Listing and Technical Evaluation Report™

A Duly Authenticated Report from an Approved Agency

Report No: 1004-01

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Subject to Renewal: April 1, 2027

ThermoPLY® Red and ThermoPLY® Red AMG Structural Sheathing

Trade Secret Report Holder:

Amrize Building Envelope, LLC

Phone: 303-748-0858 Website: www.oxengineeredproducts.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 ThermoPLY Red Structural Sheathing and ThermoPLY Red AMG Structural Sheathing

1.1.1 Throughout this report, wherever ThermoPLY Red Structural Sheathing is cited, the provisions are also applicable to ThermoPLY Red AMG Structural Sheathing.

2 Product Description and Materials

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

RYAN JOSEPH DEXTER LICENSE No 69484 STATE OF FLORIDA PROFESSIONAL ENGINEER

6/5/2026

DrJ Engineering, LLC
COA #29766

RYAN J DEXTER

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Figure 1. ThermoPLY Red Structural Sheathing and Logo

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2.2 ThermoPLY Red Structural Sheathings are composed of pressure-laminated plies consisting of high strength cellulosic fibers. These fibers are specially treated to be water-resistant and are bonded with a proprietary water-resistive adhesive. A protective polymer layer is applied on both sides of the panel. Additionally, foil facings may be applied on one or both faces.

2.2.1 ThermoPLY Red Structural Sheathing panels have a nominal thickness of 0.113" (2.9 mm) and nominal weight of 0.414 lb. per square foot (2.02 kg per square meter).

2.3 *Material Availability*

2.3.1 *Standard Widths:*

2.3.1.1 48" (1,219 mm)

2.3.1.2 48$^{3}/_{4}$" (1,238 mm)

2.3.2 *Standard Lengths:*

2.3.2.1 96" (2,438 mm)

2.3.2.2 108" (2,743 mm)

2.3.2.3 120" (3,048 mm)

2.3.3 Custom widths and lengths can be manufactured.

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

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 secrets 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]

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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, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Chicago, Clark County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, 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, but is not limited to, the following featured states: 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 *Regulations*

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

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

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

4.2.4 *FBC-B – 20, 23: Florida Building Code[25] – Building*

4.2.5 *FBC-B – 20, 23: Florida Building Code[25] – Residential*

4.2.6 *CBC — 22, 25: California Building Code[26] (Title 24, Part 2)*

4.2.7 *CRC — 22, 25: California Residential Code[26] (Title 24, Part 2.5)*

4.3 *Standards*

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

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

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

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

4.3.5 *ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials*

4.3.6 *ASTM E96: Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials*

4.3.7 *ASTM E283: Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

4.3.8 *ASTM E330: Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference*

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

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

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

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

4.3.13 *UL 723: Test for Surface Burning Characteristics of Building Materials*

4.4 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:

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

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

4.4.2.1 ASTM D7989 is accepted engineering practice used to establish Seismic Design Coefficients (SDC).

4.4.2.2 Tested data generated by ISO/IEC 17025 approved agencies and/or professional engineers, which use ASTM D7989 as their basis, are defined as intellectual property and/or trade secrets.

4.4.2.3 All professional engineering evaluations are defined as an independent design review (i.e., listings, certified reports, duly authenticated reports from approved agencies, and/or research reports, are prepared independently by approved agencies and/or approved sources, when signed and sealed by licensed professional engineer pursuant to registration law.

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

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

5 Listed[27]

5.1 Equipment, materials, products, or services included in a List published by a nationally recognized testing laboratory (e.g., CBI), an approved agency (e.g., CBI and DrJ), and/or and approved source (e.g., DrJ), or other organization(s) concerned with product evaluation (e.g., DrJ), that maintains periodic inspection (e.g., 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 ThermoPLY Red Structural Sheathing panels are used in the following applications:

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

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

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

6.1.4 Structural wall sheathing to provide resistance to transverse loads for wall assemblies used in light-frame wood construction.

6.1.5 Structural wall sheathing to provide resistance to uplift loads for wall assemblies used in light-frame wood construction.

6.1.6 An approved alternative Water-Resistive Barrier (WRB) when installed in accordance with **Section 6.3** and **Section 9**.

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6.1.7 An approved air barrier material when installed in accordance with **Section 6.4** and **Section 9**.

6.1.8 An approved draftstop material when installed in accordance with **Section 6.5** and **Section 9**.

6.2 *Structural Applications*

6.2.1 Except as otherwise described in this report, ThermoPLY Red Structural Sheathing 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).

6.2.2 ThermoPLY Red Structural Sheathing is permitted to be designed in accordance with SDPWS for the design of shear walls using the methods set forth therein, including the perforated shear wall methodology, and are subject to the SDPWS boundary conditions, except as specifically allowed in this report.

6.2.3 Anchorage for in-plane shear 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 codes provided in **Section 4**.

6.2.4 Except as provided for in **Section 6.2.8**, the maximum aspect ratio for ThermoPLY Red Structural Sheathing shall be 4:1.

6.2.5 The minimum full height panel width shall be 24", except as allowed by **Section 6.2.8**, **Section 6.2.9**, or **Section 8.2**.

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

6.2.7 *Simplified IRC Bracing Provisions:*

6.2.7.1 ThermoPLY Red Structural Sheathing is permitted to be used in accordance with the IRC simplified bracing method of IRC Section R602.12 and **Table 1**.

Table 1. ThermoPLY Red Structural Protective Sheathing Simplified Bracing Table[1,2,3,4,5,6,7,8]

Structural Sheathing Product	Ultimate Design Wind Speed (mph)	Story Level	Eave to Ridge Height (ft)	Minimum Number of Bracing Units Required (Long Side)						Minimum Number of Bracing Units Required (Short Side)					
				Length of Short Side (ft)						Length of Long Side (ft)					
				10	20	30	40	50	60	10	20	30	40	50	60
ThermoPLY Red Structural Sheathing	115	One Story or Top of Two or Three Story	10	1	2	2	2	3	3	1	2	2	2	3	3
		First of Two Story or Second of Three Story		2	3	3	4	5	6	2	3	3	4	5	6
		First of Three Story		2	3	4	6	7	8	2	3	4	6	7	8
		One Story or Top of Two or Three Story	15	1	2	3	3	4	4	1	2	3	3	4	4
		First of Two Story or Second of Three Story		2	3	4	5	6	7	2	3	4	5	6	7
		First of Three Story		2	4	5	6	7	9	2	4	5	6	7	9

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Table 1. ThermoPLY Red Structural Protective Sheathing Simplified Bracing Table[1,2,3,4,5,6,7,8]

Structural Sheathing Product	Ultimate Design Wind Speed (mph)	Story Level	Eave to Ridge Height (ft)	Minimum Number of Bracing Units Required (Long Side)						Minimum Number of Bracing Units Required (Short Side)					
				Length of Short Side (ft)						Length of Long Side (ft)					
				10	20	30	40	50	60	10	20	30	40	50	60
ThermoPLY Red Structural Sheathing Continued	130	One Story or Top of Two or Three Story	10	1	2	2	3	3	4	1	2	2	3	3	4
		First of Two Story or Second of Three Story		2	3	4	5	6	7	2	3	4	5	6	7
		First of Three Story		2	4	5	7	9	10	2	4	5	7	9	10
		One Story or Top of Two or Three Story	15	2	3	3	4	4	6	2	3	3	4	4	6
		First of Two Story or Second of Three Story		2	3	4	6	7	8	2	3	4	6	7	8
		First of Three Story		3	4	6	8	9	11	3	4	6	8	9	11

SI: 1 in = 25.4 mm, 1 ft = 0.305 m

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 ThermoPLY Red Structural Sheathing shall replace the sheathing material.
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 redesignated 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 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. Actual length of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 10 when using this table.
6. Maximum stud spacing is 24" o.c.
7. ThermoPLY Red Structural Sheathing attached with minimum $^{15}/_{16}$" crown x $1^{1}/_{4}$" leg staples, fastened 3" o.c. at panel edges, and 3" o.c. in the field. Roofing nails (minimum 0.120" x $1^{1}/_{4}$" with a $^{3}/_{8}$" head) are a permitted alternate fastener.
8. Minimum $^{1}/_{2}$" Gypsum Wallboard (GWB) attached to the interior side of the wall in accordance with IRC Section R702.3.5 and IRC Table R702.3.5.

6.2.8 *Prescriptive IRC Bracing Applications:*

6.2.8.1 ThermoPLY Red Structural Sheathing may be used on braced wall lines as an equivalent alternative to Method WSP and CS-WSP (Continuously Sheathed Wood Structural Panel) of the IRC, when installed in accordance with IRC Section R602.10, except where modified by this report.

6.2.8.2 Required braced wall panel lengths for ThermoPLY Red Structural Sheathing shall be as determined by the equivalency factor shown in **Table 2** and IRC Table R602.10.3(1) through IRC Table R602.10.3(4), including all footnotes.

6.2.8.2.1 The braced wall line length equivalency factors in **Table 2** are based on equivalency testing and are used to comply with Method WSP and CS-WSP of the IRC.

6.2.8.2.2 ThermoPLY Red Structural Sheathing tested equivalency factors in **Table 2**, allow the user to determine the length of bracing required by multiplying the factor from **Table 2** by the length shown in the WSP or CS 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.

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6.2.8.3 All IRC prescriptive bracing minimums, spacing requirements, and rules must also be met.

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

Table 2. IRC Braced Wall Panel Equivalency for ThermoPLY Red Structural Sheathing[5]

Product	Maximum Stud Spacing (in)	Fastener[1,2]	Maximum Fastener Spacing (edge:field) (in)	GWB[4,6] Fastening Spacing (blocked or unblocked) (edge:field)	Wind	
					SPF Framing	
					Equivalency Factors[3] to IRC WSP or CS-WSP	
ThermoPLY Red Structural Sheathing	16 o.c.	Minimum 16-gauge $^{15}/_{16}$" Crown x $1^{1}/_{4}$" Leg Staple	3:3	16:16	1.00	
				8:8	0.81	
	24 o.c.			16:16	1.02	
				8:8	0.83	

SI: 1 in = 25.4 mm

1. Staples shall be a minimum 16-gauge.
2. Roofing nails (minimum 0.120" x $1^{1}/_{4}$" with a $^{3}/_{8}$" head) are a permitted alternate fastener.
3. ThermoPLY Red Structural Sheathing 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.
4. Where gypsum wallboard is not applied to the interior side of the wall assembly, bracing lengths 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, shall be used, except the factor for omitting the gypsum wallboard shall be 1.5 for gypsum fastened 16:16, and 1.8 for gypsum fastened 8:8.
5. Valid for single top plate (advanced framing method) wall installations or double top plate wall installations.
6. Gypsum wallboard shall be installed according to the provision listed in IRC Table R702.3.5.

6.2.9 *ThermoPLY Red Structural Sheathing CS-PF Portal Frame:*

6.2.9.1 ThermoPLY Red Structural Sheathing CS-PF was tested and evaluated for equivalency to the IRC Method CS-PF in accordance with IRC Section R602.10.6.4 and IRC Table R602.10.5.

6.2.9.2 IRC Table R602.10.5 establishes the contributing length of bracing of the CS-PF as equivalent to 1.5 times its actual length and that it contributes this length of bracing to that required by method CS WSP.

6.2.9.3 The capacity of the ThermoPLY Red Structural Sheathing CS-PF exceeds the capacity of the IRC Method CS-WSP and is therefore, permitted to be substituted for an equivalent length of bracing.

6.2.9.4 The ThermoPLY Red Structural Sheathing CS-PF is depicted in **Figure 2**.

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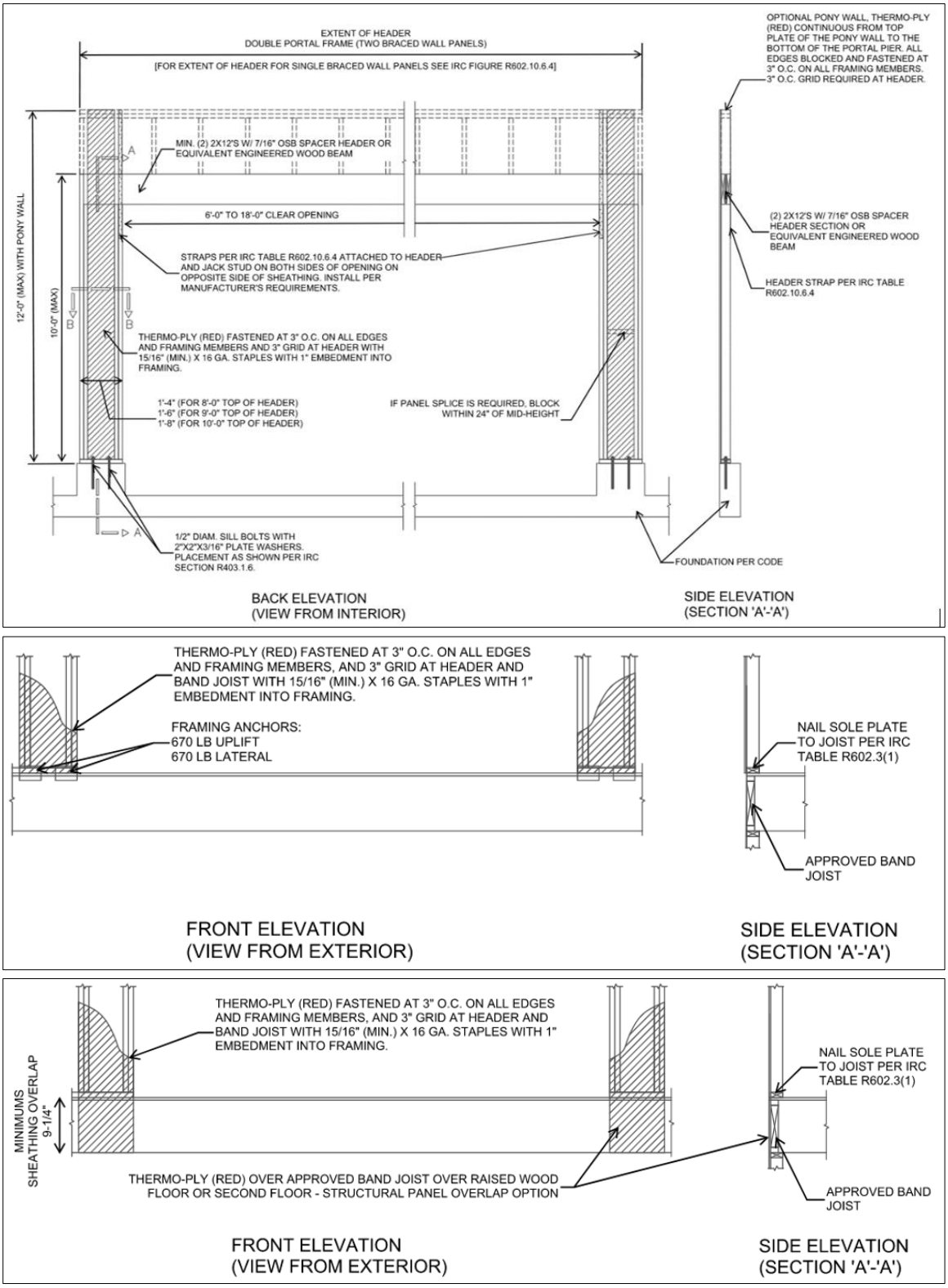

Figure 2. ThermoPLY Red Structural Sheathing CS-PF

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6.2.10 *Prescriptive IBC Conventional Light-Frame Wood Construction:*

6.2.10.1 ThermoPLY Red Structural Sheathing may be used to brace exterior walls of buildings as an equivalent alternative to Method WSP of the IBC when installed with blocked or unblocked $^1/_2$" gypsum fastened with a minimum 5d cooler nail or #6 type W or S screw spaced a maximum of 16" o.c. at panel edges and 16" o.c. in the field. Bracing shall be in accordance with the conventional light-frame construction method of IBC Section 2308.10 and this report.

6.2.11 *Performance-Based Wood-Framed Construction:*

6.2.11.1 ThermoPLY Red Structural Sheathing 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 3**, **Table 4**, and **Table 5**.

6.2.11.2 ThermoPLY Red Structural Sheathing shear walls are permitted to resist horizontal wind load forces using the allowable shear loads (in pounds per linear foot) set forth in **Table 3**.

6.2.11.3 ThermoPLY Red Structural Sheathing shear walls that require seismic design in accordance with IBC Section 1613 shall use the seismic allowable unit shear capacities set forth in **Table 4**.

6.2.11.4 The response modification coefficient, R, system overstrength factor, Ω_0, and deflection amplification factor, C_d, as indicated in **Table 4**, shall be used to determine the base shear, element design forces, and design story drift in accordance with ASCE 7 Chapter 12 and Section 14.5.

6.2.11.5 ThermoPLY Red Structural Sheathing panels are permitted to resist uplift load forces using the allowable uplift loads (in pounds per linear foot) set forth in **Table 5**.

6.2.11.6 ThermoPLY Red Structural Sheathing panels are permitted to resist transverse wind load forces using the allowable transverse loads (in pounds per linear foot) set forth in **Table 6**.

Table 3. Allowable Stress Design (ASD) Capacity for – Wind

Product[1,5]	Joint Condition[3]	Maximum Stud Spacing (in)	Gypsum Wallboard Thickness	GWB Fastener Spacing[2,4] (edge:field)	Allowable Unit Shear Capacity (plf)
ThermoPLY Red Structural Sheathing	Lapped or Butted	16 o.c.	$^1/_2$" GWB	4:16	530
				8:8	445
				8:16	425
				16:16	370
		24 o.c.		8:8	435
				16:16	365
	Lapped	16 o.c.	None	-	320
		24 o.c.			295
	Butted	16 o.c.			300
		24 o.c.			275

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

1. ThermoPLY Red Structural Sheathing attached with a minimum 16-gauge, $^{15}/_{16}$" crown staples. Staples shall penetrate a minimum of 1" into the stud. Fasteners are to be installed with the crown parallel to the framing and spaced a maximum of 3" o.c. at the panel edges and 3" o.c. in the field. Fastener edge distance shall be a minimum of $^3/_8$". Fastener head shall be in contact with the ThermoPLY Red Structural Sheathing surface. Roofing nails (minimum 0.120" x $1^1/_4$" with a $^3/_8$" head) are a permitted alternate fastener.
2. Gypsum attached with minimum #6 type W or S screws $1^1/_4$" long or 5d cooler nails with a minimum edge distance of $^3/_8$".
3. Where lapped joints are used, the panels shall be overlapped nominally $^3/_4$".
4. Straight-line interpolations between fastening patterns is acceptable.
5. ThermoPLY Red Structural Sheathing may be installed on either the interior or the exterior side of the wall.

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Table 4. Seismic Performance of ThermoPLY Red Structural Sheathing[1,3,8,9]

Seismic Force Resisting System	Joint Condition	GWB[2]	Maximum Stud Spacing (in)	Seismic Allowable Unit Shear Capacity (plf)	Apparent Shear Stiffness, Ga (kips/in)	Response Modifi-cation Factor, R[4]	System Over-strength Factor, Ω_0[5]	Deflection Amplifi-cation Coefficient, C_d[6]	Structural System Limitations and Building Height Limit[7] (ft)				
									Seismic Design Category				
									B	C	D	E	F
Light-Frame (Wood) Walls Sheathed with ThermoPLY Red Structural Sheathing	Lapped or Butted	1/2" GWB Fasteners Spaced 8:8	16 o.c.	355	11.5	6.5	3	4	NL	NL	65	65	65
		No GWB		240	6.7	6.5	3	4	NL	NL	65	65	65
	Lapped	1/2" GWB Fasteners Spaced 16:16	24 o.c.	290	11	6.5	3	4	NL	NL	65	65	65
	Butted	1/2" GWB Fasteners Spaced 16:16		275	11	6.5	3	4	NL	NL	65	65	65

SI: 1 in = 25.4 mm, 1 lb/ft = 0.0146 kN/m, 1 psi = 0.00689 MPa

1. ThermoPLY Red Structural Sheathing attached with a minimum 16-gauge, 15/16" crown staples. Staples shall penetrate a minimum of 1" into the stud. Fasteners are to be installed with the crown parallel to the framing and spaced a maximum of 3" o.c. at the panel edges and 3" o.c. in the field. Fastener edge distance shall be a minimum of 3/8". Fastener head shall be in contact with the ThermoPLY Red Structural Sheathing surface. Roofing nails (minimum 0.120" x 1 1/4" with a 3/8" head) are a permitted alternate fastener.
2. Gypsum attached with minimum #6 type W or S screws 1 1/4" long with a minimum edge distance of 3/8".
3. All seismic design parameters follow the equivalency as defined in **Section 8**.
4. Response modification coefficient, R, for use throughout ASCE 7. *Note:* R reduces forces to a strength level, not an allowable stress level.
5. The tabulated value of the overstrength factor, Ω_0, is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
6. Deflection amplification factor, C_d, for use with ASCE 7 Section 12.8.6, 12.8.7, and 12.9.1.2.
7. NL = Not Limited. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
8. ThermoPLY Red Structural Sheathing may be installed with either lapped joints or butted joints.
9. ThermoPLY Red Structural Sheathing may be installed on either the interior or exterior side of the wall.

Table 5. Uplift Performance of ThermoPLY Red Structural Sheathing

Product	Allowable Uplift Capacity (plf)	Maximum Stud Spacing (in)	Fastener Schedule
ThermoPLY Red Structural Sheathing Single Bottom Plate	220	16 o.c.	Minimum 15/16" crown, 1 1/4" leg 16-gauge galvanized staples[1] OR 0.120" x 1 1/4" roofing nails, 3" o.c. to perimeter/field.

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

1. Staple crowns to be installed parallel to framing.

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Table 6. Load Capacity (psf) for ThermoPLY Red Structural Sheathing Resisting Transverse Wind Loads[1,2,4]

Product	Maximum Stud Spacing (in)	Allowable Design Value (psf)	Fastener Schedule	Basic Wind Speed V_{asd} per ASCE 7-05 (mph)	Basic Wind Speed V_{ult} per ASCE 7-16 & 7-22 (mph)
ThermoPLY Red Structural Sheathing	16 o.c.	120	Minimum 15/16" crown, 1 1/4" leg 16-gauge galvanized staples[3] OR 0.120" x 1 1/4" roofing nails, 3" o.c. to perimeter/field	155	200
	24 o.c.	95			

SI: 1 in = 25.4 mm, 1 psf = 0.0479 kN/m^2

1. Design wind load capacity shall be in accordance with IBC Section 1609.1.1.
2. Capacities assume minimum 1/2" GWB installed on the interior side of the wall. Where GWB in not installed on the interior side of the wall, a forty percent (40%) reduction in wind pressure resistance shall be applied (V_{asd} wind speed less than 90 mph, V_{ult} less than 120 mph).
3. Staple crowns shall be installed parallel to framing.
4. Allowable wind speeds are based on the following: Components and Cladding wind loads, Mean roof height 30', Exposure C, Zone 5, 10 sq. ft. effective wind area. See the applicable building code for any adjustment needed for specific building location and configuration.

6.3 *Water-Resistive Barrier (WRB)*

6.3.1 ThermoPLY Red Structural Sheathing may be used as a WRB as prescribed in IBC Section 1403.2, IBC Section 1402.2, and IRC Section R703.2, when installed on exterior walls as described in this section.

6.3.2 ThermoPLY Red Structural Sheathing shall be installed with board joints placed directly over exterior framing spaced a maximum of 24" (610 mm) o.c. The fasteners used to attach the board shall be installed in accordance with **Section 9**.

6.3.3 All seams and joints between boards shall be butt jointed and sealed with an approved construction tape or overlapped in accordance with **Section 9**. Use approved construction tape, such as 2 7/8" OX SeamTape®.

6.3.4 A separate WRB system may also be provided. If a separate WRB system is used, overlapping or taping of the sheathing joints is not required.

6.3.5 Flashing must be installed at all sheathing penetrations and shall comply with all applicable code sections. Approved flashing tapes include OX Arctic-Flash® Synthetic Flashing, HomeGuard® Flexible Butyl Flashing and HomeGuard RA-plus® Flashing.

6.3.6 Where ThermoPLY Red Structural Sheathing is used in the intermittent bracing method along a braced wall line, ThermoPLY Green Structural Sheathing may be used as the infill panels between the ThermoPLY Red Structural Sheathing braced wall panels. In this application, the WRB, air barrier, and transverse load resistance is maintained, provided all seams and joints between boards are overlapped or sealed by the approved construction tapes listed in **Section 6.3.3**.

6.4 *Air Barrier*

6.4.1 ThermoPLY Red Structural Sheathing may be used as a component in air barrier assemblies as prescribed in IRC Section N1102.5.1.1, IECC Section R402.5.1.1, and IECC Section C402.6.1.

6.4.2 Air leakage rate of assemblies constructed with ThermoPLY Red Structural Sheathing were evaluated in accordance with ASTM E283 pursuant to IECC Section C402.6.1.1.

6.4.2.1 Assemblies constructed with ThermoPLY Red Structural Sheathing had an average air leakage rate <0.04 cfm/ft^2 (0.2 L/[s·m^2]) under a pressure differential of 0.3 inch of water (75 Pa).

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6.5 *Water Vapor Transmission*

6.5.1 ThermoPLY Red Structural Sheathing was evaluated for water vapor transmission in accordance with ASTM E96. The permeance characteristics are shown in **Table 7**.

6.5.2 ThermoPLY Red Structural Sheathing meets the requirements of a Class I Vapor Retarder in accordance with IBC Section 1404.3 and IRC Section R702.7.

Table 7. Water Vapor Transmission Properties

Product	Test Method	Water Vapor Permeance (perms)	Vapor Retarder Class
ThermoPLY Red Structural Sheathing	ASTM E96[1]	< 0.1	Class I
1. Tested in accordance with ASTM E96 Desiccant Method (Procedure A).			

6.6 *Draftstop*

6.6.1 ThermoPLY Red Structural Sheathing may be used as a draftstop material in accordance with IBC Section 708.4.2, IBC Section 718.3, IBC Section 718.4, and IRC Section R302.12.

6.6.2 When installed as a draftstop, ThermoPLY Red Structural Sheathing shall be installed in accordance with **Section 9**.

6.7 *Surface Burning Characteristics*

6.7.1 ThermoPLY Red Structural Sheathing panels have the surface burning characteristics shown in **Table 8**.

Table 8. Flame Spread and Smoke Developed Indices[1]

Product	Flame Spread Index	Smoke Developed Index
ThermoPLY Red Structural Sheathing	< 200	< 450
1. Tested in accordance with ASTM E84 and UL 723.		

6.8 *Non-Structural Applications*

6.8.1 Where other means of wall bracing are provided or are not required, any grade of ThermoPLY Red Structural Sheathing may be used to provide other wall functions when installed in accordance with this section.

6.8.1.1 The sheathing panels are applied to wall framing with minimum 0.120" x $1^1/_4$" galvanized roofing nails or 16-gauge galvanized staples having a $^{15}/_{16}$" crown and $1^1/_4$" leg lengths.

6.8.1.2 Fastener spacing shall be a maximum of 6" at the edges and 12" on intermediate members.

6.8.1.3 Stud spacing shall be a maximum of 24" o.c.

6.8.1.4 Minimum fastener penetration into the framing members is 1".

6.8.1.5 Fasten all staples parallel to the framing member, with an edge spacing of $^3/_8$" (9.5 mm) minimum.

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

6.8.2 Incidental tears or penetrations of ThermoPLY Red Structural Sheathing must be repaired with an approved construction tape. See **Section 6.3.3**.

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6.8.3 All joints must be installed in one of the following methods:

6.8.3.1 Joints overlap nominally $^3/_4$" (19 mm).

6.8.3.2 Butted joints are sealed with approved construction tape. See **Section 6.3.3**.

6.9 *Thermal Barrier Requirements – Attic, Crawlspace, or Other Uninhabitable Space Applications*

6.9.1 When installed in an attic, crawlspace, or other uninhabitable space, ThermoPLY Red Structural Sheathing is approved for use without a thermal barrier or ignition barrier. This includes, but is not limited to, knee and gable end walls.

6.10 Alternative techniques shall be permitted in accordance with accepted engineering practice and experience. These provisions for the use of alternative materials, designs, and methods of construction are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed herein. This includes, but is not limited to, the following areas of engineering: mechanics of materials, structures, building science, and fire science.

7 Certified Performance[28]

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.[29]

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.[30]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 ThermoPLY Red Structural Sheathing and ThermoPLY Red AMG Structural Sheathing comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 Structural performance under lateral load conditions (wind and seismic) for use as an alternative to the IRC Intermittent Wall Bracing provisions of IRC Section R602.10 and the IRC Continuous Wall Bracing provisions of IRC Section R602.10.4 Method CS-WSP and CS-PF (Continuously Sheathed Portal Frame).

8.1.2 Structural performance under lateral load conditions for both wind and seismic loading for use with the performance-based provisions of IBC Section 2306.1 and IBC Section 2306.3 for light-frame wood wall assemblies.

8.1.2.1 **Table 4** provides Seismic Design Coefficients (SDC) that conform to the requirements in ASCE 7 Section 12.2.1.1 and Table 12.2-1 for design of wall assemblies in buildings that require seismic design in accordance with ASCE 7 (i.e., all seismic design categories).

8.1.2.2 The basis for equivalency testing is outlined in Section 12.2.1.1 of ASCE 7:

> **12.2.1.1 Alternative Structural Systems.** Use of seismic force-resisting systems not contained in Table 12.2-1 shall be permitted contingent on submittal to and approval by the Authority Having Jurisdiction and independent structural design review of an accompanying set of design criteria and substantiating analytical and test data. The design criteria shall specify any limitations on system use, including Seismic Design Category and height; required procedures for designing the system's components and connections; required detailing; and the values of the response modification coefficient, R; overstrength factor, Ω_0; and deflection amplification factor, C_d.

8.1.2.3 The basis of the seismic evaluation performed as part of this report is based on ASTM D7989 and testing per ASTM E2126 to establish SDCs that conform to the requirements of ASCE 7 Section 12.2.1.1.

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8.1.3 Structural performance under lateral load conditions for use as an alternative to SDPWS Section 4.3 Wood Frame Shear Walls.

8.1.4 Resistance to transverse loads for wall assemblies used in light-frame wood construction in accordance with IBC Section 1609.1.1 and IRC Section R301.2.1.

8.1.5 Resistance to uplift loads for wall assemblies used for light-frame wood construction in accordance with IBC Section 1609 and IRC Section R301.2.1.

8.1.6 Performance for use as a WRB in accordance with IBC Section 1403.2, IBC Section 1402.2, and IRC Section R703.2.

8.1.7 Performance for use as an air barrier in accordance with IRC Section N1102.5.1.1, IECC Section R402.5.1.1, and IECC Section C402.6.1.

8.1.8 Performance for use as a draftstop in accordance with IBC Section 708.4.2, IBC Section 718.3, IBC Section 718.4, and IRC Section R302.12.

8.1.9 Surface burn characteristic performance for use as a Class C interior finish material in accordance with IBC Section 803.1.2 and IRC Section R302.9.

8.2 Use of ThermoPLY Red Structural Sheathing in a Portal Frame with Hold-down (PFH) is outside the scope of this evaluation. For this application, see Report Number 1101-01.

8.3 Use of ThermoPLY Red Structural Sheathing in a fire resistance rated assembly is outside the scope of this evaluation. For this application, see Report Number 1510-04.

8.3.1 The addition of a single GWB layer in between ThermoPLY Red Structural Sheathing and the framing members to the assemblies defined in **Section 6** in order to achieve the fire ratings detailed in Report Number 1510-04, will not reduce the allowable unit shear capacities listed in **Table 3** or **Table 4**.

8.3.1.1 Additional screws in GWB are not required to maintain the lateral shear design values in **Table 3** or **Table 4**, provided that 0.120" x $1^{3}/_{4}$" roofing nails are used to fasten ThermoPLY Red Structural Sheathing and GWB to framing members.

8.3.2 Alternatively, the GWB layer shall be fastened with #6 x $1^{5}/_{8}$" Type W screws spaced 16" o.c. at panel edges and 16" o.c. in the field, and ThermoPLY Red Structural Sheathing shall be fastened with minimum 16-gauge, $^{7}/_{16}$" crown, 2" leg stapes spaced 3" o.c. at panel edges and 3" o.c. in the field.

8.4 Use of this report is designated for Allowable Stress Design (ASD). For Limit States Design (LSD), see Report Number 1808-03.

8.5 For limitations for allowable size of holes in walls sheathed with ThermoPLY Red Structural Sheathing, see Report Number 2302-41.

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[31] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[32] 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.

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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 *General for Structural and WRB Applications*

9.3.1 ThermoPLY Red Structural Sheathing shall be installed in accordance with the manufacturer published installation instructions and this report. Basic instructions are also printed on every ThermoPLY panel.

9.3.2 If there are any conflicts between the manufacturer instructions and this report, the more restrictive shall apply.

9.3.3 Where ThermoPLY Red Structural Sheathing extends beyond the bottom of a wall and overlaps the band joist below, fasten the bottom edge of ThermoPLY Red Structural Sheathing to the wall bottom plate where it meets the band joist. Due to possible shrinkage of the band joist, do not fasten the sheathing to the band joist. Instead, fasten tightly with one fastener every 12" to smooth out if necessary.

9.3.4 Where hold-down straps are used, install ThermoPLY Red Structural Sheathing first, then install the strap over the face of the structural sheathing and attach per the manufacturer installation instructions.

9.4 *Orientation*

9.4.1 ThermoPLY Red Structural Sheathing may be installed in either the vertical or horizontal orientation. To be recognized for the structural values listed in this report or as a water or air barrier, all joints must be backed by studs, plates, or blocks, and fastened.

9.5 *Fastener Type*

9.5.1 *ThermoPLY Red Structural Sheathing:*

9.5.1.1 Minimum 0.120" x $1^1/_4$" galvanized roofing nail.

9.5.1.2 Minimum $^{15}/_{16}$" crown by $1^1/_4$" leg, 16-gauge staples shall be installed per the staple manufacturer instructions.

9.5.1.3 Fasteners shall be driven so that the head of the fastener is in contact with the surface of the ThermoPLY Red Structural Sheathing. Do not overdrive fasteners. See **Table 9** for fastening spacing.

Table 9. Fastener Spacing of ThermoPLY Red Structural Sheathing

ThermoPLY Red Structural Sheathing Application	Maximum Panel Edge Fastener Spacing (in)	Maximum Panel Intermediate Fastener Spacing (in)
Lateral Shear	3	3
Transverse loads		
Uplift loads		
Water-Resistive Barrier	6	12
Air Barrier		
Draftstop		
SI: 1 in = 25.4 mm		

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9.5.2 *Gypsum Wallboard:*

9.5.2.1 Where required, gypsum wallboard shall be a minimum $^1/_2$" thickness and shall be attached with one of the following:

9.5.2.1.1 #6 x $1^1/_4$" type W or S screws

9.5.2.1.2 5d cooler nails

9.6 *Fastener Edge Distance*

9.6.1 Fasteners shall be installed with a minimum edge distance of $^3/_8$" (9.5 mm) for ThermoPLY Red Structural Sheathing and gypsum.

9.7 *Treatment of Joints*

9.7.1 ThermoPLY Red Structural Sheathing joints may be either butted or overlapped.

9.7.1.1 Lapped joints shall be overlapped by $^3/_4$" (19 mm) nominally and fastened with a single row of fasteners. Always run staples parallel with framing.

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

9.8 *Window Jamb Adjustments*

9.8.1 If windows are made to accommodate traditional $^1/_2$" (12 mm) sheathing materials, order windows with adjustable nailing fins from the supplier. Door brick moldings may be planed or routed $^3/_8$" in order to accommodate the different sheathing thickness, either at the jobsite or by the millwork supplier.

9.8.2 ThermoPLY Red Structural Sheathing must be installed with appropriate flashing and counter flashing in conformance to accepted building standards and in compliance with local building codes and the flashing manufacturer installation instructions.

9.8.3 The structural installation procedure shall be in accordance with **Figure 3**.

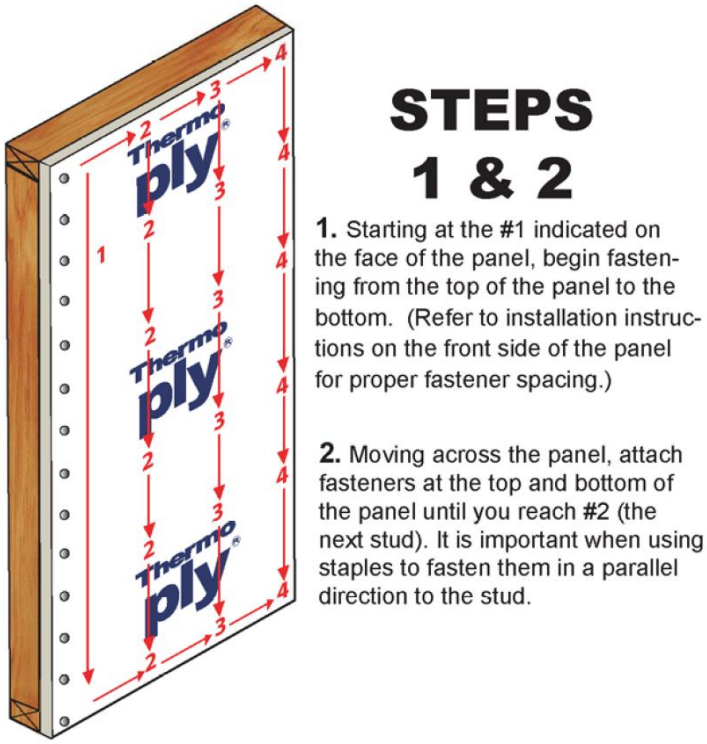

Figure 3. Installation Instructions - WRB Installation Procedure

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9.8.4 *Overlapped Joint:*

9.8.4.1 Install the first panel per **Figure 3**.

9.8.4.2 Overlap the next panel $^3/_4$" over the first panel and fasten the joint with a common line of fasteners.

9.8.4.3 For ThermoPLY Red AMG Structural Sheathing, ensure the panel is properly positioned on the wall prior to removal of the adhesive release liners on vertical edges. Fasten the overlapped joint with a common line of fasteners.

9.8.5 *Butted Joint with Flashing:*

9.8.5.1 Install panels per **Figure 3** with joints butted (no overlap).

9.8.6 Seal butted seams with approved construction tape (see **Section 6.3.3**), when finished with attaching the wall panels and all fasteners in the wall line.

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 Transverse load testing in accordance with ASTM E330

10.1.2 Uplift load testing in accordance with ASTM E72

10.1.3 Use as a WRB material testing in accordance with ASTM E331

10.1.4 Use as an air barrier testing in accordance with ASTM E283

10.1.5 Lateral load testing and data for determining comparative equivalency for use as an alternative material in accordance with ASTM D564 and ASTM E2126, and analysis per ASTM D7989

10.1.6 Surface burn characteristics testing in accordance with ASTM E84

10.1.7 Water vapor transmission testing in accordance with ASTM E96

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.[33]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for ThermoPLY Red Structural Sheathing on the DrJ Certification website.

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11 Findings

11.1 As outlined in **Section 6**, ThermoPLY Red Structural Sheathings 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, ThermoPLY Red Structural Sheathing shall be approved for the following applications:

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

11.2.2 Transverse load resistance due to components and cladding pressures on building surfaces.

11.2.3 Uplift load resistance due to wind uplift loads carried by the walls.

11.2.4 Performance for use as a WRB in accordance with IBC Section 1403.2, IBC Section 1402.2, and IRC Section R703.2.

11.2.5 Performance for use as an air barrier in accordance with IRC Section N1102.5.1.1, IECC Section R402.5.1.1, and IECC Section C402.6.1.

11.2.6 Performance for use as a draftstop in accordance with IBC Section 708.4.2, IBC Section 718.3, IBC Section 718.4, and IRC Section R302.12.

11.2.7 Performance for use as a Class C interior finish material in accordance with IBC Section 803.1.2 and IRC Section R302.9.

11.2.8 Performance for use as a Class I Vapor Retarder in accordance with IBC Section 1404.3 and IRC Section R702.7.

11.3 Unless exempt by state statute, when ThermoPLY Red Structural Sheathings 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 Amrize Building Envelope, LLC.

11.5 IBC Section 104.2.3[34] (IRC Section R104.2.2[35] and IFC Section 104.2.3[36] 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:**[37] Building regulations require that the building official shall accept duly authenticated reports.[38]

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.[39]

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12 Conditions of Use

12.1 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.

12.2 As listed herein, ThermoPLY Red Structural Sheathing shall not be used:

12.2.1 As a nailing base for claddings, trim, windows and doors; nor

12.2.2 To resist horizontal loads from concrete and masonry walls when used as wall sheathing.

12.3 Fastening through the ThermoPLY Red Structural Sheathing into the framing is acceptable.

12.4 When used as a WRB, installation shall be in accordance with **Section 6.3**.

12.4.1 When ThermoPLY Red Structural Sheathing is not installed as a WRB, other means of providing a WRB shall be required per the code.

12.5 When used in accordance with the IBC in Seismic Design Categories C, D, E, or F, special inspections shall comply with IBC Section 1705.13.[40]

12.6 When used in accordance with the IBC in high wind areas, special inspections shall comply with IBC Section 1705.12.[41]

12.7 Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.

12.7.1 Allowable shear loads shall not exceed values in **Table 3** for wind loads and **Table 4** for seismic loads.

12.7.2 Allowable uplift loads shall not exceed values in **Table 5**.

12.7.3 Transverse design loads shall not exceed those described in **Table 6**, unless an approved exterior wall covering capable of separately resisting loads perpendicular to the face of the walls is installed over the sheathing.

12.7.4 ThermoPLY Red Structural Sheathing is a Class I Vapor Retarder (vapor barrier). The Designer of Record shall ensure the wall assembly design satisfies the moisture management requirements of the applicable code for the specific climate zone.

12.8 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:

12.8.1 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.

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

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

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

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

12.8.6 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.

12.8.7 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.

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12.9 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.

12.10 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).

12.11 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 ThermoPLY Red Structural Sheathing and ThermoPLY Red AMG Structural Sheathing, as 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.oxengineeredproducts.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.

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Issue Date: January 6, 2021

Subject to Renewal: April 1, 2027

FBC Supplement to Report Number 1004-01

REPORT HOLDER: Amrize Building Envelope, LLC

1 Evaluation Subject

1.1 ThermoPLY Red Structural Sheathing and ThermoPLY Red AMG Structural Sheathing

1.1.1 Throughout this supplement, wherever ThermoPLY Red Structural Sheathings is cited, the provisions are also applicable to ThermoPLY Red AMG Structural Sheathing.

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show ThermoPLY Red Structural Sheathings, recognized in Report Number 1004-01, 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*

2.2.2 *FBC-R—20, 23: Florida Building Code – Residential*

3 Conclusions

3.1 ThermoPLY Red Structural Sheathings, described in Report Number 1004-01, comply 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 is reserved.

3.2.2 FBC-B Section 110.4 is reserved and replaces IBC Section 110.4.

3.2.3 FBC-B Section 104.6 is reserved and replaces IBC Section 104.4.

3.2.4 FBC-B Section 104.11 replaces IBC Section 104.2.3 and Section 104.2.3.2.

3.2.5 FBC-B Section 105.3 replaces IBC Section 105.3.

3.2.6 FBC-B Section 105.3.1 replaces IBC Section 105.3.1.

3.2.7 FBC-B Section 708.4 replaces IBC Section 708.4.2.

3.2.8 FBC-B Section 718.3 replaces IBC Section 718.3.

3.2.9 FBC-B Section 718.4 replaces IBC Section 718.4.

3.2.10 FBC-B Section 803.1.1 replaces IBC Section 803.1.2.

3.2.11 FBC-B Section 110.3 replaces IBC Section 110.3.

3.2.12 FBC-B Section 1403.2 replaces IBC Section 1402.2.

3.2.13 FBC-B Section 1404.2 replaces IBC Section 1403.2.

3.2.14 FBC-B Section 1404.3 replaces IBC Section 1403.3.

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3.2.15 FBC-B Section 1609.1.1 replaces IBC Section 1609.1.1.

3.2.16 FBC-B Section 1613 is reserved and replaces IBC Section 1613.

3.2.17 FBC-B Section 1705 is reserved and replaces IBC Section 1705.12 and IBC Section 1705.13.

3.2.18 FBC-B Section 1707.1 replaces IBC Section 1707.1.

3.2.19 FBC-B Section 2306.1 replaces IBC Section 2306.1.

3.2.20 FBC-B Section 2306.3 replaces IBC Section 2306.3.

3.2.21 FBC-B Section 2308 is reserved and replaces IBC Section 2308.10.

3.2.22 FBC-R Section N1101.1 replaces IRC N1102.5.1.1.

3.2.23 FBC-R Section R104 and Section R109 are reserved.

3.2.24 FBC-R Section R301.1 replaces IRC Section R301.1.

3.2.25 FBC-R Section R301.2.1 replaces IRC Section R301.2.1.

3.2.26 FBC-R Section R302.9 replaces IRC Section R302.9.

3.2.27 FBC-R Section R302.12 replaces IRC Section R302.12.

3.2.28 FBC-R Section R602.10 is reserved and replaces IRC Section R602.10.

3.2.29 FBC-R Table R602.10.3(1) is reserved and replaces IRC Section R602.10.3(1).

3.2.30 FBC-R Table R602.10.3(2) is reserved and replaces IRC Section R602.10.3(2).

3.2.31 FBC-R Table R602.10.3(3) is reserved and replaces IRC Section R602.10.3(3).

3.2.32 FBC-R Table R602.10.3(4) is reserved and replaces IRC Section R602.10.3(4).

3.2.33 FBC-R Section R602.10.4 is reserved and replaces IRC Section R602.10.4.

3.2.34 FBC-R Section R602.10.5 is reserved and replaces IRC Section R602.10.5.

3.2.35 FBC-R Section R602.10.6.4 is reserved and replaces IRC Section R602.10.6.4.

3.2.36 FBC-R Section R602.12 is reserved and replaces IRC Section R601.12.

3.2.37 FBC-R Section R702.3.5 replaces IRC Section R702.3.5.

3.2.38 FBC-R Table R702.3.5 replaces IRC Table R702.3.5.

3.2.39 FBC-R Section R702.7 replaces IRC Section R702.7.

3.2.40 FBC-R Section R703.2 replaces IRC Section R703.2.

4 Conditions of Use

4.1 ThermoPLY Red Structural Sheathings, described in Report Number 1004-01, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 1004-01.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of FBC-B Chapter 16 and Chapter 17, as applicable.

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Issue Date: December 22, 2020

Subject to Renewal: April 1, 2027

CBC and CRC Supplement to Report Number 1004-01

REPORT HOLDER: Amrize Building Envelope, LLC

1 Evaluation Subject

1.1 ThermoPLY Red Structural Sheathing and ThermoPLY Blue AMG Structural Sheathing

1.1.1 Throughout this supplement, wherever ThermoPLY Red Structural Sheathings is cited, the provisions are also applicable to ThermoPLY Red AMG Structural Sheathing.

2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show ThermoPLY Red Structural Sheathings, recognized in Report Number 1004-01 have also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

2.2.1 *CBC — 22, 25: California Building Code (Title 24, Part 2)*

2.2.2 *CRC — 22, 25: California Residential Code (Title 24, Part 2.5)*

3 Conclusions

3.1 ThermoPLY Red Structural Sheathings, described in Report Number 1004-01, comply with the CBC and CRC 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 CBC and CRC applicable to this report, they are listed here:

3.2.1 CBC Section 104.11 replaces IBC Section 104.2.3 and IBC Section 104.2.3.2.

3.2.2 CBC Section 104.7 replaces IBC Section 104.7.2.

3.2.3 CBC Section 1404.3 replaces IBC Section 1404.3.

3.2.4 CBC Section 1707.1 replaces IBC Section 1707.1.

3.2.5 CRC Part IV Energy Conservation replaces IRC Section N1102.5.1.1.

3.2.6 CRC Section R104.4 replaces IRC Section R104.7.2.

3.2.7 CRC Section R104.11 replaces IRC Section R104.2.2.

3.2.8 CRC Section R301.1 replaces IRC Section R301.1.

3.2.9 CRC Table R602.10.5 replaces IRC Table R602.10.5.

3.2.10 CRC Section R702.7 replaces IRC Section R702.7.

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4 Conditions of Use

4.1 ThermoPLY Red Structural Sheathing, described in Report Number 1004-01, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 1004-01.

4.1.2 The design, installation, and inspections are in accordance with additional requirements of CBC and CRC, as applicable.

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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 All references to the FBC-B and FBC-R are the same as the 2024 IBC and 2024 IRC unless otherwise noted in the Florida Supplement at the end of this report.

26 All references to the CBC and CRC are the same as the 2024 IBC and 2024 IRC unless otherwise noted in the CBC and CRC Supplement at the end of this report.

27 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

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

29 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

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30 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

31 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.

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

33 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

34 2021 IBC Section 104.11

35 2021 IRC Section R104.11

36 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

37 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.

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

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

40 2018 IBC Section 1705.12

41 2018 IBC Section 1705.11

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