

TER and Listing



2302-01

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Use of CSP Homes Concrete Structural Steel Insulated Interlocking Plug-N-Play Panels (C-SIP)

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CSI Designations:

DIVISION: 03 00 00 - CONCRETE

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 21 00 - Thermal Insulation

Section: 07 42 00 - Wall Panels

Section: 07 42 13 - Metal Wall Panels

Section: 07 42 13.19 - Insulated Metal Wall Panels

Section: 07 42 13.23 - Metal Composite Material Wall Panels

Section: 07 42 43 - Composite Wall Panels

Section: 07 48 00 - Exterior Wall Assemblies

1 Innovative Product Evaluated^{1,2}

1.1 Concrete Structural Steel Insulated Interlocking Plug-N-Play Panels (C-SIP)

2 Applicable Codes and Standards^{3,4}

2.1 Codes

2.1.1 IBC—15, 18, 21: International Building Code®

2.1.2 IRC—15, 18, 21: International Residential Code®

2.1.3 IECC—15, 18, 21: International Energy Conservation Code®

¹ For more information, visit drjcertification.org or call us at 608-310-6748.

² **Federal Regulation Definition.** 24 CFR 3280.2 "Listed or certified" means included in a list published by a nationally recognized testing laboratory, inspection agency, or other organization concerned with product evaluation that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner. **International Building Code (IBC) Definition of Listed.** Equipment, materials, products or services included in a list published by an organization acceptable to the building official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose Listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. **IBC Definition of Labeled.** Equipment, materials or products to which has been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, approved agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.

³ This Listing is a code defined research report, which is also known as a duly authenticated report, provided by an approved agency (see IBC Section 1703.1) and/or an approved source (see IBC Section 1703.4.2). An approved agency is "approved" when it is ANAB accredited. DrJ Engineering, LLC (DrJ) is listed in the ANAB directory. A professional engineer is "approved" as an approved source when that professional engineer is properly licensed to transact engineering commerce. Where sealed by a professional engineer, it is also a duly authenticated report certified by an approved source. (i.e., Registered Design Professional). DrJ is an ANAB accredited product certification body.

⁴ Unless otherwise noted, all references in this Listing are from the 2021 version of the codes and the standards referenced therein. This material, product, design, service and/or method of construction also complies with the 2000-2021 versions of the referenced codes and the standards referenced therein.

- 2.1.4 FBC-B – 20, 23: Florida Building Code - Building⁵ (FL 44554)
- 2.1.5 FBC-R – 20, 23: Florida Building Code – Residential⁵ (FL 44554)

2.2 Standards and Referenced Documents

- 2.2.1 ACI 318: Building Code Requirements for Structural Concrete
- 2.2.2 ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- 2.2.3 ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- 2.2.4 ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- 2.2.5 ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings

3 Performance Evaluation

- 3.1 Tests, test reports, research reports, duly authenticated reports and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2016 (DTSA).⁶
- 3.2 Testing and/or inspections conducted for this report were performed at an ISO/IEC 17025 accredited testing laboratory,⁷ an ISO/IEC 17020 accredited inspection body,⁸ which are internationally recognized accreditations through International Accreditation Forum (IAF), and/or a licensed Registered Design Professional (RDP).
 - 3.2.1 Structural performance under lateral load conditions for wind and seismic loading for use with the IBC performance-based provisions of IBC Section 2211.1.1 for light-frame steel wall assemblies.
 - 3.2.2 Resistance to transverse loads for wall assemblies used in light-frame wood and steel construction in accordance with IBC Section 1609.1.1 and IRC Section R301.2.1.
 - 3.2.3 Resistance to gravity loads for wall assemblies used in light-frame steel construction in accordance with IBC Section 1604 and IRC Section R301.1.
- 3.3 Any building code and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP/approved sources. DrJ is qualified⁹ to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.
- 3.4 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope, which are also its areas of professional engineering competence.

⁵ All references to the FBC-B and FBC-R are the same as the 2021 IBC and 2021 IRC unless otherwise noted in the Florida Supplement.

⁶ <https://www.law.cornell.edu/uscode/text/18/part-I/chapter-90>. Given our professional duty to inform, please be aware that whoever, with intent to convert a trade secret (TS), that is related to a product or service used in or intended for use in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; shall be fined under this title or imprisoned not more than 10 years, or both. Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

⁷ Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

⁸ Ibid.

⁹ Qualification is performed by a legislatively defined Accreditation Body. ANSI National Accreditation Board (ANAB) is the largest independent accreditation body in North America and provides services in more than 75 countries. DrJ is an ANAB accredited product certification body.

3.5 Any regulation specific issues not addressed in this section are outside the scope of this report.

4 Product Description and Materials

4.1 The innovative product evaluated in this report is shown in **Figure 1**.



Figure 1. C-SIPs

4.2 Product Description

4.2.1 C-SIPs are load-bearing, insulated exterior/interior wall panels composed of an Expanded Polystyrene foam (EPS) enclosed within a steel frame and sheathed with fiber cement boards. The steel frame has an internal bracing system comprised of 24-gauge, $19/32"$ by $19/32"$ (0.7 mm thick, 15 mm by 15 mm) square tubes. Where walls exceed 8 feet tall (2,440 mm), 20-gauge, 1" by 1" (1 mm thick, 25 mm by 25 mm) angle steel members are used to support the butt-jointed fiber cement boards on both sides of the panel. Each wall panel measures approximately 2 feet (610 mm) in length with various heights.

4.2.1.1 Steel Frame:

4.2.1.1.1 Steel is specified as Q235 hot-dip galvanized steel, 18-gauge (1 mm) thick.

4.2.1.1.2 A typical steel frame consists of: 1 male steel member, 1 female steel member, 2 arch steel members, 2 angle steel members, and 6 square tubes.

4.2.1.1.3 Steel member cross sections are displayed in **Figure 2** through **Figure 7**.

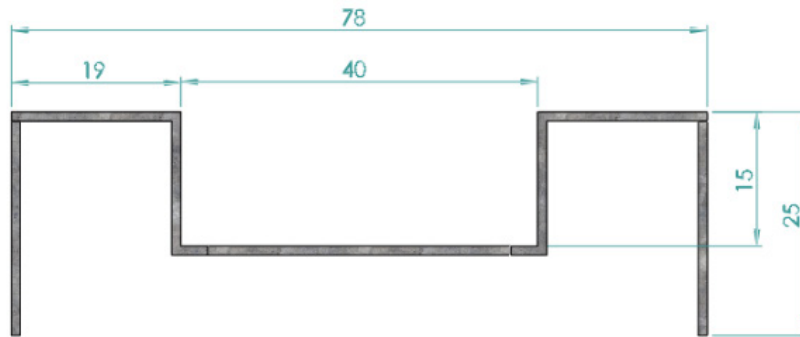


Figure 2. Female Steel Profile for 3³/₄" (96 mm) Thick Wall Panels

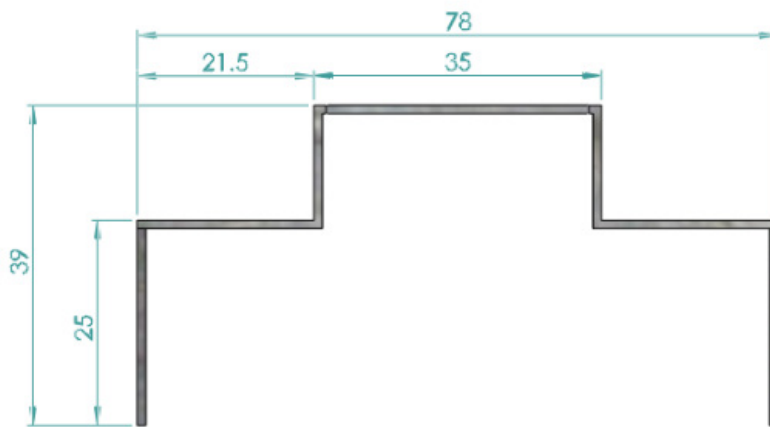


Figure 3. Male Steel Profile for 3³/₄" (96 mm) Thick Wall Panels

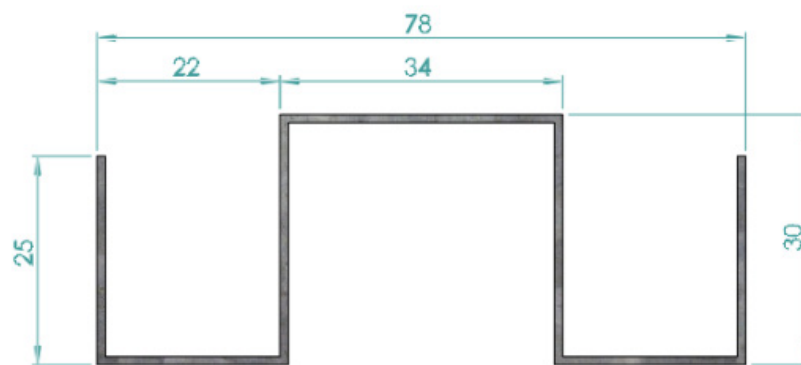


Figure 4. Arch Steel Profile for 3³/₄" (96 mm) Thick Wall Panels

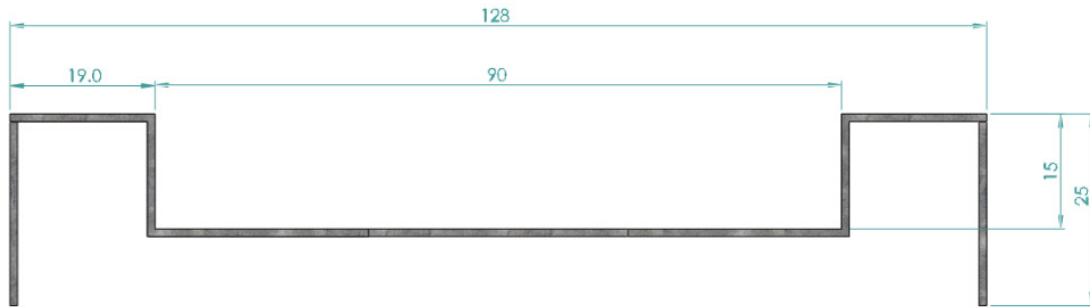


Figure 5. Female Steel Profile for 5³/₄" (146 mm) Thick Wall Panels

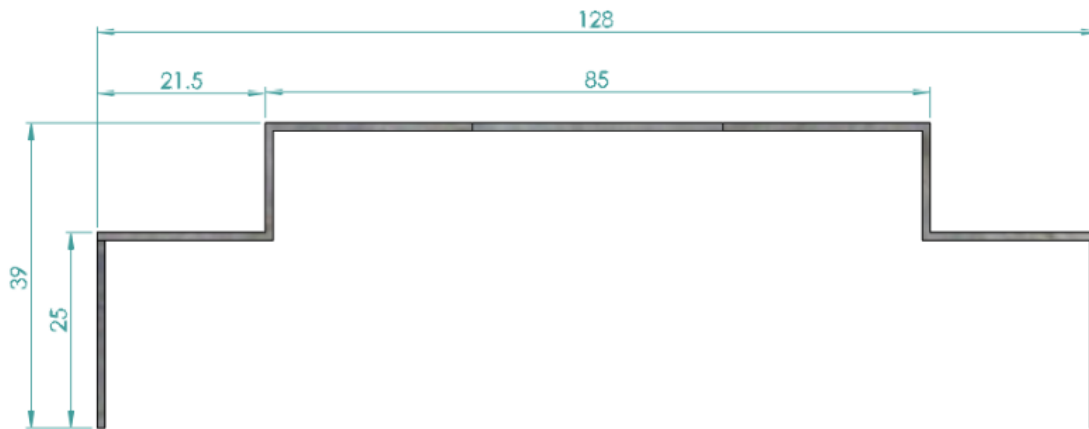


Figure 6. Male Steel Profile for 5³/₄" (146 mm) Thick Wall Panels

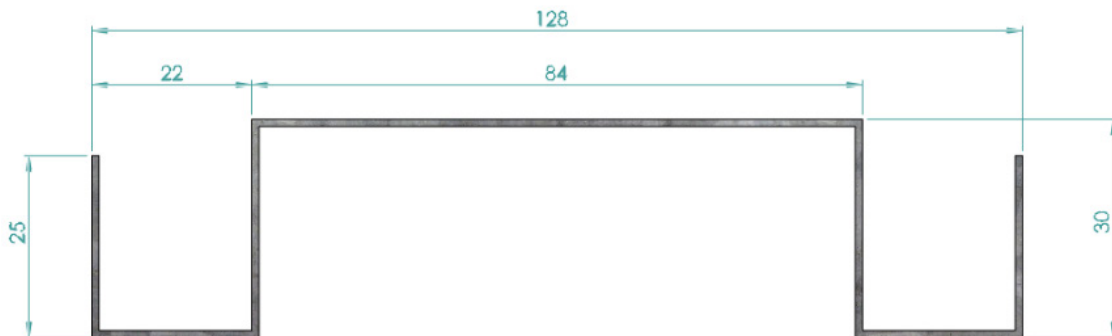


Figure 7. Arch Steel for 5³/₄" (146 mm) Thick Wall Panels

4.2.1.2 *Fiber Cement Board:*

4.2.1.2.1 Nominal thickness: ³/₈" (9 mm)

4.2.1.2.2 Boards are fastened to the steel frame with #6 x 1" (3.5mm x 25 mm) self-tapping drywall screws spaced 24" (610 mm) o.c., along vertical panel edges and 6" (152mm) along horizontal panel edges. Fasteners are located 1/2" (12.7 mm) from the panel edges.

4.2.1.3 *Panel-to-Panel Connection:*

- 4.2.1.3.1 A 14-gauge, $1\frac{3}{16}$ " by $1\frac{3}{16}$ " (2mm thick, 30 mm by 30 mm) square tube is fitted into the groove of the top and bottom arch steel members of the panels being joined together.
- 4.2.1.3.2 The square tube is fastened to the top and bottom arch steel members with #12 24"x2" self-tapping screws spaced 3" or 6" o.c. staggered front to back for each wall panel.

4.3 *Material Availability*

4.3.1 *Standard Product Thickness:*

- 4.3.1.1 $3\frac{3}{4}$ " (96 mm)
- 4.3.1.2 $5\frac{3}{4}$ " (146 mm)

4.3.2 *Standard Product Width:*

- 4.3.2.1 $23\frac{5}{8}$ " (600 mm)
 - 4.3.2.1.1 Width measurement applies only to the net face and excludes the tongue of the male end.

4.3.3 *Standard Product Height:*

- 4.3.3.1 122" (3,100 mm) to $141\frac{3}{4}$ " (3,600 mm)

5 Applications

5.1 C-SIPs are used in the following applications as:

- 5.1.1 Walls in buildings constructed in accordance with the IRC and IBC
- 5.1.2 Structural wall panels to provide lateral load resistance (wind and seismic) for buildings
- 5.1.3 Structural wall panels in buildings constructed in accordance with the IBC requirements for Type I-V construction
- 5.1.4 Structural wall panels to provide resistance to transverse loads for wall assemblies
- 5.1.5 Structural wall panels to provide resistance to compression loads for wall assemblies

5.2 *Structural Applications*

- 5.2.1 Except as otherwise described in this report, C-SIPs shall be installed in accordance with the applicable building codes listed in **Section 2** using the provisions set forth herein for the design and installation.
- 5.2.2 Anchorage for in-plane shear shall be provided to transfer the induced shear force into and out of each shear wall.
 - 5.2.2.1 For wind and seismic design, anchor bolt spacing shall not exceed 24" o.c.
- 5.2.3 The maximum aspect ratio for full height walls braced with C-SIPs shall be 1:1.
- 5.2.4 Fastener type and spacing shall be per the applicable table of this report and **Section 6**. Fasteners shall be installed with the head in contact with the face of the board.
- 5.2.5 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.
- 5.2.6 All provisions of the International Residential Code (IRC) simplified bracing method shall be met when using **Table 1**, where **Table 1** replaces IRC Table R602.12.4.

Table 1. Simplified Bracing Amounts for Use With the International Residential Code (IRC)^{1,2,3,4,5}

Ultimate Design Wind Speed (mph)	Story Level	Eave to Ridge Height (ft)	Minimum Number of Bracing Units Required (Long Side) ⁶						Minimum Number of Bracing Units Required (Short Side) ⁶					
			Length of Short Side						Length of Long Side					
			10	20	30	40	50	60	10	20	30	40	50	60
115	One Story or Top of Two or Three Story	10	3	4	7	8	11	12	3	4	7	8	11	12
	First of Two Story or Second of Three Story		5	9	12	16	19	23	5	9	12	16	19	23
	First of Three Story		7	13	18	23	28	33	7	13	18	23	28	33
	One Story or Top of Two or Three Story	15	4	5	9	10	14	16	4	5	9	10	14	16
	First of Two Story or Second of Three Story		6	10	14	18	22	26	6	10	14	18	22	26
	First of Three Story		8	14	20	25	31	36	8	14	20	25	31	36
130	One Story or Top of Two or Three Story	10	3	6	8	11	13	15	3	6	8	11	13	15
	First of Two Story or Second of Three Story		6	11	16	20	25	29	6	11	16	20	25	29
	First of Three Story		9	16	23	29	36	43	9	16	23	29	36	43
	One Story or Top of Two or Three Story	15	4	8	10	14	17	20	4	8	10	14	17	20
	First of Two Story or Second of Three Story		7	13	18	23	29	33	7	13	18	23	29	33
	First of Three Story		10	18	25	32	40	47	10	18	25	32	40	47

SI: 1 in = 25.4 mm, 1 mph = 1.61 km/h

1. This simplified bracing table is based on the provisions of [IRC Section R602.12](#). All provisions therein shall be observed, except that this table shall replace [IRC Table R602.12.4](#), and C-SIPs shall replace specified wall assembly.
2. Interpolation shall not be permitted.
3. Cripple walls or wood-framed basement walls in a walk-out condition shall be designated as the first story, and the stories above shall be re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of ten (10) when using this table.
5. For Exposure Category C, multiply bracing units by a factor of 1.20 for a one-story building, 1.30 for a two-story building, and 1.40 for a three-story building.
6. A bracing unit is one nominal 24" wide panel.

5.3 Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line

- 5.3.1 C-SIPs may be used on braced wall lines as an equivalent alternative to the IRC Method WSP and Method CS-WSP, when installed in accordance with [IRC Section R602.10](#) and this report.
- 5.3.2 For wind design, required braced wall panel lengths for C-SIPs shall be as shown in **Table 2** and shall be used in conjunction with [IRC Table R602.10.3\(2\)](#), which provides the required adjustments.

Table 2. Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line-Wind Design^{1,2,3,4,5}

Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line											
		Intermittent Sheathing						Continuous Sheathing					
		Ultimate Design Wind Speed											
		< 95 mph	≤110 mph	≤115 mph	≤120 mph	≤130 mph	<140 mph	< 95 mph	≤110 mph	≤115 mph	≤120 mph	≤130 mph	<140 mph
One Story or the Top of Two or Three Stories	10	3.3	4.4	4.4	5.6	5.6	6.7	3.3	3.3	4.4	4.4	5.6	5.6
	20	5.6	7.8	7.8	8.9	11.1	12.2	5.6	6.7	7.8	7.8	8.9	11.1
	30	8.9	11.1	12.2	13.3	15.6	17.8	7.8	10.0	10.0	11.1	13.3	15.6
	40	11.1	14.4	15.6	17.8	20.0	23.3	8.9	12.2	13.3	14.4	16.7	20.0
	50	13.3	17.8	20.0	21.1	24.4	28.9	11.1	15.6	16.7	17.8	21.1	24.4
	60	15.6	21.1	23.3	25.6	28.9	33.3	13.3	17.8	20.0	21.1	24.4	28.9
First Story of Two Stories or Second Story of Three Stories	10	6.7	7.8	8.9	10.0	11.1	13.3	5.6	6.7	7.8	7.8	10.0	11.1
	20	11.1	14.4	16.7	17.8	21.1	24.4	10.0	12.2	14.4	15.6	17.8	20.0
	30	15.6	21.1	23.3	25.6	30.0	34.4	13.3	17.8	20.0	21.1	25.6	28.9
	40	21.1	27.8	30.0	33.3	38.9	44.4	17.8	23.3	25.6	27.8	34.4	37.8
	50	25.6	34.4	36.7	40.0	47.8	54.4	22.2	28.9	31.1	34.4	40.0	46.7
	60	30.0	40.0	44.4	47.8	55.6	64.4	25.6	34.4	37.8	41.1	47.8	55.6
First Story of Three Stories	10	8.9	12.2	13.3	14.4	16.7	18.9	7.8	10.0	11.1	12.2	14.4	16.7
	20	16.7	22.2	24.4	25.6	30.0	35.6	14.4	18.9	20.0	22.2	25.6	30.0
	30	23.3	31.1	34.4	37.8	43.3	51.1	20.0	26.7	28.9	32.2	37.8	43.3
	40	30.0	41.1	44.4	48.9	56.7	65.6	25.6	34.4	37.8	41.1	48.9	55.6
	50	37.8	50.0	54.4	60.0	70.0	81.1	32.2	42.2	46.7	51.1	58.9	68.9
	60	44.4	58.9	64.4	71.1	83.3	95.6	37.8	51.1	55.6	60.0	70.0	81.1
SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h													
1. Linear interpolation is permitted.													
2. C-SIPs constructed as described in Section 4 and the manufacturer installation instructions.													
3. Demonstrates equivalency to IRC Table R602.10.3(1) . All adjustment factors from IRC Table R602.10.3(2) shall be applied.													
4. Wind speeds are V_{ult} in accordance with ASCE 7-22. Convert to equivalent V_{asd} wind speed per IBC Section 1609.3.1 .													
5. Bracing lengths based on assemblies fastened at the top and bottom with fasteners 6" o.c.													

5.4 Required Bracing Lengths for C-SIP (Method WSP and CS-WSP) – Seismic

- 5.4.1 For seismic design, required braced wall panel lengths for C-SIPs shall be as shown in Table 3 and shall be used in conjunction with [IRC Table R602.10.3\(4\)](#), which provides the required adjustments.

Table 3. Required Bracing Lengths for C-SIPs (Method WSP and CS-WSP) – Seismic^{1,2,3,4}

Condition	Braced Wall Line Spacing (ft)	Minimum Total Length (ft) of Braced Wall Panels Required Along Each Braced Wall Line							
		Intermittent Sheathing				Continuous Sheathing			
		Seismic Design Category (SDC)							
		C	D ₀	D ₁	D ₂	C	D ₀	D ₁	D ₂
One Story or the Top of Two or Three Stories	10	3.7	3.9	4.4	5.5	3.1	3.7	3.8	4.7
	20	7.1	8.0	8.9	11.1	6.0	6.8	7.6	9.6
	30	10.7	12.0	13.3	16.8	9.2	10.2	11.3	14.1
	40	14.1	16.0	17.8	22.2	12.0	13.6	15.2	18.8
	50	17.8	19.9	22.2	27.7	15.2	17.0	18.8	23.6
First Story of Two Stories or Second Story of Three Stories	10	6.7	8.4	9.9	12.3	5.8	7.1	8.4	10.5
	20	13.3	16.8	19.9	24.3	11.3	14.1	17.0	20.9
	30	19.9	25.1	30.0	36.6	17.0	21.3	25.6	31.1
	40	26.7	33.2	40.0	48.9	22.7	28.4	34.0	41.6
	50	33.2	41.8	50.0	61.1	28.4	35.6	42.4	52.0
First Story of Three Stories	10	9.9	11.8	13.3	NP	8.4	9.9	11.3	NP
	20	19.9	23.3	26.7	NP	17.0	19.9	22.7	NP
	30	30.0	35.1	40.0	NP	25.6	29.8	34.0	NP
	40	40.0	46.6	53.3	NP	34.0	39.8	45.3	NP
	50	50.0	58.4	66.7	NP	42.4	49.5	56.7	NP

SI: 1 in. = 25.4 mm, 1 mph = 1.61 km/h

- Linear interpolation is permitted.
- C-SIPs constructed as described in **Section 4** and the manufacturer installation instructions.
- Demonstrates equivalency to [IRC Table R602.10.3\(3\)](#). All adjustment factors from [IRC Table R602.10.3\(4\)](#) shall be applied.
- Bracing lengths based on assemblies fastened at the top and bottom with fasteners 6" o.c.

5.5 C-SIP Equivalency Factor to IRC Wall Bracing Provisions

- 5.5.1 **Table 4** provides an equivalency factor that can be used to adjust the IRC bracing tables for use with the C-SIPs.
- 5.5.2 Multiply the bracing lengths derived from [IRC Table R602.10.3\(1\)](#) and [IRC Table R602.10.3\(3\)](#), including all adjustments found in [IRC Table R602.10.3\(2\)](#) and [IRC Table R602.10.3\(4\)](#), respectively.
- 5.5.3 All other IRC prescriptive bracing minimums, spacing requirements and rules must still be met.

Table 4. C-SIP Equivalency Factor to IRC Wall Bracing Provisions^{1,2,3}

Product	Maximum Stud Spacing (in)	Fastener	Maximum Fastener Spacing (in)		Wind Minimum SPF Structural Member Equivalency Factors to IRC WSP or CS-WSP
			Top/Bottom - Square Tube/Arch Steel Connection	Fiber Cement Board to Steel Frame	
96 mm C-SIP	24 o.c.	#12 24x2" Self-Tapping Screws	6" o.c.	Arch Steel: 12" o.c	2.22
			3" o.c.	Male/Female: 24" o.c.	2.06
SI: 1 in = 25.4 mm					
1. C-SIPs tested equivalency factors allow the user to determine the length of bracing required, by multiplying the factor by the length of bracing shown in the WSP or CS WSP columns in IRC Table R602.10.3(1) and IRC Table R602.10.3(3) , as modified by all applicable factors in IRC Table R602.10.3(2) and IRC Table R602.10.3(4) , respectively.					
2. Bracing lengths based on assemblies fastened at the top and bottom with fasteners 6" o.c.					

5.6 Transverse Load Resistance

- 5.6.1 The maximum allowable transverse load resistance capacities for various deflection limits and product thicknesses are shown in **Table 5**.

Table 5. Allowable Transverse Load (psf) at Various Deflection Limits for C-SIP Structural Members

Product	Max. Allow. Load (psf)	L/180	L/240	L/360	L/480
96 mm C-SIP	40	40	40	25	20
146 mm C-SIP	85	85	85	70	55
SI: 1 in = 25.4 mm, 1 ft. = 30.48 cm, 1 psi = 0.00689 MPa, 1 psf = 0.993 Mpa					

5.7 Basic Wind Speed (mph) for C-SIP Used in Exterior Sheathed Assemblies

- 5.7.1 The maximum basic wind speed for C-SIPs for various deflection limits used in wall applications are shown in **Table 6**.

Table 6. Maximum Basic Wind Speed (V_{ult}) for C-SIP for Various Deflection Limits Used in Wall Applications^{1,2}

Product	Max. Allow. Wind Speed (mph)	L/180	L/240	L/360	L/480
96 mm MCSW	165	165	160	135	120
146 mm MCSW	200	200	200	200	200
1. Wind speeds are V_{ult} per ASCE 7-22. 2. Allowable wind speeds are based on the following: Components and Cladding wind loads, Zone 5, mean roof height 30', Exposure B, 10 sq. ft. effective wind area. See the applicable building code for any adjustment needed for specific building location and configuration.					

5.8 C-SIP Design Properties

- 5.8.1 Whenever a building design involving C-SIP is outside of the prescriptive conditions, which are the tabulated resistance properties found in **Table 2** through **Table 6**, a professional engineer shall use **Table 7** for calculations, where required by statute in the jurisdiction where the building is located.

Table 7. Allowable Design Properties¹

Product	F _b (psi)	F _t (psi)	F _c (psi)	EI (lb-in ²)	MOE (psi)	Nominal I _{xx} (in ⁴)	Nominal S _x (in ³)
96 mm MCSW	275	10	110	21,900	1,590,000	54.0	28.6
146 mm MCSW	255	10	115	64,900	1,340,000	189.9	66.1

1. Allowable design properties based on a 12" wide section.

- 5.9 Where the application falls outside of the performance evaluation, conditions of use and/or installation requirements set forth herein, alternative techniques shall be permitted in accordance with accepted engineering practice and experience. This includes but is not limited to the following areas of engineering: mechanics or materials, structural, building science, and fire science.

6 Installation

- 6.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.
- 6.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.
- 6.3 *Installation Procedure*
- 6.3.1 Wall sections shall be connected in accordance with **Section 4** of this TER and the manufacturer installation instructions.
- 6.3.2 Wall sections arrive pre-assembled. Panel-to-panel connections and panel-to-top and bottom rail members are completed onsite.

7 Substantiating Data

- 7.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:
- 7.1.1 Transverse wind load resistance in accordance with ASTM E330
- 7.1.2 Lateral load resistance in accordance with ASTM E2126
- 7.1.3 Compression and tension load resistance in accordance with ASTM E72
- 7.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 7.3 Where pertinent, testing and/or engineering analysis is based upon provisions that have been codified into law through state or local adoption of codes and standards. The developers of these codes and standards are responsible for the reliability of published content. DrJ's engineering practice may use a code-adopted provision as the control sample. A control sample versus a test sample establishes a product as being equivalent to the code-adopted provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

- 7.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports from approved agencies, and research reports prepared by approved agencies and/or approved sources provided by the suppliers of products, materials, designs, assemblies, and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this report, may be dependent upon published design properties by others.
- 7.5 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.¹⁰
- 7.6 Where additional condition of use and/or code compliance information is required, please search for C-SIP on the DrJ Certification website.

8 Findings

- 8.1 As outlined in **Section 3**, C-SIP has performance characteristics that were tested and/or meet applicable standards and are suitable for use pursuant to its specified purpose.
- 8.2 When used and installed in accordance with this report and the manufacturer installation instructions, C-SIP shall be approved for the following applications:
- 8.2.1 Use in wall constructions in accordance with code requirements this report.
- 8.3 Unless exempt by state statute, when C-SIP is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 8.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from CSP Homes, Inc.
- 8.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10¹¹ are similar) in pertinent part states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code. Where the alternative material, design or method of construction is not approved, the building official shall respond in writing, stating the reasons the alternative was not approved.

- 8.6 **Approved:**¹² Building codes require that the building official shall accept duly authenticated reports¹³ or research reports¹⁴ from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.
- 8.6.1 Acceptance of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).
- 8.6.2 Acceptance of a licensed RDP, by a building official, is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.

¹⁰ See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.

¹¹ 2018 IBC Section 104.9

¹² Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

¹³ <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

¹⁴ <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

- 8.6.3 Federal law, Title 18 US Code Section 242, requires that where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved, as denial without written reason deprives a protected right to free and fair competition in the marketplace.
- 8.7 DrJ is an engineering company, employs RDPs and is an ISO/IEC 17065 ANAB-Accredited Product Certification Body – Accreditation #1131.
- 8.8 Through ANAB accreditation and the IAF Multilateral Agreements, this report can be used to obtain product approval in any jurisdiction or country that has IAF MLA Members and Signatories to meet the Purpose of the MLA – “*certified once, accepted everywhere.*” IAF specifically says, “*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.*”¹⁵

9 Conditions of Use

- 9.1 Material properties shall not fall outside the boundaries defined in **Section 3**.
- 9.2 As defined in **Section 3**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.
- 9.3 When required by adopted legislation and enforced by the building official, also known as the Authority Having Jurisdiction (AHJ) in which the project is to be constructed:
- 9.3.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice, and, when prepared by an approved source, shall be approved when signed and sealed.
- 9.3.2 This report and the installation instructions shall be submitted at the time of permit application.
- 9.3.3 This innovative product has an internal quality control program and a third-party quality assurance program.
- 9.3.4 At a minimum, this innovative product shall be installed per **Section 6** of this report.
- 9.3.5 The review of this report by the AHJ shall be in compliance with IBC Section 104 and IBC Section 105.4.
- 9.3.6 This innovative product has an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.
- 9.3.7 The application of this innovative product in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.
- 9.4 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, “*the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11”*, all of IBC Section 104, and IBC Section 105.4.
- 9.5 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).
- 9.6 The actual design, suitability, and use of this report, for any particular building, is the responsibility of the owner or the authorized agent of the owner.

¹⁵ <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>

10 Identification

- 10.1 The innovative product listed in **Section 1.1** is identified by a label on the board or packaging material bearing the manufacturer name, product name, TER or Listing number, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at www.csp.homes.

11 Review Schedule

- 11.1 This report is subject to periodic review and revision. For the latest version, visit drjcertification.org.
- 11.2 For information on the status of this report, please contact [DrJ Certification](#).

12 Approved for Use Pursuant to U.S. and International Legislation Defined in Appendix A

- 12.1 Concrete Structural Steel Insulated Interlocking Plug-N-Play Panels (C-SIP) are included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This TER/Listing states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.

Appendix A

1 Legislation that Authorizes AHJ Approval

- 1.1 **Fair Competition:** State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies and/or methods of construction that:
 - 1.1.1 Advance Innovation,
 - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
 - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize C-SIP to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
 - 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”
 - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation, and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.
 - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),¹⁶ where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years¹⁷ and/or a \$5,000,000 fine or 3 times the value of¹⁸ the Intellectual Property (IP) and Trade Secrets (TS).
 - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources.
 - 1.2.4 For new materials¹⁹ that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
 - 1.2.5 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design using accepted engineering practice.²⁰
 - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
 - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.²¹

¹⁶ <http://www.drjengineering.org/AppendixC> and <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>.

¹⁷ <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years>

¹⁸ <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>

¹⁹ <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2>

²⁰ IBC 2021, Section 1706.1 Conformance to Standards

²¹ IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

- 1.3 **Approved²² by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards, which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.²³ The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.²⁴
- 1.4 **Approved by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approved by New York City:** The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed²⁵ an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement²⁶ (i.e., ANAB, International Accreditation Forum (IAF), etc.).
- 1.6 **Approved by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by
- 1.6.1 A certification mark or listing of an approved certification agency,
 - 1.6.2 A test report from an approved testing laboratory,
 - 1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or
 - 1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed and sealed by a professional engineer or architect, licensed in Florida.
- 1.7 For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods;
- 1.7.1 A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code;

²² See Section 8 for the distilled building code definition of Approved

²³ Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

²⁴ <https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1>

²⁵ New York City, The Rules of the City of New York, § 101-07 Approved Agencies

²⁶ New York City, The Rules of the City of New York, § 101-07 Approved Agencies

- 1.7.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code;
- 1.7.3 A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code;
- 1.7.4 A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code;
- 1.7.5 A statewide product approval issued by the Florida Building Commission.
- 1.8 The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).
- 1.9 **Approved by Miami-Dade County** (i.e., Notice of Acceptance [NOA]): A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.
- 1.10 **Approved by New Jersey:** Pursuant to the 2018 Building Code of New Jersey in IBC Section 1707.1 General,²⁷ it states: *"In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)"*.²⁸ Furthermore N.J.A.C 5:23-3.7 states: "Municipal approvals of alternative materials, equipment, or methods of construction."
 - 1.10.1 **Approvals:** Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations.
 - 1.10.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.
 - 1.10.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as, but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.
 - 1.10.2 The New Jersey Department of Community Affairs has confirmed that technical evaluation reports, from any accredited entity listed by ANAB, meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide *"reports of engineering findings"*.

²⁷ <https://up.codes/viewer/new-jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1>

²⁸ <https://www.nj.gov/dca/divisions/codes/codereg/ucc.html>

- 1.11 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards:** Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14²⁹ and Part 3280,³⁰ the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:
- 1.11.1 *"All construction methods shall be in conformance with accepted engineering practices"*
- 1.11.2 *"The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur."*
- 1.11.3 *"The design stresses of all materials shall conform to accepted engineering practice."*
- 1.12 **Approval by US, Local, and State Jurisdictions in General:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
- 1.12.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.³¹
- 1.12.2 For innovative alternative products, materials, designs, services and/or methods of construction, in the absence of approved rules or other approved standards ... the building official shall accept duly authenticated reports (i.e., listing and/or research report) from approved agencies with respect to the quality and manner of use of new materials or assemblies.³² A building official approved agency is deemed to be approved via certification from an accreditation body that is listed by the International Accreditation Forum³³ or equivalent.
- 1.12.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.³⁴ An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report certified by a PE, shall be approved.
- 1.13 **Approval by International Jurisdictions:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, assemblies and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:
- 1.13.1 Permit participation of conformity assessment bodies located in the territories of other Members (defined as GATT Countries) under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country,
- 1.13.2 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
- 1.13.3 State that conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.

²⁹ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3282/subpart-A/section-3282.14>

³⁰ <https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280>

³¹ IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials. Adopted law pursuant to IBC model code language 1706.2.

³² IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General. Adopted law pursuant to IBC model code language 1707.1.

³³ Please see the ANAB directory for building official approved agencies.

³⁴ IBC 2021, Section 1706 Design Strengths of Materials, Section 1706.1 Conformance to Standards Adopted law pursuant to IBC model code language 1706.1.

- 1.13.4 **Approved:** The IAF Purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, assemblies and/or methods of construction. Accreditations granted by IAF MLA signatories are recognised (sic) worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

Issue Date: November 20, 2023
Subject to Renewal: January 1, 2025

FBC Supplement to TER 2302-01

REPORT HOLDER: CSP Homes, Inc.

1 Evaluation Subject

- 1.1 Concrete Structural Steel Insulated Interlocking Plug-N-Play Panels (C-SIP)

2 Purpose and Scope

- 2.1 Purpose
 - 2.1.1 The purpose of this Technical Evaluation Report (TER) supplement is to show C-SIP, recognized in this report, have also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.
- 2.2 *Applicable Code Editions*
 - 2.2.1 *FBC-B—20, 23: Florida Building Code – Building (FL 44554)*
 - 2.2.2 *FBC-R—20, 23: Florida Building Code – Residential (FL 44554)*

3 Conclusions

- 3.1 C-SIP, described in this report, complies with the FBC-B and FBC-R and are subject to the conditions of use described in this supplement.
- 3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:
 - 3.2.1 FBC-B Section 104.4 and Section 110.4 are reserved.
 - 3.2.2 FBC-R Section R104, Section R109, Section R602.10 and Section R602.12.4 are reserved.
 - 3.2.3 FBC-B Section 1609.1.1 replaces IBC Section 1609.1.1.
 - 3.2.4 FBC-B Section 1609.3.1 replaces IBC Section 1609.3.1.
 - 3.2.5 FBC-R Section R301.1 replaces IRC Section R301.1.
 - 3.2.6 FBC-R Section R301.2.1 replaces IRC Section R301.2.1.

4 Conditions of Use

- 4.1 C-SIP, described in this report, must comply with all of the following conditions:
 - 4.1.1 All applicable sections in this report.
 - 4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.