INSULSPAN
Structural Insulated Panels
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Technical Bulletin	
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Technical Bulletin

ICC ES Listing Report ESL-1348
Insulspan SIP System for Seismic Zones A, B, C, D, E & F

ICC ES, LLC Listing Report ESL-1348 for the ***Insulspan® SIP System*** confirms compliance with the applicable sections of the following standards:

1. ASCE/SEI 7-10 Section 11.1.4
2. ASCE/SEI 7-10 Section 12.2.1
3. ASTM E72, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
4. ASTM E2126, Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings.

ICC ES, LLC Listing Report ESL-1348 was established based upon review of quasi-static cyclic (reversed) load tests conducted at APA – The Engineered Wood Association to evaluate the performance of ***Insulspan SIP System*** shear wall assemblies for use in Seismic Design Categories A, B, C, D, E & F. The APA test program included testing of ***Insulspan SIP System*** shear wall assemblies and matched light-frame (conventional) walls sheathed with wood-based structural panels for comparison.

For ***Insulspan SIP System*** Design Numbers 1348-1 and 1348-2, the interior framing for the matched conventional walls was single 4x lumber spaced at 24" (610 mm) on center. For ***Insulspan SIP System*** Design Number 1348-3, the interior framing for the matched conventional walls was double 2x lumber spaced at 24" (610 mm) on center. The ***Insulspan SIP System*** shear wall assemblies and matched conventional walls tested were constructed using the same nail spacing and boundary plate configuration (i.e. top plate, bottom plate and end post).

Insulspan SIP System shear wall designs in ESL-1348 are permitted for use in Seismic Design Categories A, B, C, D, E and F. As indicated in section 5.5 of ESL-1348, ***Insulspan SIP System*** shear wall assemblies must be designed using the seismic design coefficients and limitations provied in ASCE 7-10 for conventional light-framed walls sheathed with wood structural panels rated for shear resistance (SFRS A13) using 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.

Basic descriptions of the ***Insulspan SIP System*** shear wall assemblies in Listing Report ESL-1348 for are provided in Table 1 (refer to ESL-1348 for detailed description of each shear wall assembly).

Table 1 – ICC ES Listing Report ESL-1348 - *Insulspan SIP System* Designs

ESL-1348 Design Number	Bottom Plates	Top Plates & Chords	Panel to Panel Connection	Nail Spacing
1348-1	4" (89 mm) x	4" (89 mm) x	4" (89 mm) x	8d nails @ 4" (102 mm)
1348-2	4" (89 mm) x	4" (89 mm) x	4 (89 mm) x	8d nails @ 2" (51 mm)
1348-3	2" (38 mm) x	2 - 2" (38 mm) x	OSB Spline or Insulated Spline	8d nails @ 6" (152 mm)
	2" (38 mm) x	2 - 2" (38 mm) x	2 - 2" (38 mm) x	8d nails @ 6" (152 mm)

Contact:
East:1-800-726-3510
West:1-866-848-8855
www.Insulspan.com

ICC-ES Listing Report

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ESL-1348

This listing is subject to renewal April 2025.

CSI: DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 12 00—Structural Panels

Product Certification System:

The ICC-ES product-certification system includes evaluating reports of tests of standard manufactured product, prepared by accredited testing laboratories and provided by the listee, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the listee's quality system.

Product: INSULSPAN STRUCTURAL INSULATED WALL PANELS

Insulspan Structural Insulated Wall Panels are factory-assembled, laminated sandwich panels consisting of expanded polystyrene (EPS) foam plastic core with wood-based structural-use sheathing facings.

Listee: PLASTI-FAB LTD.

Evaluation: Insulspan Structural Insulated Wall Panel shear wall assemblies, for use as a lateral force resisting system in Seismic Design Categories A through F, have been evaluated based on testing, tested in accordance with the following standard:

- ASTM E72-05, Standard Test Methods of Conducting Strength Tests of Panels for Building Construction, ASTM International
- ASTM E2126-05, Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings, ASTM International.
- ASCE / SEI 7-10, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, American Society of Civil Engineers.

Findings: Insulspan Structural Insulated Wall Panels have the following allowable in-plane shear loads as specified in Tables 2, 3 and 4 below, based on testing in accordance with ASTM E72 and ASTM E2126. See ICC Design No.SIP-1348-01, ICC Design No. SIP-1348-02, and ICC Design No. SIP-1348-03 for assembly component details.

Identification:

1. The panels must have a label containing the name and address of the sandwich panel manufacturer, the plant identifier, the product panel number, the ICC-ES evaluation report number (ESR-1295) and / or ICC-ES listing number (ESL-1348), and when applicable, the ICC-ES listing mark. Bundles of Block Splines are delivered to the jobsite with shipping documents from the sandwich panel manufacturers noted in Table 1.

2. The report holder's contact information is the following:

   PLASTI-FAB LTD.
   300, 2891 SUNRIDGE WAY NE
   CALGARY, ALBERTA T1Y 7H9
   CANADA
   www.insulspan.com

Installation: Insulspan Structural Insulated Wall Panels shall be fabricated, identified and erected in accordance with this report, the approved construction documents and the applicable code.

Conditions of listing:

1. Additional attributes and their applications can be found in the ICC-ES evaluation report ESR-1295.
2. The listing report addresses only conformance with the standard noted above.
3. Approval of the product's use is the sole responsibility of the local code official.
4. The listing report applies only to the materials tested and as submitted for review by ICC-ES.
5. SIP panel seismic parameters: Response Modification Coefficient, R = 6.5; System Overstrength Factor, Ω_0 = 3.0; Deflection Amplification Factor, C_d = 4.0. Parameters have been determined by testing to establish equivalency of SIP panels to *Light-frame wood walls sheathed with wood structural panels rated for shear resistance* under Table 12.2-1 of ASCE 7-16.
6. The Insulspan Structural Insulated Wall Panels are manufactured at Blissfield, Michigan and Delta, British Columbia facilities noted in Table 1, under a quality control program with inspections by ICC-ES.

TABLE 1—MANUFACTURING LOCATIONS

INSULSPAN SIP MANUFACTURING PLANTS	PLANT IDENTIFICATION NUMBER
PFB Manufacturing, LLC 245 N. Jipson Street Blissfield, MI 49228-1167	81
Plasti-Fab Ltd. Unit 1, 600 Chester Road Annacis Business Park Delta, British Columbia V3M 5Y3 Canada	80

TABLE 2 (DESIGN SIP-1348-01)—ALLOWABLE IN-PLANE SHEAR LOAD (POUNDS PER FOOT) FOR SIP SHEAR WALLS (SEISMIC LOAD IN SEISMIC DESIGN CATEGORIES A, B, C, D, E AND F)

Spline Type	Framing Minimum SG[1]	Minimum Facing Connections			Allowable In-plane Shear Load[4] (plf)
		Chord	Plate	Spline	
4x #2 Douglas Fir[2]	0.50	0.113-in. x 2-1/2-in. nails, 4-in. O.C, 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 4-in. O.C., 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 4-in. O.C., 3/4-in. edge distance	540

See Table 4 for footnotes.

TABLE 3 (DESIGN SIP-1348-02)—ALLOWABLE IN-PLANE SHEAR LOAD (POUNDS PER FOOT) FOR SIP SHEAR WALLS (SEISMIC LOAD IN SEISMIC DESIGN CATEGORIES A, B, C, D, E AND F)

Spline Type	Framing Minimum SG[1]	Minimum Facing Connections			Allowable In-plane Shear Load[4] (plf)
		Chord	Plate	Spline	
4x #2 Douglas Fir[2]	0.50	0.113-in. x 2-1/2-in. nails, 4-in. O.C. 2 rows staggered, 3/4-in. and 2-1/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 4-in. O.C. 2 rows staggered, 3/4-in. and 2-1/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 4-in. O.C. 2 rows staggered, 5/8-in. and 1-1/8-in. edge distance	920

See Table 4 for footnotes.

TABLE 4 (DESIGN SIP-1348-03)—ALLOWABLE IN-PLANE SHEAR LOAD (POUNDS PER FOOT) FOR SIP SHEAR WALLS (SEISMIC LOAD IN SEISMIC DESIGN CATEGORIES A, B, C, D, E AND F)

Spline Type	Framing Minimum SG[1]	Minimum Facing Connections			Allowable In-plane Shear Load[4] (plf)
		Chord	Plate	Spline	
OSB Block Spline[3]	0.50	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	360
Double 2x #2 Douglas Fir[2]	0.50	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	0.113-in. x 2-1/2-in. nails, 6-in. O.C., 3/4-in. edge distance	360

For **SI**: 1 inch = 24.4 mm; 1 plf = 14.6 N/m

[1]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.

[2]The maximum assembly height-to-width ratio shall be 2:1 for the allowable loads as published. For design to resist seismic forces, shear wall height-to-width ratios greater than 2:1, but not exceeding 3.5:1, are permitted provided the allowable shear strength values in this table are multiplied by 2w/h.

[3]The maximum assembly height-to-width ratio shall be 2:1 when used in Seismic Design Categories A, B and C. The maximum assembly height-to-width ratio shall be 1:1 when used in Seismic Design Categories D, E and F.

[4]Shear strength values are based on conventionally constructed wood frame wall sheathed with wood-based structural panels mechanically fastened to wood framing members found in ESR-1539 which have been determined to be equivalent.

ICC Design No. SIP-1348-01

ESL-1348

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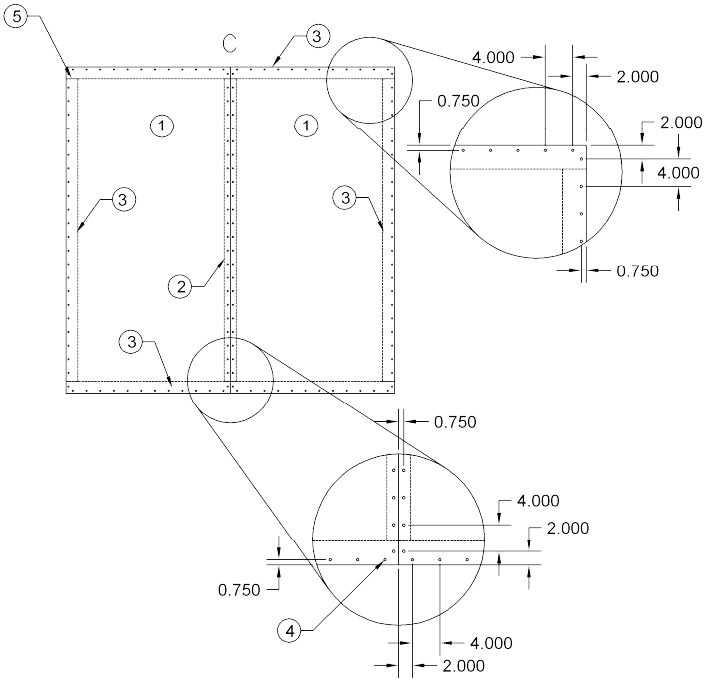
Applicant: PLASTI-FAB LTD.

Product: INSULSPAN STRUCTURAL INSULATED WALL PANELS

Standards: ASTM E72
ASTM E2126
ASCE/SEI 7-10 Section 11.1.4
ASCE/SEI 7-10 Section 12.2.1



INSULSPAN STRUCTURAL INSULATED WALL PANELS FOR USE IN SEISMIC DESIGN CATEGORIES A, B, C, D, E, AND F

COMPONENTS OF CONSTRUCTION:

1. **Structural Insulated Panels:** Insulspan Structural Insulated Panels consisting of minimum nominal $5^{1}/_{2}$-inch-thick (140 mm) expanded polystyrene (EPS) core laminated between two sheets of $^{7}/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB). SIP Panels shall be labeled in accordance with ESR-1295.
2. **Splines:** Insulspan Structural Insulated Panels for use in seismic construction are interconnected with #2 Douglas Fir 4x lumber along the full length of the spline connections at maximum 48 inches (1219 mm) on-center.
3. **Chords and Top and Bottom Plates:** Insulspan Structural Insulated Panels for use in seismic construction shall use #2 Douglas Fir 4x Top Plate, Chords and Bottom Plate.
4. **8d Nails - 0.113-inch x 2-$^{1}/_{2}$-inches:** Nails spaced 4-inches (101.6 mm) on-center around the panel perimeter and 4-inches (101.6 mm) on-center on both sides of the spline connection.
5. **10d Nails - 0.131-inch x 3-inches:** (4) fasteners used to toe nail the top and bottom plates at each chord.

Hold-downs: Designed in accordance with accepted engineering practice to resist design chord forces.

ICC Design No. SIP-1348-02

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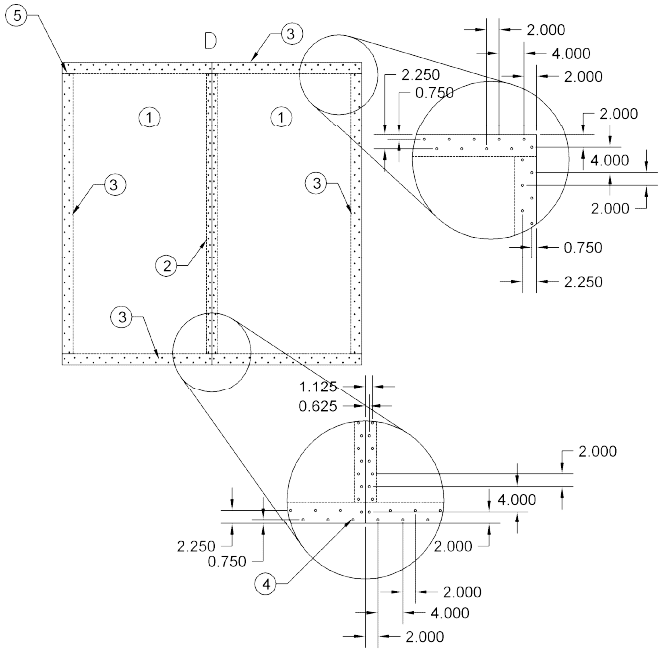
Applicant: PLASTI-FAB LTD.

Product: INSULSPAN STRUCTURAL INSULATED WALL PANELS

Standards: ASTM E72
ASTM E2126
ASCE/SEI 7-10 Section 11.1.4
ASCE/SEI 7-10 Section 12.2.1



INSULSPAN STRUCTURAL INSULATED WALL PANELS FOR USE IN SEISMIC DESIGN CATEGORIES A, B, C, D, E, AND F

COMPONENTS OF CONSTRUCTION:

1. **Structural Insulated Panels:** Insulspan Structural Insulated Panels consisting of minimum nominal $5^{1}/_{2}$-inch-thick (140 mm) expanded polystyrene (EPS) core laminated between two sheets of minimum $^{7}/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB). SIP Panels shall be labeled in accordance with ESR-1295.

2. **Splines:** Insulspan Structural Insulated Panels for use in seismic construction are interconnected with #2 Douglas Fir 4x lumber along the full length of the spline connections at maximum 48 inches (1219 mm) on center.

3. **Chords and Top and Bottom Plates:** Insulspan Structural Insulated Panels for use in seismic construction shall use #2 Douglas Fir 4x Top Plate, Chords and Bottom Plate.

4. **8d Nails, - 0.113-inch x 2-$^{1}/_{2}$-inches:** Nails spaced 4 inches (101.6 mm) on center, 2 rows staggered around the panel perimeter and 4 inches (101.6 mm) on center, 2 rows staggered on both sides of the spline connection.

5. **10d Nails - 0.131-inch x 3-inches:** (4) fasteners used to toe nail the top and bottom plates at each chord.

   Hold-downs: Designed in accordance with accepted engineering practice to resist design chord forces.

ICC Design No. SIP-1348-03

ESL-1348

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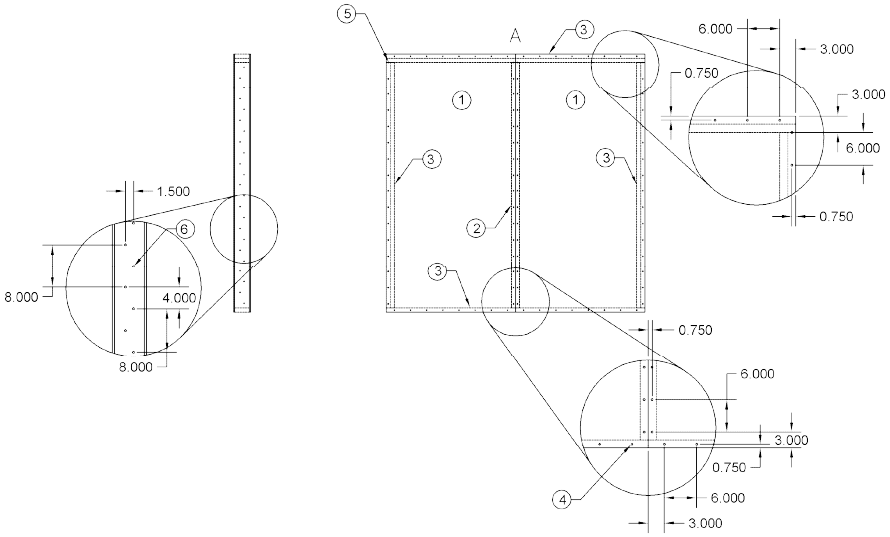
Applicant: PLASTI-FAB LTD.

Product: INSULSPAN STRUCTURAL INSULATED WALL PANELS

Standard: ASTM E72
ASTM E2126
ASCE/SEI 7-10 Section 11.1.4
ASCE/SEI 7-10 Section 12.2.1



INSULSPAN STRUCTURAL INSULATED WALL PANELS FOR USE IN SEISMIC DESIGN CATEGORIES A, B, C, D, E, AND F

COMPONENTS OF CONSTRUCTION:

1. **Structural Insulated Panels:** *Insulspan Structural Insulated Panels* consisting of minimum nominal $5^{1}/_{2}$-inch-thick (140 mm) expanded polystyrene (EPS) core laminated between two sheets of minimum $^{7}/_{16}$-inch-thick (11.1 mm) oriented strand board (OSB). SIP Panels shall be labeled in accordance with ESR-1295.
2. **Splines:** *Insulspan Structural Insulated Panels* for use in seismic construction are interconnected with insulated OSB (Block) splines, 3 inches wide (76.2 mm) and overall thickness equal to the core thickness of the SIP, along the full length of the spline connections at maximum 48 inches (1219 mm) on center. The spline is composed of $^{7}/_{16}$-inch-thick (11.1 mm) OSB and an EPS core. Alternatively, #2 Douglas Fir Double 2x lumber may be used in place of the block spline.
3. **Chords and Top and Bottom Plates:** *Insulspan Structural Insulated Panels* for use in seismic construction shall use #2 Douglas Fir Double 2x Top Plates and Chords with a single 2x Bottom Plate.
4. **8d Nails - 0.113-inch x 2-$^{1}/_{2}$-inches:** Nails spaced 6 inches (152 mm) on center around the panel perimeter and 6 inches (152 mm) on center on both sides of the spline connection.
5. **10d Nails - 0.131-inch x 3-inches:** (3) fasteners used to end nail the top and bottom plates at each chord.
6. **10d Nails - 0.131-inch x 3-inches:** Nails used for double plates, #2 Douglas Fir Double 2x lumber spline, and chords 8 inches (203 mm) on center in two rows, staggered.

   Hold-downs: Designed in accordance with accepted engineering practice to resist design chord forces.