]	50	40	27	73	64	43	81	81	58
8	68	51	34	82	82	56	81	81	78
10	45	33	22	63	57	38	68	68	54
12	30	23	15	51	40	27	55	55	39
14	21	16	--	39	29	19	46	43	29
16	--	--	--	29	22	14	40	33	22
18	--	--	--	22	16	--	34	25	17
20	--	--	--	--	--	--	26	20	13
22	--	--	--	--	--	--	21	15	--
24	--	--	--	--	--	--	17	12	--

See Table 5 for notes.

Table 5: Allowable Uniform Transverse Loads (psf) [1, 4, 5]

Panel Length (ft)	10-1/4-in. SIP thickness			12-1/4-in. SIP thickness			15-in. SIP thickness		
	Deflection Limit[2]			Deflection Limit[2]			Deflection Limit[2]		
	L/180	L/240	L/360	L/180	L/240	L/360	L/180	L/240	L/360
8 WAB[3]	81	81	76	81	81	81	81	81	81
8	81	81	81	81	81	81	81	81	81
10	73	73	73	79	79	79	81	81	81
12	59	59	54	63	63	63	68	68	68
14	49	49	41	52	52	52	56	56	56
16	42	42	31	44	44	41	47	47	47
18	37	36	24	39	39	32	41	41	41
20	32	29	19	34	34	26	36	36	36
22	29	23	15	31	31	21	33	33	29
24	25	19	12	28	26	17	29	29	24

[1] Table values assume a simply supported panel with a minimum 1-1/2-in. of continuous bearing on facing at supports with solid wood plates at bearing locations. Values do not include the dead weight of the panel.
[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code. Values are based on loads of short duration only and do not consider the effects of creep.
[3] Tabulated values are based on the strong-axis of the facing material oriented parallel to the direction of panel bending. WAB indicates weak-axis bending of the facing material; the strong-axis of the facing material is oriented perpendicular to the direction of panel bending.
[4] Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[5] Design wind loads determined in accordance with ASCE 7 (strength design).

Table 6: Allowable Uniform Transverse Loads with I-Joist Reinforcements (psf) [1, 3, 4]

Panel Length (ft)	10-1/4-in. SIP thickness			12-1/4-in. SIP thickness			15-in. SIP thickness		
	Deflection Limit[2]			Deflection Limit[2]			Deflection Limit[2]		
	L/180	L/240	L/360	L/180	L/240	L/360	L/180	L/240	L/360
8	81	81	81	81	81	81	81	81	81
10	81	81	81	81	81	81	81	81	81
12	76	76	76	81	81	81	81	81	81
14	65	65	65	71	71	71	70	70	70
16	57	57	57	62	62	62	61	61	61
18	51	51	44	55	55	55	54	54	54
20	46	46	33	49	49	48	48	48	48
22	41	38	25	45	45	37	44	44	44
24	36	30	20	41	41	29	41	41	41

[1] Table values require the use of I-joists with minimum properties specified in Table 3. Values assume a simply supported panel with 1-1/2-in. of continuous bearing on facing at supports. Values do not include the dead weight of the panel.
[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code. Values are based on loads of short duration only and do not consider the effects of creep.
[3] Tabulated values are based on the strong-axis of the facing material oriented parallel to the direction of panel bending.
[4] Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.

Table 7: Allowable Uniform Transverse Loads for SIPs with Openings, 36-in. maximum span (psf) [1,4,5,6]

Panel Length (ft)	4-5/8-in. SIP thickness			6-1/2-in. SIP thickness			8-1/4-in. SIP thickness		
	Deflection Limit[2]			Deflection Limit[2]			Deflection Limit[2]		
	L/180	L/240	L/360	L/180	L/240	L/360	L/180	L/240	L/360
8 WAB[3]	23.1	17.3	11.5	42.6	31.9	21.3	62.0	47.7	31.8
8	31.0	23.2	15.5	57.4	43.3	28.9	75.1	65.3	43.5
10	17.6	13.2	8.8	33.9	25.4	16.9	48.1	39.3	26.2
12	10.8	8.1	5.4	21.3	16.0	10.7	33.4	25.1	16.7
14	7.1	5.3	--	14.1	10.6	7.1	22.5	16.9	11.3
16	--	--	--	9.8	7.4	--	15.8	11.8	7.9
18	--	--	--	7.1	5.3	--	11.4	8.6	5.7
20	--	--	--	--	--	--	8.5	6.4	--

See Table 8 for notes.

Table 8: Allowable Uniform Transverse Loads for SIPs with Openings, 72-in. maximum span (psf) [1,4,5,6]

Panel Length (ft)	4-5/8-in. SIP thickness			6-1/2-in. SIP thickness			8-1/4-in. SIP thickness		
	Deflection Limit[2]			Deflection Limit[2]			Deflection Limit[2]		
	L/180	L/240	L/360	L/180	L/240	L/360	L/180	L/240	L/360
8 WAB[3]	16.6	12.5	8.3	29.9	23.8	15.8	39.2	36.4	24.3
8	23.3	17.5	11.6	37.5	33.5	22.3	49.1	49.1	34.4
10	12.9	9.7	6.4	24.0	19.0	12.7	31.4	29.9	19.9
12	7.8	5.8	--	15.6	11.7	7.8	21.8	18.7	12.4
14	5.0	--	--	10.2	7.7	5.1	16.0	12.3	8.2
16	--	--	--	7.0	5.3	--	11.4	8.5	5.7
18	--	--	--	5.0	--	--	8.2	6.1	--
20	--	--	--	--	--	--	6.1	--	--

[1] Table values assume a simply supported panel with 1-1/2-in. of continuous bearing on facing at supports (C_v = 1.0) with solid wood plates at bearing locations. Values do not include the dead weight of the panel.
[2] Deflection limit shall be selected by building designer based on the serviceability requirements of the structure and the requirements of adopted building code. Values are based on loads of short duration only and do not consider the effects of creep.
[3] Tabulated values are based on the strong-axis of the facing material oriented parallel to the direction of panel bending. WAB indicates weak-axis bending of the facing material; the strong-axis of the facing material is oriented perpendicular to the direction of panel bending.
[4] Permanent loads, such as dead load, shall not exceed 0.50 times the tabulated load.
[5] Tabulated values assume header depths ranging from 12 in. to 36 in.
[6] Design wind loads determined in accordance with ASCE 7 (strength design).

Table 9: Allowable In-Plane Shear Strength (Pounds per Foot) for Horizontal Diaphragms Subjected to Wind or Seismic Loading

Minimum Nominal SIP Thickness (in.)	Minimum Connections			Shear Strength (plf)	Max. Aspect Ratio
	Surface Spline[1] (Figure 3a)	Support Element (Figure 3b)	Boundary Spline[2] (Figure 3c)		
8-1/4	0.131-in. x 2-1/2-in. nails, 6 in. on center 7/16-in. x 3-in. OSB Surface Spline	10-in. length, 0.190-in. shank diameter, 0.255-in. thread o.d., 2.750-in. thread length, 0.625-in. head diameter SIP screw, 6 in. on center	0.131-in. x 2-1/2-in. nails, 6 in. on center	265	3:1
	0.131-in. x 2-1/2-in. nails, 4 in. on center 7/16-in. x 3-in. OSB Surface Spline	10-in. length, 0.190-in. shank diameter, 0.255-in. thread o.d., 2.750-in. thread length, 0.625-in. head diameter SIP screw, 4 in. on center	0.131-in. x 2-1/2-in. nails, 4 in. on center	330	3:1
	0.131-in. x 2-1/2-in. nails, 2 in. on center staggered 3/8-in. (Figure 3c) 7/16-in. x 3-in. OSB Surface Spline	10-in. length, 0.190-in. shank diameter, 0.255-in. thread o.d., 2.750-in. thread length, 0.625-in. head diameter SIP screw, 3 in. on center	0.131-in. x 2-1/2-in. nails, 2 in. on center staggered 3/8-in. (Figure 3c)	575	3:1

[1]Surface or block spline only at interior panel-to-panel joints. Specified fasteners are required on both sides of panel joint through the top surface only, as shown in Figure 3a.
[2]Boundary spline shall be solid lumber 1-1/2-in. wide minimum and have a specific gravity of 0.42 or greater. Specified fasteners are required through both facings as shown in Figure 3b.

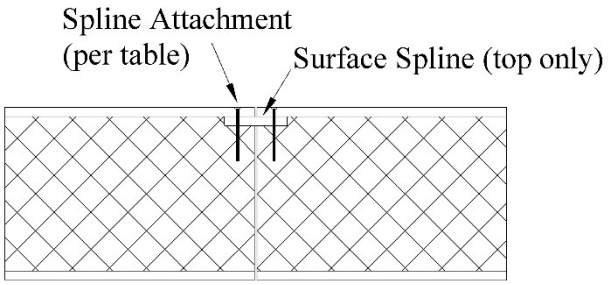

Figure 3a: Surface Spline

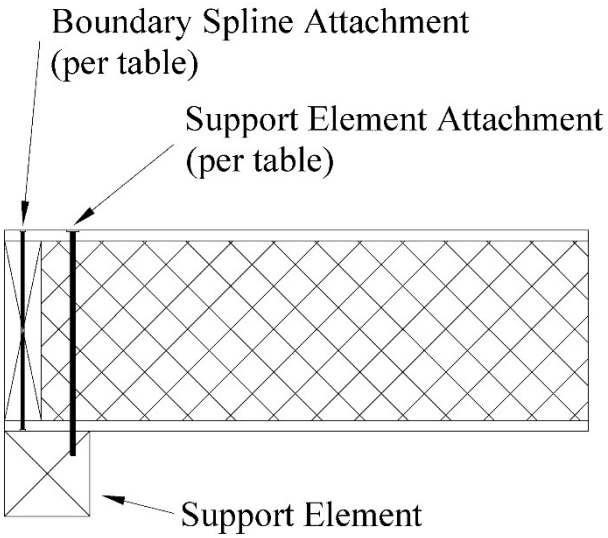

Figure 3b: Support Element

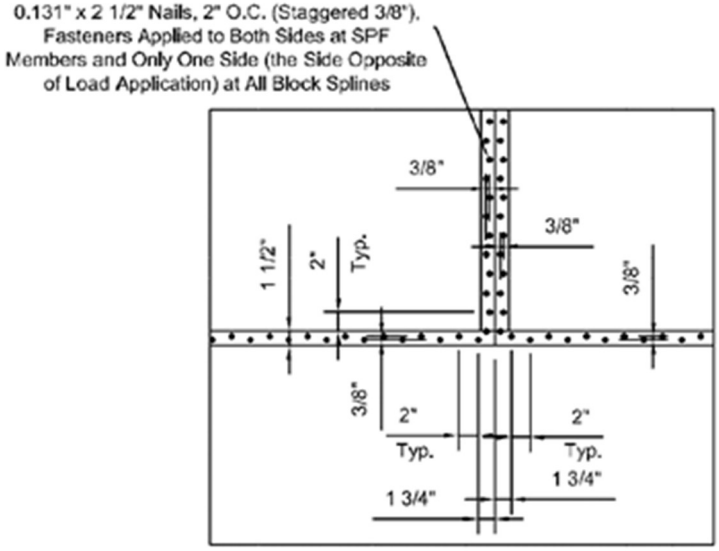

Figure 3c: Boundary Splines