Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1709-07

Issue Date: March 30, 2018

Revision Date: June 23, 2025

Subject to Renewal: July 1, 2026

Thermo-Brace® Green Structural Insulated Board (SIB™), Thermo-Brace® Green SIB™ Guard, Perma "R" Brace Green SIB™ and Perma "R" Brace Green SIB™ Guard

Trade Secret Report Holder:

INDEVCO Building Products

PO Box 2002
10351 Verdon Rd
Doswell, VA 23047-1600
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Additional Listees:

Barricade® Building Products
10351 Verdon Rd
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Phone: 804-876-3135
Website: www.barricadebp.com

Perma "R" Building Products
2504 Sunset Loop
Grenada, MS 38901
Phone: 800-647-6130
Website: www.permarproducts.com

CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

Section: 06 12 00 - Structural Panels

Section: 06 12 19 - Shear Wall Panels

Section: 06 16 00 - Sheathing

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

Section: 07 25 00 - Water-Resistive Barriers/Weather Barriers

Section: 07 27 00 - Air Barriers

1 Innovative Products Evaluated[1]

1.1 Thermo-Brace Green SIB

1.2 Thermo-Brace Green SIB Guard

1.3 Perma "R" Brace Green SIB

1.4 Perma "R" Brace Green SIB Guard

1.4.1 Unless otherwise noted, where Thermo-Brace Green SIB is called out, the provisions apply equally to Thermo-Brace Green SIB Guard, Perma "R" Brace Green SIB and Perma "R" Brace Green SIB Guard.

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2 Product Description and Materials

2.1 The innovative products evaluated in this report are shown in **Figure 1** and **Figure 2**.

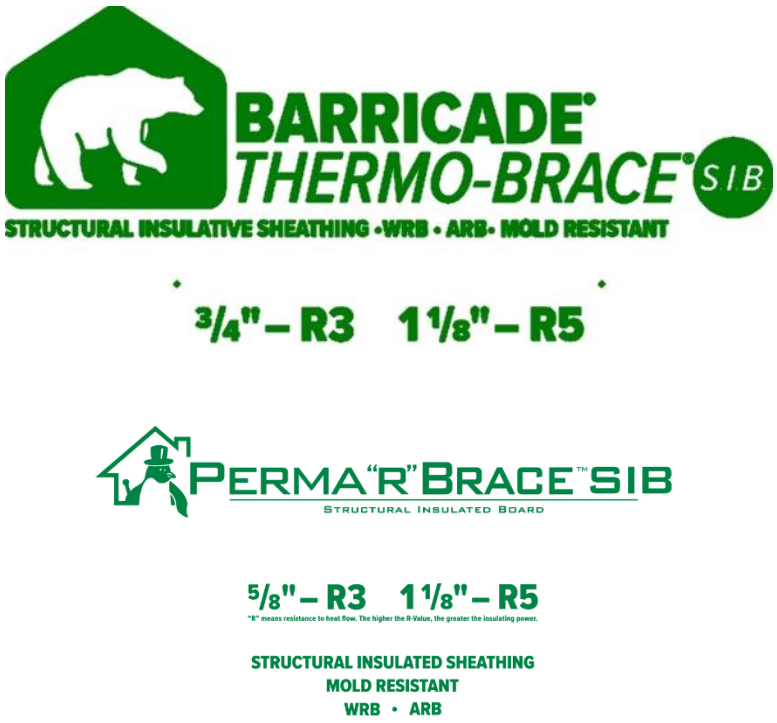

Figure 1. Thermo-Brace Green SIB and Perma "R" Brace Green SIB Product Labels

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PERMA "R" BRACE™ GUARD SIB
STRUCTURAL INSULATED BOARD

Patent Pending

5/8" – R3 1 1/8" – R5
"R" means resistance to heat flow. The higher the R-Value, the greater the insulating power.

STRUCTURAL INSULATED SHEATHING

Figure 2. Thermo-Brace SIB Guard and Perma "R" Brace Green SIB Guard

2.2 As needed, review material properties for design in **Section 6** and the regulatory evaluation in **Section 8**.

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3 Definitions[2]

3.1 New Materials[3] are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.[4] The design strength and permissible stresses shall be established by tests[5] and/or engineering analysis.[6]

3.2 Duly authenticated reports[7] and research reports[8] are test reports and related engineering evaluations that are written by an approved agency[9] and/or an approved source.[10]

3.2.1 These reports utilize intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secretes under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[11]

3.3 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited. DrJ Engineering, LLC (DrJ) is accredited and listed in the ANAB directory.

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[12]

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB[13] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[14] the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing[15] stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.[16]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.[17] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[18] and can be used in any country that is an MLA signatory found at this link: https://iaf.nu/en/recognised-abs/

3.9 Approval equity is a fundamental commercial and legal principle.[19]

4 Applicable Local, State, and Federal Approvals; Standards; Regulations[20]

4.1 *Local, State, and Federal*

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes the following featured local jurisdictions and is not limited to: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, Texas Department of Insurance, and Wichita.[21]

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes the following featured states, and is not limited to: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.[22]

4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[23] and Part 3280[24] pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 *Standards*

4.2.1 *ANSI/AWC SDPWS: Special Design Provisions for Wind and Seismic*

4.2.2 *ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.2.3 *ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

4.2.4 *ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings*

4.2.5 *ASTM E2178: Standard Test Method for Air Permeance of Building Materials*

4.3 *Regulations*

4.3.1 *IBC – 15, 18, 21, 24: International Building Code®*

4.3.2 *IRC – 15, 18, 21, 24: International Residential Code®*

4.3.3 *IECC – 15, 18, 21, 24: International Energy Conservation Code®*

5 Listed[25]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), an approved agency (i.e., CBI and DrJ), and/or and approved source (i.e., DrJ), or other organization(s) concerned with product evaluation (i.e., DrJ), that maintains periodic inspection (i.e., CBI) 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.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 Thermo-Brace Green SIB panels are used in the following applications:

6.1.1 Wall sheathing in buildings constructed in accordance with IBC and IRC provisions for light-frame wood construction.

6.1.2 Structural wall sheathing to provide lateral load resistance (wind) for braced wall panels used in light-frame wood construction.

6.1.3 Wall sheathing in buildings constructed in accordance with IBC requirements for Type V light-frame construction.

6.2 When Thermo-Brace Green SIB panels are installed with an approved construction tape on sheathing seams, they are an approved WRB in accordance with IBC Section 1403.2[26] and IRC Section R703.2. See the manufacturer product information for further details.

6.2.1 Where Thermo-Brace Green SIB joints are not taped, a separate WRB shall be installed in accordance with the WRB manufacturer installation instructions.

6.3 *Structural Applications*

6.3.1 *General Structural Provisions*

6.3.1.1 Except as otherwise described in this report, Thermo-Brace Green SIB shall be installed in accordance with the applicable building codes listed in **Section 4** using the provisions set forth herein for the design and installation of Wood Structural Panels (WSP).

6.3.1.1.1 Thermo-Brace Green SIB is permitted to be used for the design of shear walls in accordance with SDPWS and using the methods set forth therein.

6.3.1.2 Anchorage for in-plane shear force resistance shall be provided to transfer the induced shear force into and out of each shear wall. Shear wall anchorage shall be in accordance with the applicable code referenced in **Section 4**.

6.3.1.3 Except as noted in **Section 6.3.2**, the maximum aspect ratio for Thermo-Brace Green SIB shall be 4:1.

6.3.1.4 Except as noted in **Section 6.3.2**, the minimum full height panel width shall be 24" (610 mm).

6.3.1.5 Installation is permitted for single top plate or double top plate applications.

6.3.2 *Prescriptive IRC Bracing Applications*

6.3.2.1 Thermo-Brace Green SIB may be used on braced wall lines as equivalent to the WSP method when installed in accordance with IRC Section R602.10 and this report.

6.3.2.2 When Thermo-Brace Green SIB satisfies the required bracing lengths on braced wall lines, the use of Neopor® only on the remaining wall line is permitted provided cladding is installed directly in contact with the Neopor and is capable of resisting the full design wind load. Use in this manner also meets the requirements of a WRB when installed in accordance with **Section 6.4**.

6.3.2.3 For wind design, required braced wall panel lengths for Thermo-Brace Green SIB shall be designed as indicated in **Table 1** and **Table 2** of this report and shall be used in conjunction with IRC Table R602.10.3(2), which provides the required adjustments.

6.3.2.4 Thermo-Brace Green SIB may be used to brace the walls of buildings as an alternative to the continuous wall bracing provisions of the CS-WSP method described in IRC Section R602.10.4. Bracing shall be designed in accordance with the bracing amounts shown in **Table 1** and **Table 2**, as adjusted in accordance with IRC Table R602.10.3(2).

6.3.2.5 Where a building, or portion thereof, does not comply with one or more of the bracing requirements within the prescriptive sections of the IRC, those portions shall be designed and constructed in accordance with IRC Section R301.1.

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Table 1. Required Bracing Lengths for Thermo-Brace Green SIB (R3 or R5; FPIS Outward) – Wind[1,2,3,4,5,6]

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, V_{ult} (mph)											
		< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140	< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140
One Story or the Top of Two or Three Stories	10	1.4	1.9	1.9	2.4	2.4	2.9	1.4	1.4	1.9	1.9	2.4	2.4
	20	2.4	3.4	3.4	3.8	4.8	5.3	2.4	2.9	3.4	3.4	3.8	4.8
	30	3.8	4.8	5.3	5.8	6.7	7.7	3.4	4.3	4.3	4.8	5.8	6.7
	40	4.8	6.2	6.7	7.7	8.6	10.1	3.8	5.3	5.8	6.2	7.2	8.6
	50	5.8	7.8	8.6	9.1	10.6	12.5	4.8	6.7	7.2	7.7	9.1	10.6
	60	6.7	9.1	10.1	11.0	12.5	14.4	5.8	7.7	8.3	9.1	10.6	12.5
First Story of Two Stories or Second Story of Three Stories	10	2.9	3.4	3.8	4.3	4.8	5.8	2.4	2.9	3.4	3.4	4.3	4.8
	20	4.8	6.2	7.2	7.7	9.1	10.6	4.3	5.3	6.2	6.7	7.7	8.6
	30	6.7	9.1	10.1	11.0	13.0	14.9	5.8	7.7	8.6	9.1	11.0	12.5
	40	9.1	12.0	13.0	14.4	16.8	19.2	7.7	10.1	11.0	12.0	14.4	16.3
	50	11.0	14.9	15.8	17.3	20.6	23.5	9.6	12.5	13.4	14.9	17.3	20.2
	60	13.0	17.3	19.2	20.6	24.0	27.8	11.0	14.9	16.3	17.8	20.6	24.0
First Story of Three Stories	10	3.8	5.3	5.8	6.2	7.2	8.2	3.4	4.3	4.8	5.3.	6.2	7.2
	20	7.2	9.6	10.6	11.0	13.0	15.4	6.2	8.2	8.6	9.6	11.0	13.0
	30	10.1	13.4	14.9	16.3	18.7	22.1	8.6	11.5	12.5	13.9	16.3	18.7
	40	13.0	17.8	19.2	21.1	24.5	28.3	11.0	14.9	16.3	17.8	21.1	24.0
	50	16.3	21.6	23.5	25.9	30.2	35.0	13.9	18.2	20.2	22.1	25.4	29.8
	60	19.2	25.4	27.8	30.7	36.0	41.3	16.3	22.1	24.0	25.9	30.2	35.0

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

1. Minimum 3/4" thick Thermo-Brace Green SIB to be installed on 2x4 or 2x6 studs spaced 16" o.c. and fastened with staples spaced 3":3" (edge:field) per Section 9.
2. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied, except when used with method CS-PF. When used with CS-PF, a minimum of 1/2" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum of 5d cooler nails or 1 1/4" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
3. Minimum 1/2" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.7.
4. Bracing lengths are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in **Section 4** that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which belongs to the manufacturer of those products or the members of the associations that publish those design values.
5. Bracing lengths are based on the worst-case condition for the product thickness/orientation described.
6. Linear interpolation is permitted.

Table 2. Required Bracing Lengths for Thermo-Brace Green SIB (R3 or R5; FPIS Inward) – Wind[1,2,3,4,5,6]

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, V_{ult} (mph)											
		< 95	≤ 110	≤ 115	≤ 120	≤ 130	≤ 140	< 95	≤ 110	≤ 115	≤ 12	≤ 130	≤ 140
One Story or the Top of Two or Three Stories	10	1.7	2.3	2.3	2.8	2.8	3.4	1.7	1.7	2.3	2.3	2.8	2.8
	20	2.8	4.0	4.0	4.5	5.7	6.2	2.8	3.4	4.0	4.0	4.5	5.7
	30	4.5	5.7	6.2	68	7.9	9.0	4.0	5.1	5.1	5.7	6.8	7.9
	40	5.7	7.3	7.9	9.0	10.2	11.9	4.5	6.2	6.8	7.3	8.5	10.2
	50	6.8	9.0	10.2	10.7	12.4	14.7	5.7	7.9	8.5	9.0	10.7	12.4
	60	7.9	10.7	11.9	13.0	14.7	17.0	6.8	9.0	10.2	10.7	12.4	14.7
First Story of Two Stories or Second Story of Three Stories	10	3.4	4.0	4.5	5.1	5.7	6.8	2.8	3.4	4.0	4.0	5.1	5.7
	20	5.7	7.3	8.5	9.0	10.7	12.4	5.1	6.2	7.3	7.9	9.0	10.2
	30	7.9	10.7	11.9	13.0	15.3	17.5	6.8	9.0	10.2	10.7	13.0	14.7
	40	10.7	14.1	15.3	17.0	19.8	22.6	9.0	11.9	13.0	14.1	17.0	19.2
	50	13.0	17.5	18.6	20.3	24.3	27.7	11.3	14.7	15.8	17.5	20.3	23.7
	60	15.3	20.3	22.6	24.3	28.3	32.8	13.0	17.5	19.2	20.9	24.3	28.3
First Story of Three Stories	10	4.5	6.2	6.8	7.3	8.5	9.6	4.0	5.1	5.7	6.2	7.3	8.5
	20	8.5	11.3	12.4	13.0	15.3	18.1	7.3	9.6	10.2	11.3	13.0	15.3
	30	11.9	15.8	17.5	19.2	22.0	26.0	10.2	13.6	14.7	16.4	19.2	22.0
	40	15.3	20.9	22.6	24.9	28.8	33.3	13.0	17.5	19.2	20.9	24.9	28.3
	50	19.2	25.4	27.7	30.5	35.6	41.2	16.4	21.5	23.7	26.0	29.9	35.0
	60	22.6	29.9	32.8	36.2	42.4	48.6	19.2	26.0	28.3	30.5	25.6	41.2

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

1. Minimum 3/4" thick Thermo-Brace Green SIB to be installed on 2x4 or 2x6 studs spaced 16" o.c. and fastened with staples spaced 3":3" (edge:field) per **Section 9**.
2. Demonstrates equivalency to IRC Table R602.10.3(1). All adjustment factors from IRC Table R602.10.3(2) shall be applied, except when used with method CS-PF. When used with method CS-PF, a minimum of 1/2" gypsum sheathing shall be applied to the interior side of the wall assembly and fastened with a minimum of 5d cooler nails or 1 1/4" #6 types W or S screws spaced 8" o.c. at panel edges and 8" o.c. in the field of the panels.
3. Minimum 1/2" gypsum wallboard must be installed as part of the wall assembly. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.7.
4. Bracing lengths are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in **Section 4** that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which belongs to the manufacturer of those products or the members of the associations that publish those design values.
5. Bracing lengths are based on the worst-case condition for the product thickness/orientation described.
6. Linear interpolation is permitted.

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6.3.3 *Alternative to Prescriptive IRC Bracing Applications*

6.3.3.1 As an alternative to the requirements of **Section 6.3.2**, the following provisions are permitted:

6.3.3.1.1 Thermo-Brace Green SIB may be used on braced wall lines as an equivalent alternative to the WSP method when installed in accordance with IRC Section R602.10 and this report.

6.3.3.1.2 Thermo-Brace Green SIB may be used to brace the walls of buildings as an alternative to the continuous wall bracing provisions of the CS-WSP method described in IRC Section R602.10.4.

6.3.3.1.3 Required braced wall panel lengths for Thermo-Brace Green SIB shall be as determined by the equivalency factors shown in **Table 3**, IRC Table R602.10.3(1), and IRC Table R602.10.3(2), including all footnotes.

6.3.3.1.3.1 Bracing lengths in the IRC tables for the WSP or CS-WSP methods shall be multiplied by the equivalency factors listed in **Table 3** below.

Table 3. Braced Wall Line Length Equivalency Factors[7]

Product[1]	Sheathing Direction[2]	Fastener[8]	Fastener Spacing (edge:field) (in)	Stud Spacing[3] (in)	Equivalency Factors[3,4,5,6] to IRC WSP or CS-WSP
Thermo-Brace Green SIB R3	FPIS Outward	15/16" Crown x 1 3/4" Leg 16-gauge Staples	3:3	16 o.c.	0.92
	FPIS Inward	1 3/4" x 11-gauge Smooth Shank Roofing Nail	3:3	16 o.c.	1.09
Thermo-Brace Green SIB R5	FPIS Outward	15/16" Crown x 2" Leg 16-gauge Staples	3:3	16 o.c.	0.96
	FPIS Inward	1 3/4" x 11-gauge Ring Shank Roofing Nail	3:3	16 o.c.	1.13

SI: 1 in = 25.4 mm

1. Thermo-Brace Green SIB to be a minimum 3/4" thickness installed with staples or nails per **Section 9**.
2. Where the FPIS faces outward, fasteners may be countersunk beneath the surface of Thermo-Brace. Where the FPIS faces inward, fasteners shall be driven flush with the face of Thermo-Brace.
3. Factors based on SPF framing materials.
4. Multiply the bracing lengths indicated for the WSP or CS-WSP continuous sheathing methods in IRC Table R602.10.3(1) and Table R602.10.3(3), and as modified by all applicable factors in IRC Table 602.10.3(2) and Table R602.10.3(4), respectively, by the factors shown here to establish the required bracing length.
5. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths shall be multiplied by a factor of 1.9.
6. These equivalency factors are valid for single top plate (advanced framing method) wall installations or double top plate wall installations.
7. Equivalency factors are the results of comparative equivalency testing and analysis using both tested and published design values as points of comparison. DrJ relies upon the design values published in the codes and standards listed in **Section 4** that are adopted into law and that the manufacturers of those products stand behind. DrJ performs all equivalency analysis based on legally defined design values, the responsibility for which belongs to the manufacturer of those products or the members of the associations that publish those design values.
8. Fasteners are minimum sizes.

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6.3.3.1.3.2 These braced wall line length equivalency factors are based on equivalency testing and are used to comply with the IRC WSP and CS-WSP methods.

6.3.3.1.3.3 The length of bracing required shall be determined by multiplying the Thermo-Brace Green SIB tested equivalency factors in **Table 4** of this report by the length indicated for the WSP or CS-WSP methods in IRC Table R602.10.3(1) and as modified by all applicable factors in IRC Table R602.10.3(2).

6.3.3.1.4 All IRC prescriptive bracing minimums, spacing requirements, and rules must still be met.

6.3.4 *Prescriptive IBC Conventional Light-Frame Wood Construction*

6.3.4.1 Thermo-Brace Green SIB may be used to brace exterior walls of buildings as an equivalent alternative to Method WSP of the IBC when installed with 1/2" gypsum in accordance with the conventional light-frame construction method of IBC Section 2308.10[27] and this report.

6.3.5 *Performance-Based Wood-Framed Construction*

6.3.5.1 Thermo-Brace Green SIB panels used in wall assemblies designed as shear walls are permitted to be designed in accordance with the methodology used in SDPWS for WSP using the capacities shown in **Table 4**.

6.3.5.2 Thermo-Brace Green SIB shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 4**.

Table 4. Allowable Stress Design (ASD) Capacity – Wind

Product	Sheathing Direction	Fastener[1,3]	Maximum Fastener Spacing (edge:field) (in)	Maximum Stud Spacing (in)	Gypsum Wallboard (GWB)	GWB Fastener[2] Spacing (edge:field) (in)	Allowable Unit Shear Capacity (plf)
Thermo-Brace Green SIB R3	FPIS Outward	15/16" Crown x 1 3/4" Leg 16-gauge Staple	3:3	16 o.c.	None	-	290
					1/2"	8:8	450
	FPIS Inward	1 3/4" x 11-gauge (0.120" dia.) Smooth Shank Roofing Nail	3:3	16 o.c.	None	-	235
					1/2"	8:8	415
Thermo-Brace Green SIB R5	FPIS Outward	15/16" Crown x 2" Leg 16-gauge Staple	3:3	16 o.c.	None	-	285
					1/2"	8:8	470
	FPIS Inward	1 3/4" x 11-gauge (0.120" dia.) Ring Shank Roofing Nail	3:3	16 o.c.	None	-	225
					1/2"	8:8	405

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m

1. Fasteners are to be installed with the crown parallel to the framing. Fastener edge distance shall be a minimum of 3/8". Set fastener depth on driving tools to the maximum depth.
2. Gypsum wallboard attached with minimum #6 type W or S screws 1 1/4" long.
3. Fasteners are minimum sizes.

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6.4 *Water-Resistive Barrier*

6.4.1 Thermo-Brace Green SIB may be used as a WRB in accordance with ASTM E331 and as prescribed in IBC Section 1403.2 and IRC Section R703.2, when installed on exterior walls as described in this section.

6.4.2 Thermo-Brace Green SIB installed with the Neopor FPIS facing inward or outward is approved as a WRB provided the following conditions be met:

6.4.2.1 All board joints are placed directly over exterior framing spaced a maximum of 16" o.c. (406 mm). The fasteners used to attach the board shall be installed in accordance with **Section 9**.

6.4.2.2 All seams and joints between boards shall be covered by Barricade® Seam Tape or equivalent, after fasteners have been installed.

6.4.2.3 Flashing must be installed at all sheathing penetrations and shall comply with all applicable code sections.

6.4.3 When Thermo-Brace Green SIB is used as intermittent bracing, Neopor FPIS alone, which has been properly qualified as a WRB, is permitted to be used on the remaining portions of the braced wall line with all joints taped in accordance with the Neopor FPIS manufacturer installation instructions.

6.4.3.1 Where the Neopor has not been qualified as a WRB, a separate WRB shall be installed.

6.5 *Air Barrier*

6.5.1 Thermo-Brace Green SIB may be used as an air barrier material as prescribed in IRC Section N1102.5.1.1,[28] IECC Section R402.5.1.1,[29] and IECC Section C402.6.1[30] in accordance with ASTM E2178.

6.6 *Minimum Fastening Requirements for Non-Structural Applications*

6.6.1 Where other means of wall bracing are provided or are not required, any grade of Thermo-Brace SIB may be used to provide other wall functions when installed in accordance with this section.

6.6.1.1 The sheathing panels shall be applied to wall framing with 16-gauge, galvanized staples having a minimum $^{15}/_{16}$" crown. Staples for the R3 panels shall be minimum $1^{3}/_{4}$" leg length. Staples for R5 panels shall be minimum 2" in length.

6.6.1.2 Fastener spacing shall be a maximum of 3" o.c in the field and 3" o.c. around the perimeter.

6.6.1.3 Stud spacing shall be a maximum of 16" o.c. (406 mm).

6.6.1.4 Minimum fastener penetration into the framing members shall be 1" for the R3 product and $^{3}/_{4}$" for the R5 product.

6.6.1.5 All staples shall be fastened parallel to the framing member with a minimum edge spacing of $^{3}/_{8}$" (9.5 mm).

6.6.1.6 All panels are vertically or horizontally installed with all joints backed by studs, plates, or blocks when water or air barrier functionality is desired.

6.7 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.

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7 Certified Performance[31]

7.1 All construction methods shall conform to accepted engineering practices to ensure durable, livable, and safe construction and shall demonstrate acceptable workmanship reflecting journeyman quality of work of the various trades.[32]

7.2 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.[33]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 Thermo-Brace Green SIBs comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 Structural performance for shear wall assemblies used as lateral force resisting systems in Seismic Design Categories A through F, have been tested and evaluated in accordance with the following standards:

8.1.1.1 ASCE/SEI 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures

8.1.1.2 ASTM D7989: Standard Practice for Demonstrating Equivalent In-Plane Lateral Seismic Performance to Wood-Frame Shear Walls Sheathed with Wood Structural Panels

8.1.1.3 ASTM E72: Standard Test Methods of Conducting Strength Tests of Panels for Building Construction

8.1.1.4 ASTM E564: Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings

8.1.1.5 ASTM E2126: Standard Test Methods for Cyclic (Reversed) Load Test for Shear Resistance of Vertical Elements of the Lateral Force Resisting Systems for Buildings

8.1.2 Lateral force resisting systems for use in both wind and seismic applications follow the performance-based provisions of IBC Section 2306.1, IBC Section 2306.3, and/or Section 4.3 SDPWS for light-frame wood wall assemblies.

8.2 Thermo-Brace Green SIB has been evaluated to determine the following:

8.2.1 Structural performance under lateral load conditions (wind) for use as an alternative to the intermittent wall bracing provisions of IRC Section R602.10 Method WSP (Wood Structural Panel) and the continuous wall bracing provisions of IRC Section R602.10.4 Methods CS-WSP (Continuously Sheathed Wood Structural Panel) and CS-PF (Continuously Sheathed Portal Frame).

8.2.2 Structural performance under lateral load conditions (wind) for use as an alternative to the conventional wall bracing provisions of IBC Section 2308.10,[34] Method WSP for Type V construction.

8.2.3 Structural performance under lateral load conditions (wind) for use under the performance-based provisions of IBC Section 2306.1 and IBC Section 2306.3 for light-frame wood wall assemblies.

8.2.4 Structural performance under lateral load conditions (wind) for use as an alternative to SDPWS Section 4.3 Wood-Frame Shear Walls.

8.2.5 Performance for use as foam plastic insulation in accordance with IBC Section 2603 and IRC Section R303.[35]

8.2.6 Performance for use as a WRB in accordance with IBC Section 1403.2 and IRC Section R703.2.

8.2.7 Performance as an air barrier material in accordance with IRC Section N1102.5.1.1,[36] IECC Section R402.5.1.1,[37] and IECC Section C402.6.1.1.[38]

8.3 The use of Thermo-Brace Green SIB on steel studs is outside the scope of this report.

8.4 Performance with regard to thermal resistance (R-value) is outside the scope of this report.

8.5 The use of Thermo-Brace Green SIB in a fire resistance rated assembly is outside the scope of this report.

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8.6 Any building code, regulation and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[39] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[40] respectively.

8.7 Engineering evaluations are conducted with DrJ's ANAB accredited ICS code scope of expertise, which is also its areas of professional engineering competence.

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

9 Installation

9.1 Installation shall comply with the approved construction documents, the manufacturer installation instructions, this report, and the applicable building code.

9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9.3 *Orientation*

9.3.1 Thermo-Brace Green SIB and Perma "R" Brace Green SIB shall be installed in either the vertical or the horizontal orientation. To be recognized for the structural values listed in this report, all joints must be fastened and backed by studs, plates or blocks.

9.3.2 Thermo-Brace Green SIB Guard and Perma "R" Brace Green SIB Guard must be installed vertically, centered on the corner of the building. To be recognized as a water barrier, all joints must be backed by studs, plates, or blocks, and fastened in accordance with **Section 6.4**.

9.4 *Fastener Type*

9.4.1 *Staples for Installation with FPIS Facing Outward*

9.4.1.1 For R3 Thermo-Brace Green SIB, minimum $^{15}/_{16}$" crown by $1^{3}/_{4}$" leg, 16-gauge galvanized staples shall be installed per the staple manufacturer instructions.

9.4.1.2 For R5 Thermo-Brace Green SIB, minimum $^{15}/_{16}$" crown by 2" leg, 16-gauge galvanized staples shall be installed per the staple manufacturer instructions.

9.4.1.3 Fasteners shall be driven such that the head of the fasteners slightly overdriven beneath the surface of the Thermo-Brace Green SIB.

9.4.2 *Nails for Installation with FPIS Facing Inward*

9.4.2.1 For R3 Thermo-Brace Green SIB, minimum $1^{3}/_{4}$" x 11-gauge smooth shank roofing nails shall be installed per the nail manufacturer instructions.

9.4.2.2 For R5 Thermo-Brace Green SIB, minimum $1^{3}/_{4}$" x 11-gauge ring shank roofing nails shall be installed per the nail manufacturer instructions.

9.4.2.3 Fasteners shall be driven so that the head of the fasteners are flush with the surface of the Thermo-Brace Green SIB. Do not overdrive fasteners.

9.4.3 *Gypsum Wallboard*

9.4.3.1 Where required, interior gypsum wallboard shall be a minimum $^{1}/_{2}$" thickness and shall be attached, at a minimum, with one of the following:

9.4.3.1.1 #6 x $1^{1}/_{4}$" type W or S screws

9.4.3.1.2 5d cooler nails

9.5 *Fastener Edge Distance*

9.5.1 Fasteners shall be installed with a nominal edge distance of $^{3}/_{8}$" (9.5 mm) for Thermo-Brace Green SIB and gypsum.

9.6 *Treatment of Joints*

9.6.1 Thermo-Brace Green SIB joints must be butted.

9.6.1.1 Butt joints shall be placed over framing members and fastened with a single row of fasteners at each panel edge.

9.6.1.2 When used as a WRB with the Neopor FPIS installed facing inward, seal all seams with Barricade Seam Tape or equivalent after all fasteners have been installed.

9.6.1.3 When installed with the Neopor FPIS facing outward, the Neopor FPIS shall be qualified as a WRB and all seams shall be sealed with an approved tape in accordance with the Neopor FPIS manufacturer installation instructions for use as a WRB. Alternately, a separate WRB may be installed.

9.6.2 Thermo-Brace Green SIB must be installed with appropriate flashing and counter-flashing, in conformance with accepted building standards and in compliance with local building codes and the flashing manufacturer installation instructions.

10 Substantiating Data

10.1 Testing has been performed under the supervision of a professional engineer and/or under the requirements of ISO/IEC 17025 as follows:

10.1.1 Lateral load testing in accordance with ASTM E564.

10.1.2 WRB testing in accordance with ASTM E331.

10.1.3 Air barrier material testing in accordance with ASTM E2178.

10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.

10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

10.4 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, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.

10.5 *Testing and Engineering Analysis*

10.5.1 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.[41]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for Thermo-Brace Green SIB on the DrJ Certification website.

11 Findings

11.1 As outlined in **Section 6**, Thermo-Brace Green SIBs have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Thermo-Brace Green SIB shall be approved for the following applications:

11.2.1 Lateral load resistance due to wind loads carried by shear walls

11.2.2 Performance of foam plastics in accordance with IBC Section 2603 and IRC Section R303.[42]

11.2.3 Performance for use as a WRB in accordance with IBC Section 1403.2 and IRC Section R703.2.

11.2.4 Performance for use as an air barrier material as prescribed in IRC Section N1102.5.1.1,[43] IECC Section R402.5.1.1,[44] and IECC Section C402.6.1.1,[45] in accordance with ASTM E2178.

11.3 Unless exempt by state statute, when Thermo-Brace Green SIBs are 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.

11.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from INDEVCO Building Products.

11.5 IBC Section 104.2.3[46] (IRC Section R104.2.2[47] and IFC Section 104.2.3[48] are similar) in pertinent part state:

> **104.2.3 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, provided that any such alternative is not specifically prohibited by this code and has been approved.

11.6 **Approved:**[49] Building regulations require that the building official shall accept duly authenticated reports.[50]

11.6.1 An approved agency is *"approved"* when it is ANAB ISO/IEC 17065 accredited.

11.6.2 An approved source is *"approved"* when an RDP is properly licensed to transact engineering commerce.

11.6.3 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. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

11.7 DrJ is a licensed engineering company, employs licensed RDPs and is an ANAB Accredited Product Certification Body – Accreditation #1131.

11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.[51]

12 Conditions of Use

12.1 Material properties shall not fall outside the boundaries defined in **Section 6**.

12.2 As defined in **Section 6**, 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.

12.3 As listed herein, Thermo-Brace Green SIB shall not be used:

12.3.1 As a nailing base for claddings, trim, windows, or doors. Fastening through the Thermo-Brace Green SIB into the framing is acceptable.

12.3.2 To resist horizontal loads from concrete and masonry walls.

12.4 When used as part of a continuous air barrier assembly, all sheathing panel edges at the top and bottom of the wall assemblies and all joints between sheathing panels shall be sealed with an approved construction tape.

12.5 When Thermo-Brace Green SIB is installed as a wall sheathing but is not installed per structural requirements, light-framed walls shall be braced by other means. When used as a WRB, installation shall be in accordance with **Section 6.4**.

12.5.1 When Thermo-Brace Green SIB is not installed as a WRB, other means of providing a WRB are code required.

12.6 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:

12.6.1 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.

12.6.2 This report and the installation instructions shall be submitted at the time of permit application.

12.6.3 These innovative products have an internal quality control program and a third-party quality assurance program.

12.6.4 At a minimum, these innovative products shall be installed per **Section 9**.

12.6.5 The review of this report by the AHJ shall comply with IBC Section 104.2.3.2 and IBC Section 105.3.1.

12.6.6 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.

12.6.7 The application of these innovative products 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.

12.7 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or 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 Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.

12.8 Design loads shall be determined in accordance with the regulations adopted by the jurisdiction in which the project is to be constructed and/or by the building designer (i.e., owner or RDP).

12.9 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.

13 Identification

13.1 The innovative products listed in **Section 1.1** are identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.

13.2 Additional technical information can be found at www.indevconorthamerica.com.

14 Review Schedule

14.1 This report is subject to periodic review and revision. For the latest version, visit www.drjcertification.org.

14.2 For information on the status of this report, please contact DrJ Certification.

Notes

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

2 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

3 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1702

4 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

5 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

6 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

7 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

8 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4.2

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

10 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source

11 https://www.law.cornell.edu/uscode/text/18/1832 (b) 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. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

12 https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional AND https://apassociation.org/list-of-engineering-boards-in-each-state-archive/

13 https://www.cbitest.com/accreditation/

14 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.1:~:text=directed%20to%20enforce%20the%20provisions%20of%20this%20code

15 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

16 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

17 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

18 True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

19 https://www.justice.gov/crt/deprivation-rights-under-color-law AND https://www.justice.gov/atr/mission

20 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

21 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by the local jurisdiction. https://up.codes/codes/general

22 See Adoptions by Publisher for the latest adoption of a non-amended or amended model code by state. https://up.codes/codes/general

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

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

25 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

26 2015 IBC Section 1404.2

27 2021 IBC Section 2308.6

28 2021 IRC Section N1102.4.1.1

29 2021 IECC Section R402.4.1.1

30 2021 IECC Section C402.5.1

31 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1703.4

[32] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=All%20construction%20methods%20shall%20be%20in%20conformance%20with%20accepted%20engineering%20practices%20to%20insure%20durable%2C%20livable%2C%20and%20safe%20housing%20and%20shall%20demonstrate%20acceptable%20workmanship%20reflecting%20journeyman%20quality%20of%20work%20of%20the%20various%20trades

[33] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#:~:text=The%20strength%20and%20rigidity%20of%20the%20component%20parts%20and/or%20the%20integrated%20structure%20shall%20be%20determined%20by%20engineering%20analysis%20or%20by%20suitable%20load%20tests%20to%20simulate%20the%20actual%20loads%20and%20conditions%20of%20application%20that%20occur

[34] 2021 IBC Section 2308.6

[35] 2021 IRC Section R316

[36] 2021 IRC Section N1102.4.1.1

[37] 2021 IECC Section R402.4.1.1

[38] 2021 IECC Section C402.5.1.1

[39] 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.

[40] https://anabpd.ansi.org/Accreditation/product-certification/AllDirectoryDetails?prgID=1&orgID=2125&statusID=4#:~:text=Bill%20Payment%20Date-,Accredited%20Scopes,-13%20ENVIRONMENT.%20HEALTH

[41] See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

[42] 2021 IRC Section R316

[43] 2021 IRC Section N1102.4.1.1

[44] 2021 IECC Section R402.4.1.1

[45] 2021 IECC Section C402.5.1.1

[46] 2021 IBC Section 104.11

[47] 2021 IRC Section R104.11

[48] 2018: https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9 AND 2021: https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11

[49] 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 (https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

[50] https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1

[51] Multilateral approval is true for all ANAB accredited product evaluation agencies and all International Trade Agreements.