

ICC-ES Evaluation Report ESR-4586

Issued August 2023

Revised September 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:

TWIN OAKS MADISON LLC

EVALUATION SUBJECT:

STRUCTURAL INSULATED PANELS

1.0 EVALUATION SCOPE

Compliance with the following codes:

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

Properties evaluated:

- Structural
- Fire-resistance-rated construction
- Thermal Barrier

2.0 USES

The Twin Oaks Madison LLC Structural Insulated Panels (SIPs) are used as load-bearing wall, floor, and roof panels in Type V construction in the IBC. The allowable number of stories above grade plane of a Type V construction shall not exceed the limits specified in IBC Table 504.4.

When the SIPs are installed under the IRC, an engineered design is required in accordance with IRC Section R301.1.1.3.

3.0 DESCRIPTION

3.1 General:

The SIPs are factory-laminated sandwich panels consisting of magnesium oxide sulfate board facings with an expanded polystyrene (EPS) foam plastic core and vary in length from 8 to 10 ft (2.43 to 3.05 m) and in nominal overall thickness from 4 to 11³/₁₆ inches (102 to 284 mm). See Table 1 for weight and description details.

3.2 Material:

3.2.1 Facing: The facing material, evaluated under [ESR-4642](#) in accordance with ICC-ES Acceptance Criteria

for Fiber-reinforced Magnesium-oxide-based Sheets (AC386), comes in nominally 6 mm, 12 mm or 18 mm magnesium oxide sulfate boards.

3.2.2 Expanded Polystyrene: The EPS foam plastic core, evaluated under [ESR-1788](#) in accordance with ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), complies with ASTM C578, Type I. The EPS foam plastic has a flame-spread index not exceeding 25 and a smoke-developed index not exceeding 450 when tested in accordance with ASTM E84. The core is supplied in nominal thickness of 3.5, 5.5, 8, and 10 inches (89, 140, 203, 254 mm).

3.2.3 Adhesive: The adhesive, evaluated under [ESR-1023](#) in accordance with ICC-ES Acceptance Criteria for Sandwich Panel Adhesives (AC05), used for lamination of the Structural Insulated Panels comply with Type II, Class 2, performance requirements.

3.2.4 Framing:

3.2.4.1 Block Splines:

Block splines consist of two 6-inches (152 mm) wide, 12 mm thick magnesium oxide sulfate boards laminated to an EPS core. The block spline has a total thickness equal to the core thickness of the SIPs the spline is used in.

3.2.4.2 Top and Bottom Tracks:

The Structural Insulated Panels have top and bottom tracks consisting of minimum 33 ksi 18-gage cold-formed steel track profiles with a flange width of 3 inches (76 mm). The track width profiles come in either 3.5, 5.5, 8 or 10 inches (89, 140, 203, 254 mm).

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Overall Structural System: The scope of this report is limited to the evaluation of the SIPs. The connections and other details related to incorporation of the SIPs into the overall structural system of a building are beyond the scope of this report.

4.1.2 Design Approval: Where required by the authority having jurisdiction, structures using SIPs 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, and submitted to the code official for

approval 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 available at all times on the jobsite during installation.

4.1.3 Design Loads: Design loads to be resisted by the SIPs shall be as required under the applicable code. The design loads on the panels shall not exceed the allowable loads noted in this report. Calculations demonstrating that the design loads applied are less than the allowable loads described in this report shall be submitted to the code official for approval.

4.1.4 Allowable Loads: Allowable axial, transverse and in-plane shear loads are provided in Tables 2 through 6. For loading conditions not specifically addressed herein, structural members designed in accordance with accepted engineering practice shall be provided to meet applicable code requirements.

4.1.5 Concentrated Loads: Axial loads shall be applied to the product through continuous members such as roof or floor panels or repetitive members such as joists, trusses or rafters spaced at regular intervals of 24 inches (610 mm) on center or less.

4.1.6 Eccentric and Side Loads: For wall panels, the axial loads shall be applied concentrically to the top of the wall panels.

4.1.7 Openings: Openings in SIPs are beyond the scope of this report. When openings in the SIPs are used, the openings shall be framed with steel framing members designed in accordance with accepted engineering practice to resist all loads applied around the opening, as required by the applicable 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. See Table 3 for allowable header loads, as applicable.

4.1.8 In-Plane Shear Design: Shear walls utilizing block splines shall be sized to resist all code required wind and seismic loads without exceeding the allowable loads provided herein. Shear wall chords, hold-downs and connections to transfer shear forces between the wall and surrounding structure shall be designed in accordance with accepted engineering practice.

4.1.9 Seismic Design Categories A, B, and C: Use of the shear wall configurations in Table 3 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, $\Omega_0=2.5$; Deflection Amplification Factor, $C_d=2.0$. The maximum panel height-to-width ratio shall be 1:1.

4.1.10 Combined Loads: Where loading conditions result in superimposed stresses, the sum of the ratio of actual loads over allowable loads shall not exceed one.

4.2 Installation:

4.2.1 General: Twin Oaks Madison LLC Structural Insulated Panels, described in this report, 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 available at all times on the jobsite during installation.

4.2.2 Splines: Structural Insulated Panels are interconnected at the panel edges through the use of a box spline, complying with Section 3.2.4. The box spline shall be secured using #10-12 x 1 ½ inch (38 mm) long square flat head Type A tapping screws spaced 6 inches (152 mm) on center on both sides of the panel.

4.2.3 Tracks: The top and bottom tracks of the SIPs shall be minimum 18 gage cold-formed steel C-channels to match the core thickness of the SIPs. The tracks shall be secured using #10-12 x 1 ½ inch (38 mm) long square flat head Type A tapping screws, spaced 3 inches (76 mm) on center on both sides of the panel. Facings of wall panels must be in full bearing on the rigid foundation or wall top plate.

4.2.4 Cutting and Notching: No field cutting or routing of the panels shall be permitted except as shown on approved construction documents.

4.2.5 Protection from Decay: Structural Insulated Panels that rest on exterior foundation walls shall not be located within 8 inches (203 mm) of exposed earth. Structural Insulated Panels supported by concrete or masonry that is in direct contact with earth shall be protected from the concrete or masonry by a moisture barrier.

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

4.2.7 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.

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

4.2.9 Electrical Installation Restrictions: Electrical outlet boxes and raceways may be installed in the panels during fabrication at predetermined locations only. Structural Insulated Panels have shop installed vertical raceways measuring 1.25 x 1.25 inch (31.75 x 31.75 mm) located at each spline connection at a minimum of 4 feet (1219 mm) on center. No more than three outlet box openings 4 inches by 4 inches (102 mm x 102 mm) in size may be along each raceway.

4.2.10 Panel Cladding:

4.2.10.1 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 covering requiring the application of heat during installation shall be reviewed and approved by a registered design professional.

4.2.10.2 Exterior Wall Covering: Panels must be covered on the exterior by a code-compliance 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.

4.2.10.3 Interior Finish (Thermal Barrier): The Structural Insulated Panel assembly meets the requirements of IBC Section 2603.9 and IRC R316.6 when tested in accordance

with NFPA 286 and does not require an additional thermal barrier when installed in accordance with this report and the manufacturer's installation instructions.

4.3 Fire-resistance-rated Construction:

When tested in accordance with ASTM E119, the 2-hour symmetrical load bearing wall assembly must be constructed as detailed in Figure 1. The maximum allowable uniform axial compressive load is 2,500 plf (36.5 kN/m), exclusive of the weight of the wall panel.

5.0 CONDITIONS OF USE

The Structural Insulated Panels described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The Structural Insulated Panels are fabricated, identified and erected in accordance with this report and the manufacturer's published installation instructions. If there is a conflict between this report and the manufacturer's instructions, the more restrictive governs.
- 5.2 Design loads to be resisted by the Structural Insulated Panels must be determined in accordance with the IBC or IRC as applicable and must not exceed the allowable loads noted in this report.
- 5.3 All construction documents specifying the Structural Insulated Panels must comply with the design limitations of this report. Design calculations and details for the specific applications must be furnished to the code official, verifying compliance with this report and applicable codes. The documents must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4 Connections and attachments of the Structural Insulated Panels to the supporting elements are outside the scope of this report and must be addressed in the design calculations and details.
- 5.5 The transfer of vertical and lateral loads from the roof or floor diaphragm into the shear wall and from the shear wall to the foundation must be addressed in the calculations.
- 5.6 When shear walls are used in buildings that are more than one story tall, calculations and details, showing the load path for the transfer of lateral forces from the upper-story shear walls to the foundation, must be submitted to the code official.

5.7 Wood elements must be installed as set forth in IBC Section 2304.12.1 or IBC Section R317.1.

5.8 Structural Insulated Panels for Roof and Floor Panel installation requires a support condition with a minimum of 1.5 inches (38.1 mm) bearing length on each end of the panel.

5.9 When used as shear walls, Structural Insulated Panels are recognized for use in Seismic Design Categories as provided for in Table 3 of this report. Use of the panels as shear walls for buildings in Seismic Design Categories D through F, is outside the scope of this report.

5.10 The panels are fabricated under a quality control program with inspection by ICC-ES.

6.0 EVIDENCE SUBMITTED

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

6.2 Report of tests conducted in accordance with ASTM E119.

6.3 Report of a room corner fire test conducted in accordance with NFPA 286.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-4586) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the panels must have a label containing the product panel number. Bundles of block splines are delivered to the jobsite with shipping documents from the manufacturer.

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

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TABLE 1—PRODUCT DESCRIPTION: DIMENSIONS AND WEIGHTS (psf)^{1, 2, 3}

PRODUCT DESCRIPTION	NOMINAL SIP THICKNESS (in.)	WEIGHT (psf)
Wall Panel: Two – 6-mm-thick MgO facings adhered vertically to 3½-inch-thick extruded polystyrene foam plastic insulation core (EPS)	4	2.95
Wall Panel: Two – 12-mm-thick MgO facings adhered vertically to 3½-inch-thick extruded polystyrene foam plastic insulation core (EPS)	4½	5.45
Wall Panel: Two – 12-mm-thick MgO facings adhered vertically to 5½-inch-thick extruded polystyrene foam plastic insulation core (EPS)	6 ½	5.61
Floor / Roof – 12-mm-thick MgO facing bottom side, 18-mm-thick MgO facing top side adhered longitudinally with 8-inch-thick extruded polystyrene foam plastic insulation core (EPS)	9 3/16	5.86
Floor / Roof – 12-mm-thick MgO facing bottom side, 18-mm-thick MgO facing top side adhered longitudinally with 10-inch-thick extruded polystyrene foam plastic insulation core (EPS)	11 3/16	5.98
Spline: Two – 12-mm-thick MgO facings adhered to 2½ inch-thick extruded polystyrene foam plastic insulation core (EPS)	3 ½	5.39
Spline: Two – 12-mm-thick MgO facings adhered to 4½ inch-thick extruded polystyrene foam plastic insulation core (EPS)	5 ½	5.55
Spline: Two – 12-mm-thick MgO facings adhered to 7-inch-thick extruded polystyrene foam plastic insulation core (EPS)	8	5.74
Spline: Two – 12-mm-thick MgO facings adhered to 9-inch-thick extruded polystyrene foam plastic insulation core (EPS)	10	5.92

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

¹Wall Panel weights are based on an average result of panels without spline material included.

²When used in a 2-hr fire-resistance-rated wall assembly per Section 4.3, an extra layer of 12-mm-thick MgO facer is fastened to each side of the panel. Two 12-mm-thick MgO boards weigh 5.13 psf.

³Floor/Roof Panels used in floor and roof construction must be supported by an engineered structural frame designed by a registered design professional.

TABLE 2—ALLOWABLE AXIAL LOAD SIP WALLS^{1,2,3,4,5}

SIP WALL HEIGHT (ft)	SIP WALL WIDTH (ft)	NOMINAL SIP THICKNESS (in.)	ALLOWABLE AXIAL LOAD (plf)
10	4	4	2024
		4 ½	2849
		6 ½	4413

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm; 1 plf = 14.6 N/m.

¹At SIP ends each MgO facing must be fastened to minimum 18 gage cold-formed steel track profiles, matching the panel core thickness, with #10-12 x 1 ½ inch (38 mm) long square flat head Type A tapping screws, spaced 3 inches (76 mm) on center. The steel tracks must be connected to structural supports, based on connection specifications, design and installation in accordance with the applicable code or applicable ICC-ES evaluation reports.

²Axial loads shall be applied concentrically to the top of the SIP walls.

³The ends of both facings of wall panels must bear on the rigid foundation or structure to achieve the tabulated axial loads. MgO facings shall be oriented such that the strength axis is in the direction of the axial load.

⁴For combined loading, the requirements in Section 4.1.10 of this report must be applied.

⁵Allowable axial loads are based on an ultimate load with a safety factor of 3.

TABLE 3—ALLOWABLE UNIFORM LOAD FOR SIP HEADER (plf)^{1,2,3,4}

SIP HEADER DEPTH (ft)	SIP HEADER SPAN (ft)	NOMINAL SIP THICKNESS (in.)	ALLOWABLE UNIFORM LOAD (plf)
1	8	4	480
		4 ½	725
		6 ½	639

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm; 1 plf = 14.6 N/m.

¹Tabulated allowable load is the maximum load applied uniformly and is continuous without splines.

²Vertical members supporting each end of the SIP headers must be designed for the tributary vertical (gravity) and transverse (wind) loads carried by SIP headers.

³Top and bottom plates must comply with Section 3.2.4.2 of this report.

⁴Concentrated loads superimposed on SIP wall headers must be supported by conventional construction methods or by other methods designed and constructed to support the governing load combination defined in IBC Section 1605.3 without exceeding the appropriate specified allowable stresses for the materials of construction.

TABLE 4—ALLOWABLE LATERAL IN-PLANE RACKING SHEAR LOAD^{1,2,4}

NOMINAL SIP THICKNESS (in.)	FACING THICKNESS (mm)	SPLINE TYPE ⁵	BOTTOM TRACK	TOP TRACK	END POSTS	FASTENERS AT 3 INCHES ON-CENTER SPACING	ALLOWABLE LOADS (plf) ³
4	6	BLOCK	350T300-43 Track profile (33 ksi)	350T300-43 Track profile (33 ksi)	350T300-43 Track profile (33 ksi)	#10-12 x 1.5 Square Flat Type A Screw	155
4 ½	12	BLOCK	350T300-43 Track profile (33 ksi)	350T300-43 Track profile (33 ksi)	350T300-43 Track profile (33 ksi)	#10-12 x 1.5 Square Flat Type A Screw	338
6 ½	12	BLOCK	550T300-43 Track profile (33 ksi)	550T300-43 Track profile (33 ksi)	550T300-43 Track profile (33 ksi)	#10-12 x 1.5 Square Flat Type A Screw	368

For SI: 1 inch = 25.4 mm; 1 ft = 305 mm; 1 plf = 14.6 N/m.

¹This installation is recognized for use in Seismic Design Categories A through C. Maximum shear wall height to length ratio shall not exceed 1:1.

²Facings must be fully bearing on structural supports, and must be oriented with the strong strength axis of the material vertically on the shear wall.

³Allowable in-plane racking shear loads are based on an ultimate load with a safety factor of 3.

⁴Chords, hold downs and connections to other structural elements are outside the scope of this report, and must be designed by a registered design professional in accordance with applicable code and standards.

⁵Splines must be located inside at the panel-to-panel joints, and are oriented vertically.

TABLE 5—ALLOWABLE TRANSVERSE LOAD FOR STRUCTURAL INSULATED PANELS - WALLS (psf)^{1,2,3}

SIP WALL HEIGHT (ft)	SIP WALL LENGTH (ft)	NOMINAL SIP THICKNESS (in.)	LOAD AT L/180 DEFLECTION	ALLOWABLE TRANSVERSE LOAD ⁴
10	4	4	27	17
		4 ½	39	27
		6 ½	70	43

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 psf = 47.889 Pa

¹The tabulated transverse load values are for panels installed with minimum 18 gage cold-formed steel track profiles as top and bottom plates.

²The tabulated transverse load values are for panels installed with the strong strength axis of the facing material oriented parallel to the span.

³Allowable transverse loads are based on an ultimate load with a safety factor of 3.

TABLE 6—ALLOWABLE TRANSVERSE LOAD FOR STRUCTURAL INSULATED PANELS – FLOOR/ROOF (psf)^{1,2,3,4}

SIP LENGTH (ft)	SIP WIDTH (ft)	FLOOR/ROOF SPAN (ft)	NOMINAL SIP THICKNESS (in.)	ALLOWABLE TRANSVERSE LOAD ⁵
8	4	8	9 3/16	59
		8	11 3/16	65

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm; 1 psf = 47.889 Pa

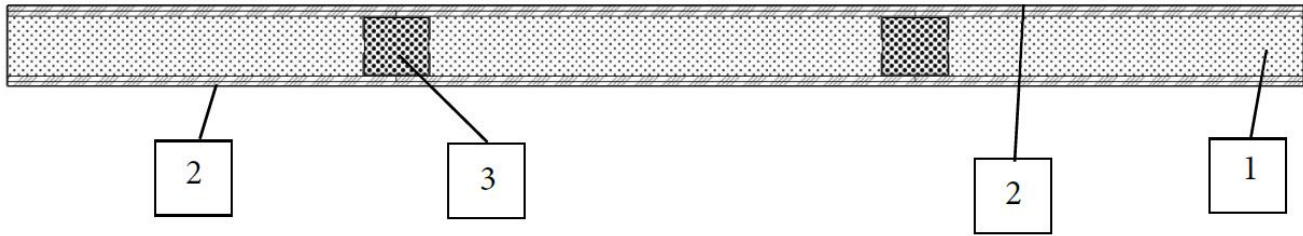
¹The tabulated transverse load values do not include the dead weights of the panels.

²The tabulated transverse load values are for short duration of load only and do not consider the effects of creep.

³The tabulated transverse load values are for panels installed with the strong axis of the facing material oriented parallel to the span.

⁴Panels used in roofs must be designed to support a superimposed 300 lbf concentrated load according to IBC Section 1607.4, when the roof has access to maintenance workers.

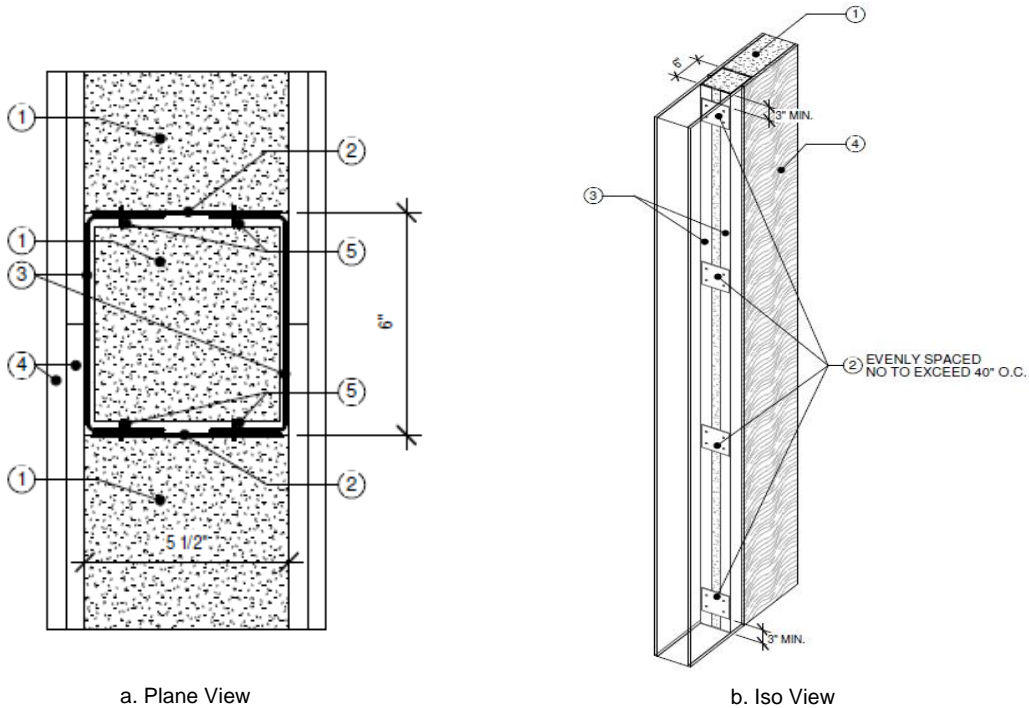
⁵Allowable transverse loads are based on an ultimate load with a safety factor of 3.



COMPONENTS OF CONSTRUCTION:

1. **STRUCTURAL INSULATED PANEL (SIP)** – Nominal 6 ½ -inch (165 mm) thick wall panel consisting of nominal ½-inch (12 mm) thick Magnesium Oxide Sulfate facers evaluated under [ESR-4642](#) on both sides of a nominal 5 ½ -inch (140 mm) thick Expanded Polystyrene (EPS) foam plastic core evaluated under [ESR-1788](#). The facers are laminated to the EPS core using an adhesive evaluated under [ESR-1023](#). The entire perimeter of the SIP was enclosed with minimum 33 ksi 18-gage 5 ½ inch (140 mm) wide (550T300-43) track profiles and fastened with #10-12 x 1 ½ inches (38 mm) long bugle head self-drilling screws spaced at 3 inches (76 mm) on center.
2. **OUTER LAYER SHEATHING** – One outer layer of nominal ½-inch (12 mm) thick Magnesium Oxide Sulfate facer, evaluated under [ESR-4642](#). The sheathing is installed with the long dimension of the panel oriented horizontally and fastened to each side of the nominal 6 ½ inch (165 mm) thick SIP with #10-12 x 1 ½ inches (38 mm) long bugle head self-drilling screws spaced at 3 inches (76 mm) on center around the perimeter of the SIP and 12 inches (305 mm) on center in the field (vertically and horizontally), with a 1 ½ -inches (38 mm) offset from the base layer perimeter fasteners.
3. **METAL CLAD THERMAL SPLINE** – Nominal 6 inches (152 mm) wide Metal Clad Thermal Splines are used to connect nominal 6½ -inches (165 mm) thick wall panels together. Each Metal Clad Thermal Spline consist of 5½ inches-thick EPS core enclosed with minimum 33 ksi 18-gage 5 ½ inches (140 mm) wide C-channel profiles. 3-inches x 5½ -inches (76 mm x 140 mm) metal stitch plates are fastened to the steel stud flanges with two - #10 x 1 inch (25.4 mm) long hex head tap screws per side. The Metal Clad Thermal Splines are fastened to the SIP with #10-12 x 1 ½ inch (38 mm) long bugle head self-drilling screws spaced at 6 inches (152 mm) on center along the seams. See Figure 2 below for details.

FIGURE 1 – 2-HR FIRE-RESISTANCE RATED LOAD BEARING WALL ASSEMBLY (ASTM E119)



1	EPS Foam 5.5"	3	18 Gauge Metal Stud
2	3" x 5" Metal Stitch Plates	4	12mm MgO Skin
		5	#10 Hexhead 1" Self Tapping Screws(2 ea.)

FIGURE 2 – METAL CLAD THERMAL SPLINE DETAIL

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

REPORT HOLDER:

TWIN OAKS MADISON LLC

EVALUATION SUBJECT:

STRUCTURAL INSULATED PANELS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that Structural Insulated Panels, described in ICC-ES evaluation report ESR-4586, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 and 2020 *Florida Building Code—Building*
- 2023 and 2020 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Structural Insulated Panels, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-4586, complies with the *Florida Building Code—Building* and the *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-4586 for the 2021 and 2018 *International Building Code*® meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential*, as applicable, with the following conditions:

- Installation of foam plastic in areas subject to damage from termites must meet the requirements of Sections 1403.8 and 2603.8 of the *Florida Building Code – Building* and Sections R318.7 and R318.3 of the *Florida Building Code – Residential*, as applicable.

Use of the Structural Insulated Panels has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* or the *Florida Building Code—Residential* with the following conditions:

- The allowable positive or negative design wind load must not exceed 83.2 psf* (3984 Pa).
 - The tested wall panel assembly is based on nominally 7 7/16-inch (187.7 mm) thick Structural Insulated Panels consisting of two - 12 mm thick MgO facings adhered vertically to 5 1/2-inch-thick extruded polystyrene foam plastic insulation core (EPS) with an extra layer of 12 mm thick MgO facing installed horizontally on each side and fastened to the SIP with #10-12 x 1 1/2 inches (38 mm) long bugle head self-drilling screws spaced at 3 inches (76 mm) on center around the perimeter of the SIP and 12 inches (305 mm) on center in the field (vertically and horizontally), with a 1 1/2 -inches (38 mm) offset from the base layer perimeter fasteners. Block splines were used and are as detailed in Section 3.2.4.1 of ESR-4586.

* Allowable positive or negative design wind load is based on an ultimate load with a safety factor of 1.5.

In addition to the data noted in Section 6.0 of the evaluation report ESR-4586, data in accordance with *Florida Building Code* Test Protocols for High-Velocity Hurricane Zones, TAS 201, TAS 202 and TAS 203 was submitted.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, issued August 2023 and revised September 2023.