



ICC-ES Evaluation Report

ESR-2445

Reissued August 2023

This report is subject to renewal August 2024.

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

REPORT HOLDER:

FOUR SEASONS SOLAR PRODUCTS

EVALUATION SUBJECT:

CONSERVADECK STRUCTURAL INSULATED PANELS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015 and 2012 *International Building Code*® (IBC)
- 2021, 2018, 2015 and 2012 *International Residential Code*® (IRC)

Property evaluated:

Structural

2.0 USES

Conservadeck Structural Insulated Panels (SIPs) are used as structural insulated floor panels of enclosed structures installed over nonhabitable space.

3.0 DESCRIPTION

3.1 General:

Conservadeck SIPs are factory-assembled sandwich panels consisting of oriented strand board (OSB) facings with an expanded polystyrene (EPS) foam plastic core material. The panels are 4 feet (1.2 m) wide and vary in length from 8 feet to 16 feet (2.4 m by 4.9 m). Panel thicknesses are 6¹/₂, 7, 8³/₈, and 8⁷/₈ inches (165, 178, 213, and 225 mm). The 6¹/₂- and 8³/₈-inch-thick (165 and 213 mm) panels are faced with a single layer of OSB on each side, while the 7- and 8⁷/₈-inch-thick (178 and 225 mm) panels are faced with an additional layer of OSB on the top (walking surface) side.

3.2 Materials:

3.2.1 Expanded Polystyrene: The core thicknesses are 5⁵/₈ and 7³/₈ inches (143 and 187 mm) for 6¹/₂- and 7-inch-thick panels, and for 8³/₈- and 8⁷/₈-inch-thick panels, respectively. The core material is a nominal

1.0-pound-per-cubic-foot (16 kg/m³), Type I, expanded polystyrene foam plastic board complying with ASTM C578. The board is supplied by the manufacturer identified in the approved quality control documentation. The foam plastic has a flame-spread index of 25 or less and a maximum smoke-developed index of 450 or less when tested in accordance with ASTM E84.

3.2.2 Facings: The facing material (both factory- and jobsite-applied) of the panels is 7¹/₁₆-inch-thick (11 mm) OSB sheathing classified as Exposure 1, having a span rating of 2⁴/₁₆ and complying with U.S. DOC PS 2 and the requirements in the approved quality documentation.

3.2.3 Adhesive: The facing material is factory-laminated to the panel core with a Type II, Class 2, adhesive (as described in the approved quality control documentation) that complies with the ICC-ES Acceptance Criteria for Sandwich Panel Adhesives (AC05).

3.2.4 Splines and Plates: Splines and plates must be minimum No. 2 grade, sawn Douglas fir-larch lumber with a minimum nominal specific gravity of 0.50. The splines and plates must be nominally 2-by lumber, fitted for each EPS foam plastic core thickness.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Allowable Loads: For use in allowable stress design, the allowable uniform gravity (dead and live) loads and upward wind loads for the panels are as set forth in Tables 1 and 2. Use of the panels to resist any other load conditions (such as axial compression or tension forces due to horizontal wind loads, or use as a floor diaphragm to resist seismic or horizontal-wind loads) is outside the scope of this report.

4.1.2 IRC: When panels are installed under the IRC, an engineered design is required in accordance with IRC Section R301.1.3.

4.2 Installation:

4.2.1 General: Conservadeck SIPs must be installed as the floor of the enclosed structure with the panel length perpendicular to the supporting members and without transverse joints. The panels must be connected to each other along the panel edges by insertion of the lumber splines described in Section 3.2.4. The lumber spline and plates must be secured between the panels with 8d cooler

[0.113-inch-diameter-by-2³/₈-inch-long (2.9 mm by 60 mm)] nails at 8 inches (203 mm) on center. The top surface of the floor panels must be covered by a thermal barrier approved by the code official, such as ³/₄-inch-thick (19.1 mm) plywood installed on the top surface.

Each end of the panel span must be provided with a minimum 1-inch (25.4 mm) continuous bearing support, to resist downward gravity loads and upward wind loads. As an alternative, the panels may be fastened to the supporting structure through a ledger and support block as shown in Figure 1 of this report. The connection of the ledger and support block to the supporting structure must be designed in accordance with the IBC. For supporting panels subject to uplift forces, an alternative is to install metal fasteners at a maximum of 12 inches (305 mm) on center. The connection must be designed to resist the applicable forces.

The underside of the panel must have a minimum clearance of 18 inches (457 mm) above finish grade.

4.2.2 Installation of Additional OSB Layer: Panels having an additional layer of OSB placed on the top of the Conservadeck SIPs must have the OSB's strength axis perpendicular to the Conservadeck panel span. This layer of OSB is fastened in the field to the splines using 10d box nails at 8 inches (203 mm) on center (staggered offset from the 8d cooler nails used to fasten the facings to the splines and plates, as described in Section 4.2.1, above) and 12 inches (305 mm) on center in the field in two rows spaced 16 inches (406 mm) on center apart across the width of the panel.

5.0 CONDITIONS OF USE

The Conservadeck Structural Insulated Panels described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The panels are fabricated, identified and erected in accordance with this report and the manufacturer's published installation instructions. Where differences exist between this report and the manufacturer's published installation instructions, this report governs.
- 5.2 The panels must be installed in interior dry locations, subject to approval by the code official.

5.3 Design loads to be resisted by the panels must be determined in accordance with the applicable code, and must not exceed the allowable panel loads noted in this report. The design calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed, and submitted to the code official for approval.

5.4 The panels are limited to use in buildings of Group R occupancies of Type V-B construction under the IBC, and nonfire-resistance-rated construction under the IRC.

5.5 The panels are fabricated in Holbrook, New York, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Sandwich Panels (AC04), dated June 2019 (editorially revised December 2020).

7.0 IDENTIFICATION

7.1 Each panel must be identified by a stamp or label on the panel that includes the name and address of the manufacturer (Four Seasons Solar Products), and the evaluation report number (ESR-2445).

7.2 The report holder's contact information is the following:

FOUR SEASONS SOLAR PRODUCTS
5005 VETERANS MEMORIAL HIGHWAY
HOLBROOK, NEW YORK 11741
(631) 563-4000
www.fourseasonssunrooms.com

TABLE 1—ALLOWABLE LOADS FOR 5⁵/₈-INCH-THICK EPS FOAM CORE CONSERVADECK FLOOR PANELS^{1,2} (psf)

PANEL SPAN (ft)	3 psf SUPERIMPOSED DEAD LOAD			7 psf SUPERIMPOSED DEAD LOAD		
	Gravity Loads		Wind Uplift Load	Gravity Loads		Wind Uplift Load
	Allowable Floor Live Load Single OSB	Allowable Floor Live Load Double OSB ³		Allowable Floor Live Load Single OSB	Allowable Floor Live Load Double OSB ³	
7	85	84	38	81	80	40
8	71	72	33	67	68	36
9	56	62	30	52	58	33
10	45	49	28	41	45	30
11	N/A	40	25			

TABLE 2—ALLOWABLE LOADS FOR 7³/₈-INCH-THICK EPS FOAM CORE CONSERVADECK FLOOR PANELS^{1,2} (psf)

PANEL SPAN (ft)	3 psf SUPERIMPOSED DEAD LOAD			7 psf SUPERIMPOSED DEAD LOAD		
	Gravity Loads		Wind Uplift Load	Gravity Loads		Wind Uplift Load
	Allowable Floor Live Load Single OSB	Allowable Floor Live Load Double OSB ³		Allowable Floor Live Load Single OSB	Allowable Floor Live Load Double OSB ³	
7	85	83	38	81	79	40
8	73	72	34	69	68	36
9	64	63	30	60	59	33
10	57	56	28	53	52	30
11	51	50	26	47	46	28
12	46	45	24	42	41	26
13	40	N/A	22			

For **SI**: 1 inch= 25.4 mm; 1 foot= 305 mm; 1 psf = 47.9 Pa.

Notes:

¹All allowable loads provided are uniform applied loads.

²Deflection limit for live load is L/360. Deflection limit for dead plus live load is L/240. Deflection limit for wind load is L/360. Minimum allowable live load presented is 40 psf

³See Section 4.2.2 for installation requirements.

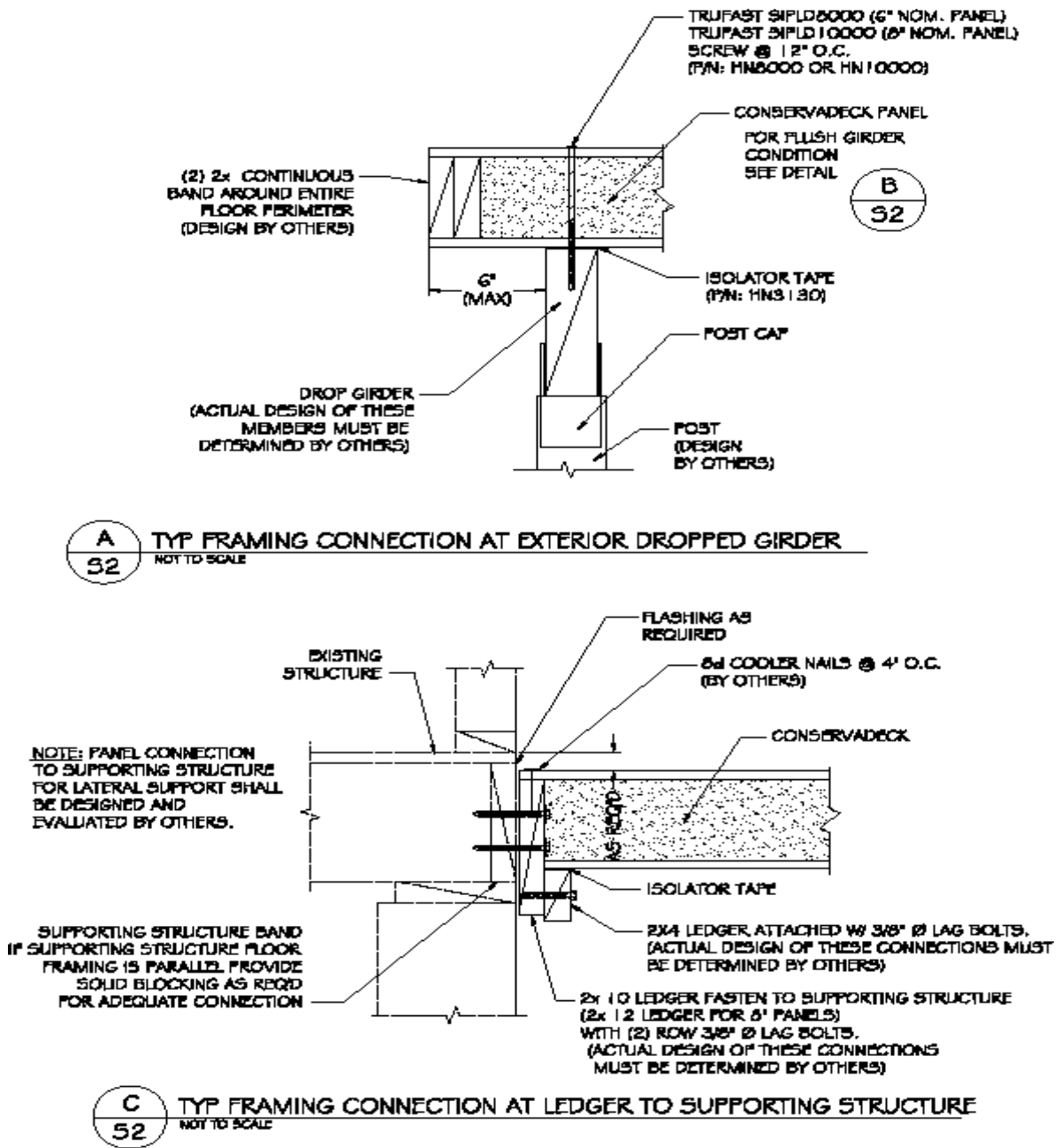


FIGURE 1

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Section: 06 12 00—Structural Panels

REPORT HOLDER:**FOUR SEASONS SOLAR PRODUCTS****EVALUATION SUBJECT:****CONSERVADECK STRUCTURAL INSULATED PANELS****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that the Conservadeck Structural Insulated Panels, described in ICC-ES evaluation report ESR-2445, have also been evaluated for compliance with the codes noted below.

Applicable codes:

- 2022 and 2019 *California Building Code*® (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 and 2019 *California Residential Code*® (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The Conservadeck Structural Insulated Panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-2445, comply with 2022 and 2019 CBC Chapters 3, 8, 23 and 26, provided the design and installation are in accordance with the 2021 and 2018 *International Building Code*® provisions, respectively, noted in the evaluation report and the additional requirements of 2022 and 2019 CBC Chapters 3, 8, 23 and 26, as applicable.

The Conservadeck Structural Insulated Panels have not been evaluated under CBC Chapter 7A for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area.

2.1.1 OSHPD: The applicable OSHPD Sections of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections of the CBC are beyond the scope of this supplement.

2.2 CRC:

The Conservadeck Structural Insulated Panels, described in Sections 2.0 through 7.0 of the evaluation report ESR-2445, comply with 2022 and 2019 CRC Chapter 3, provided the design and installation are in accordance with the 2021 and 2018 *International Residential Code*® provisions, respectively, noted in the evaluation report and the additional requirements of 2022 and 2019 CRC Chapter 3, as applicable.

The Conservadeck Structural Insulated Panels have not been evaluated under CRC Section R337 for use in the exterior design and construction of new buildings located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland–Urban Interface Fire Area.

The products recognized in this supplement have not been evaluated for compliance with the *International Wildland–Urban Interface Code*®.

This supplement expires concurrently with the evaluation report, reissued August 2023.