

## CBI Listing



**CL 2303-08**

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## Trade Secret Owner

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DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

SECTION: 06 12 00 - Structural Panels

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

SECTION: 06 12 19 - Shear Wall Panels

SECTION: 07 27 00 - Air Barriers

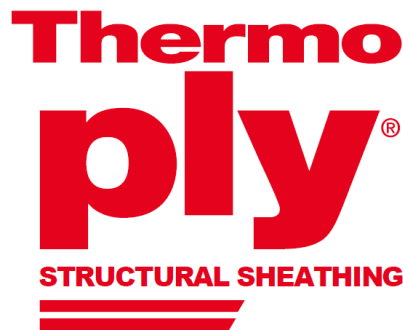
SECTION: 06 16 00 - Sheathing

## 1 Listed Innovative Products<sup>1,2</sup>

1.1 Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing

1.1.1 Whenever Thermo-Ply® Red is stated in this listing the provisions also apply to Thermo-Ply® Red AMG

1.2 The Innovative Products evaluated in this Listing are shown in Figure 1.



**Figure 1.** Thermo-Ply® Red Structural Sheathing

<sup>1</sup> For more information, visit [cbitest.com](http://cbitest.com) or call us at 608-310-6739.

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



**1.3** Thermo-Ply® Red Structural Sheathing is 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, and foil facings may be additionally applied on one or both faces.

1.3.1 Thermo-Ply® Red Structural Sheathing panels have a nominal thickness of 0.113" and nominal weight of 0.414 lbs. per square foot

**1.4** *Material Availability*

1.4.1 Standard widths include 48" (1219 mm) and 48¾" (1238 mm).

1.4.2 Standard lengths include 96" (2438 mm), 108" (2743 mm), and 120" (3048 mm).

1.4.3 Other custom widths and lengths can be manufactured.

**2** **Scope of Listing**<sup>3,4</sup>

2.1 Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing have been tested and/or evaluated in accordance with the following Standards and Referenced Documents for use as specified herein:

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

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

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

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

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

2.1.6 *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*

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

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

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

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

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

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

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



### 3 Performance Evaluation

- 3.1 Tests, testing, test reports, research reports, duly authenticated reports and related engineering evaluations are defined as intellectual property and/or trade secrets and protected by Defend Trade Secrets Act 2018 (DTSA).<sup>5</sup>
- 3.2 Testing and/or inspections conducted for this Listing were performed by CBI, an ISO/IEC 17025 accredited testing laboratory<sup>6</sup> and ISO/IEC 17020 accredited inspection body,<sup>7</sup> which are internationally recognized accreditations through International Accreditation Forum (IAF).
- 3.3 Independent testing and/or inspections conducted for this Listing were performed by an ISO/IEC 17025 accredited testing laboratory, ISO/IEC 17020 accredited inspection body, and/or a licensed Registered Design Professional (RDP).
- 3.4 Thermo-Ply® Red Structural Sheathing panels are used in the following applications:
  - 3.4.1 Wall sheathing in buildings constructed in accordance with the IRC and IBC for light-frame wood construction.
  - 3.4.2 Structural wall sheathing to provide lateral load resistance (wind and seismic) for braced wall panels used in light-frame wood construction.
  - 3.4.3 Wall sheathing in buildings constructed in accordance with the IBC requirements for Type V light-frame construction.
  - 3.4.4 Structural wall sheathing to provide resistance to transverse loads for wall assemblies used in light-frame wood construction.
  - 3.4.5 Structural wall sheathing to provide resistance to uplift loads for wall assemblies used in light-frame wood construction.
  - 3.4.6 An approved alternative WRB when installed in accordance with Section 3.11 and Section 4.
  - 3.4.7 An approved air barrier material when installed in accordance with Section 3.12 and Section 4.
  - 3.4.8 An approved draftstop material when installed in accordance with Section 3.13 and Section 4.
- 3.5 *Structural Applications*
  - 3.5.1 Except as otherwise described in this Listing, Thermo-Ply® Red Structural Sheathing shall be installed in accordance with the applicable building codes listed in Section 2 using the provisions set forth herein for the design and installation of wood structural panels (WSP).
    - 3.5.1.1 Thermo-Ply® 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 subject to the SDPWS boundary conditions, except as specifically allowed in this Listing.

<sup>5</sup> <https://www.law.cornell.edu/uscode/text/18/part-11/chapter-90>. Given our professional duty to inform, please be aware that whoever, with intent to convert a trade secret (TS), that is related to a product or service used in or intended for use in interstate or foreign commerce, to the economic benefit of anyone other than the owner thereof, and intending or knowing that the offense will, injure any owner of that trade secret, knowingly without authorization copies, duplicates, sketches, draws, photographs, downloads, uploads, alters, destroys, photocopies, replicates, transmits, delivers, sends, mails, communicates, or conveys such information; shall be fined under this title or imprisoned not more than 10 years, or both. Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of \$5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. As the National Society of Professional Engineers states, "Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve." Therefore, to protect intellectual property (IP) and TS, and to achieve compliance with public records and trade secret legislation, requires approval through the use of Listings, certified reports, technical evaluation reports, duly authenticated reports and/or research reports prepared by approved agencies and/or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

<sup>6</sup> Internationally recognized accreditations are performed by members of the International Accreditation Forum (IAF). Accreditation Body and Regional Accreditation Group Members of IAF are admitted to the IAF MLA only after a stringent evaluation of their operations by a peer evaluation team, which is charged to ensure that the applicant complies fully with both international standards and IAF requirements. Once an accreditation body is a signatory of the IAF MLA, it is required to recognize certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.

<sup>7</sup> Ibid.



- 3.5.2 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 code referenced in Section 2.
- 3.5.3 Except as provided for in Section 3.15, the maximum aspect ratio for Thermo-Ply® Red Structural Sheathing shall be 4:1.
- 3.5.4 The minimum full height panel width shall be 24", except as allowed by Section 3.15.
- 3.5.5 Installation is permitted for single top plate or double top plate applications.
- 3.5.6 Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.
- 3.6 *Simplified IRC Bracing Provisions*
  - 3.6.1 Thermo-Ply® Red Structural Sheathing is permitted to be used in accordance with the IRC simplified bracing method and Table 1.

**Table 1.** Thermo-Ply® Red Structural Protective Sheathing Simplified Bracing Table<sup>1,2,3,4,5,6,7,8</sup>

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
Thermo-Ply® 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	5	2	3	3	4	5	5
		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
	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. This simplified bracing table is based on the provisions of the IRC. All provisions therein shall be observed, except that this table shall replace [IRC Table R602.12.4](#), and Thermo-Ply® 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 re-designated as the second and third stories, respectively, and shall be prohibited in a three-story structure.
4. Actual lengths of the sides of the circumscribed rectangle shall be rounded to the next highest unit of 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. Thermo-Ply® attached with minimum 15/16" crown x 1/4" leg staples fastened 3" o.c. at panel edges and 3" o.c. in the field. Roofing nails (minimum 0.120" x 1/4" 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 the IRC and [IRC Table R702.3.5](#).



### 3.7 Prescriptive IRC Bracing Applications

- 3.7.1 Thermo-Ply® Red Structural Sheathing may be used on braced wall lines as an equivalent alternative to Method WSP and CS-WSP of the IRC, when installed in accordance with the IRC and this Listing.
- 3.7.2 Required braced wall panel lengths for Thermo-Ply® Red Structural Sheathing shall be as determined by the equivalency factor shown in Table 2 and [IRC Table R602.10.3\(1-4\)](#) including all footnotes.
  - 3.7.2.1 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.
  - 3.7.2.2 Thermo-Ply® 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.
- 3.7.3 All IRC prescriptive bracing minimums, spacing requirements, and rules must also be met.
- 3.7.4 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 an alternate provision.

**Table 2.** IRC Braced Wall Panel Equivalency for Thermo-Ply® Red Structural Sheathing<sup>5</sup>

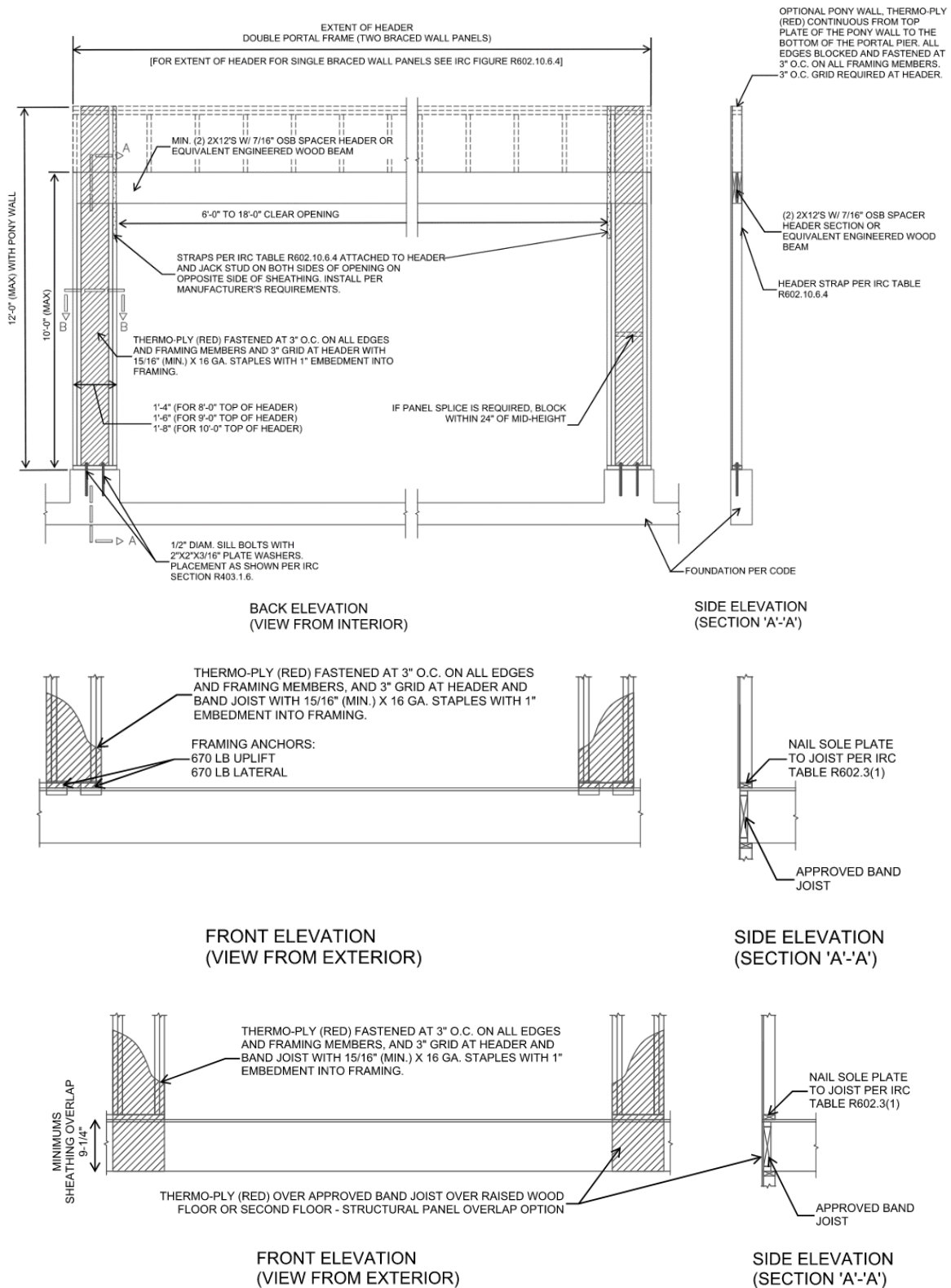
Product	Maximum Stud Spacing (in)	Fastener <sup>1,2</sup>	Maximum Fastener Spacing (edge:field) (in)	Gypsum Wallboard <sup>4,6</sup> Fastening Spacing (blocked or unblocked) (edge:field)	Wind
					SPF Framing
					Equivalency Factors <sup>3</sup> to IRC WSP or CS-WSP
Thermo-Ply® Red Structural Sheathing	16 o.c.	Minimum 16 Gauge <sup>15</sup> / <sub>16</sub> " Crown x 1 <sup>1</sup> / <sub>4</sub> " 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 <sup>1</sup>/<sub>4</sub>" with a <sup>3</sup>/<sub>8</sub>" head) are a permitted alternate fastener.
3. Thermo-Ply® 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\(1 and 3\)](#), as modified by all applicable factors in [Table R602.10.3\(2 and 4\)](#) 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\(4\)](#), 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](#).

### 3.8 Thermo-Ply® Red Structural Sheathing CS-PF Portal Frame

- 3.8.1 A Thermo-Ply® Red Structural Sheathing CS-PF was tested and evaluated for equivalency to the IRC Method CS-PF in accordance with the IRC and [IRC Table R602.10.5](#).
- 3.8.2 [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.
- 3.8.3 The capacity of the Thermo-Ply® 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.
- 3.8.4 The Thermo-Ply® Red Structural Sheathing CS-PF is depicted in Figure 2.



**Figure 2. Thermo-Ply® Red Structural Sheathing CS-PF**





3.9 *Prescriptive IBC Conventional Light-Frame Wood Construction*

3.9.1 Thermo-Ply® 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 ½" 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 the IBC and this Listing.

3.10 *Performance-Based Wood-Framed Construction*

- 3.10.1 Thermo-Ply® 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.
- 3.10.2 Thermo-Ply® 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.
- 3.10.3 Thermo-Ply® Red Structural Sheathing shear walls that require seismic design in accordance with the IBC shall use the seismic allowable unit shear capacities set forth in Table 4.
  - 3.10.3.1 The response modification coefficient, R; system overstrength factor,  $\Omega_0$ ; and deflection amplification factor,  $C_d$ , 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 ASCE 7 Section 14.5.
- 3.10.4 Thermo-Ply® 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.
- 3.10.5 Thermo-Ply® 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 Thermo-Ply® Red Structural Sheathing – Wind

Product <sup>1,5</sup>	Joint Condition <sup>3</sup>	Maximum Stud Spacing (in)	Gypsum Wallboard Thickness	Gypsum Wallboard Fastener Spacing <sup>2,4</sup> (edge:field)	Allowable Unit Shear Capacity (plf)
Thermo-Ply® Red Structural Sheathing	Lapped or Butted	16 o.c.	½" GWB	4:16	530
				8:8	445
				8:16	425
				16:16	370
				8:8	435
				16:16	365
	Lapped	16 o.c.	None	-	320
					24 o.c.
		16 o.c.			300
					24 o.c.

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

1. Thermo-Ply® Red 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 ¾". Fastener head shall be in contact with the Thermo-Ply® surface. Roofing nails (minimum 0.120" x 1¼" with a ¾" head) are a permitted alternate fastener.
2. Gypsum attached with minimum #6 type W or S screws 1¼" long or 5d cooler nails with a minimum edge distance of ¾".
3. Where lapped joints are used, the panels shall be overlapped nominally ¾".
4. Straight-line interpolations between fastening patterns is acceptable.
5. Thermo-Ply® Red may be installed on either the interior or the exterior side of the wall.



**Table 4. Seismic Performance of Thermo-Ply® Red Structural Sheathing<sup>1,3,8,9</sup>**

Seismic Force Resisting System	Joint Condition	Gypsum Wallboard <sup>2</sup>	Maximum Stud Spacing (in)	Seismic Allowable Unit Shear Capacity (plf)	Apparent Shear Stiffness, $G_a$ (kips/in)	Response Modification Factor, $R^4$	System Overstrength Factor, $\Omega_0^5$	Deflection Amplification Coefficient, $C_d^6$	Structural System Limitations and Building Height Limit <sup>7</sup> (ft)				
									Seismic Design Category				
									B	C	D	E	F
Light-Frame (Wood) Walls Sheathed with Thermo-Ply® Red	Lapped or Butted	½" GWB Fasteners Spaced 8/8	16 o.c.	355	11.5	6.5	3	4	NL	NL	65	65	65
Light-Frame (Wood) Walls Sheathed with Thermo-Ply® Red	Lapped or Butted	No GWB	16 o.c.	240	6.7	6.5	3	4	NL	NL	65	65	65
Light-Frame (Wood) Walls Sheathed with Thermo-Ply® Red	Lapped	½" GWB Fasteners Spaced 16/16	24 o.c.	290	11	6.5	3	4	NL	NL	65	65	65
Light-Frame (Wood) Walls Sheathed with Thermo-Ply® Red	Butted	½" GWB Fasteners Spaced 16/16	24 o.c.	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

- Thermo-Ply® Red sheathing attached with a minimum 16 gauge, <sup>15</sup>/<sub>16</sub>" 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 ¾". Fastener head shall be in contact with the Thermo-Ply® surface. Roofing nails (minimum 0.120" x 1¼" with a ¾" head) are a permitted alternate fastener.
- Gypsum attached with minimum #6 type W or S screws 1¼" long with a minimum edge distance of ¾".
- All seismic design parameters follow the equivalency as defined in the IBC.
- Response modification coefficient,  $R$ , for use throughout ASCE 7. Note:  $R$  reduces forces to a strength level, not an allowable stress level.
- The tabulated value of the overstrength factor,  $\Omega_0$ , is permitted to be reduced by subtracting one-half (0.5) for structures with flexible diaphragms.
- Deflection amplification factor,  $C_d$ , for use with ASCE 7 Section 12.8.6, 12.8.7, and 12.9.2.
- NL = Not Limited. Heights are measured from the base of the structure as defined in ASCE 7 Section 11.2.
- Thermo-Ply® Red sheathing may be installed with either lapped joints or butted joints.
- Thermo-Ply® Red may be installed on either the interior or the exterior side of the wall.





**Table 5. Uplift Performance of Thermo-Ply® Red Structural Sheathing**

Product	Allowable Uplift Capacity (plf)	Maximum Stud Spacing (in)	Fastener Schedule
Thermo-Ply® Red: Single Bottom Plate	220	16 o.c.	Minimum 15/16" crown, 1¼" leg 16 gauge galvanized staples <sup>1</sup> OR 0.120" x 1¼" 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.

**Table 6. Load Capacity (psf) for Thermo-Ply® Red Structural Sheathing Resisting Transverse Wind Loads<sup>1,2,4</sup>**

Product	Maximum Stud Spacing (in)	Allowable Design Value (psf)	Fastener Schedule	Basic Wind Speed V <sub>asd</sub> per ASCE 7-05 (mph)	Basic Wind Speed V <sub>ult</sub> per ASCE 7-10 & 7-16 (mph)
Thermo-Ply® Red	16 o.c.	120	Minimum 15/16" crown, 1¼" leg 16 gauge galvanized staples <sup>3</sup> OR 0.120" x 1¼" 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<sup>2</sup>  
1. Design wind load capacity shall be in accordance with the IBC.  
2. Capacities assume minimum ½" gypsum wallboard installed on the interior side of the wall. Where gypsum wallboard is not installed on the interior side of the wall, a 40% reduction in wind pressure resistance shall be applied (V<sub>asd</sub> wind speed less than 90 mph, V<sub>ult</sub> 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 B, Zone 5, 10 sq. ft. effective wind area. See the applicable building code for any adjustment needed for specific building location and configuration.

**3.11 Water-Resistive Barrier (WRB)**

- 3.11.1 Thermo-Ply® Red Structural Sheathing may be used as a WRB as prescribed in the IBC when installed on exterior walls as described in this section.
- 3.11.2 Thermo-Ply® 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 4.
- 3.11.3 All seams and joints between boards shall be butt jointed and sealed with an approved construction tape or overlapped in accordance with Section 6. Use approved construction tape, such as 2⅞" OX SeamTape®.
- 3.11.4 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.
- 3.11.5 Flashing must be installed at all sheathing penetrations and shall comply with all applicable code sections. Approved flashing tapes include Arctic Flash Synthetic Flashing, Flexible Butyl Flashing, and Home Guard RA-Plus Flashing.
- 3.11.6 Where Thermo-Ply® Red Structural Sheathing is used in the intermittent bracing method along a braced wall line, Thermo-Ply® Green Structural Sheathing may be used as the infill panels between the Thermo-Ply® 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 3.11.3.



3.12 Air Barrier

3.12.1 Thermo-Ply® Red Structural Sheathing may be used as an air barrier assembly as prescribed in the IRC and IECC in accordance with ASTM E283.

3.13 Draftstop

3.13.1 Thermo-Ply® Red Structural Sheathing may be used as a draftstop material in accordance with the IBC and IRC.

3.13.2 When installed as a draftstop, Thermo-Ply® Red Structural Sheathing shall be installed in accordance with Section 4.

3.14 Surface Burn Characteristics

3.14.1 Thermo-Ply® Red Structural Sheathing panels have the flame spread characteristics shown in Table 7.

Table 7. Flame spread and Smoke Developed Rating<sup>1</sup>

Product	Flame Spread	Smoke Developed
Thermo-Ply® Red Structural Sheathing	< 200	< 450

1. Tested in accordance with ASTM E84 and UL 723.

3.15 Non-Structural Applications

3.15.1 Where other means of wall bracing are provided, or are not required, any grade of Thermo-Ply® Structural Sheathing may be used to provide other wall functions when installed in accordance with this section.

3.15.1.1 The sheathing panels are applied to wall framing with minimum 0.120" x 1¼" galvanized roofing nails or No.16 gauge galvanized staples having a 15/16" crown and 1¼" leg lengths.

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

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

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

3.15.1.5 Fasten all staples parallel to the framing member, with an edge spacing of 3/8" (9.5 mm) minimum.

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

3.15.2 Incidental tears or penetrations of Thermo-Ply® Red Structural Sheathing must be repaired with an approved construction tape. See Section 3.11.3.

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

3.15.3.1 Joints overlap nominally 3/4" (19.1 mm).

3.15.3.2 Butted joints are sealed with approved construction tape. See Section 3.11.3.

3.16 Any building code and/or accepted engineering evaluations (i.e., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ Engineering, LLC (DrJ), an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDPs / approved sources. DrJ is qualified<sup>8</sup> to practice product and code compliance services within its scope of accreditation and engineering expertise, respectively.

<sup>8</sup> 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. CBI is an ANAB accredited laboratory and inspection body. DrJ is an ANAB accredited product certification body.



## 4 Installation

- 4.1 Installation shall comply with the manufacturer installation instructions, this Listing, the approved construction documents, and the applicable building code.
- 4.2 In the event of a conflict between the manufacturer installation instructions, this Listing, the approved construction documents and the applicable building code, the most restrictive shall govern.
- 4.3 *General for Structural and WRB Applications*
  - 4.3.1 Thermo-Ply® Red Structural Sheathing shall be installed in accordance with the manufacturer published installation instructions and this Listing. Basic instructions are also printed on every Thermo-Ply® panel.
  - 4.3.2 If there are any conflicts between the manufacturer instructions and this Listing, the more restrictive shall apply.
  - 4.3.3 Where the Thermo-Ply® Structural Sheathing extends beyond the bottom of a wall and overlaps the band joist below, fasten the bottom edge of the Thermo-Ply® 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.
  - 4.3.4 Where hold-down straps are used, install Thermo-Ply® Red Structural Sheathing first, then install the strap over the face of the structural sheathing and attach per the manufacturer installation instructions.
- 4.4 *Orientation*
  - 4.4.1 Thermo-Ply® 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.
- 4.5 *Fastener Type*
  - 4.5.1 *Thermo-Ply® Red Structural Sheathing*
    - 4.5.1.1 Minimum 0.120" x 1¼" galvanized roofing nail.
    - 4.5.1.2 Minimum <sup>15</sup>/<sub>16</sub>" crown by 1¼" leg, 16 gauge staples shall be installed per the staple manufacturer instructions.
    - 4.5.1.3 Fasteners shall be driven such that the head of the fastener is in contact with the surface of the Thermo-Ply® Structural Sheathing. Do not overdrive fasteners. See Table 8 for fastening spacing.

**Table 8.** Fastener Spacing of Thermo-Ply® Red Structural Sheathing

Thermo-Ply® 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

#### 4.6 Gypsum Wallboard

4.6.1 Where required, gypsum wallboard shall be a minimum 1/2" thickness and shall be attached with one of the following:

4.6.1.1 #6 x 1 1/4" type W or S screws

4.6.1.2 5d cooler nails

#### 4.7 Fastener Edge Distance

4.7.1 Fasteners shall be installed with a minimum edge distance of 3/8" (9.5 mm) for Thermo-Ply® Red Structural Sheathing and gypsum.

#### 4.8 Treatment of Joints

4.8.1 Thermo-Ply® Red Structural Sheathing joints may be either butted or overlapped.

4.8.1.1 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.

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

#### 4.9 Window Jamb Adjustments

4.9.1 If windows are made to accommodate traditional 1/2" 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.

4.9.2 Thermo-Ply® Red Structural Sheathing 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.

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

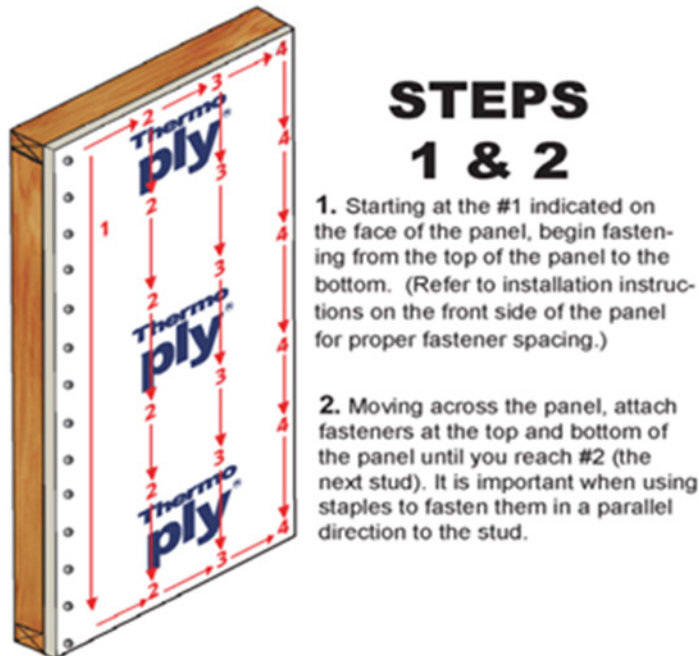


Figure 3. Installation Instructions - WRB Installation Procedure



- 4.9.4 Overlapped Joint – Install the first panel per Figure 3.
  - 4.9.4.1 Overlap the next panel ¾" over the first panel and fasten the joint with a common line of fasteners.
  - 4.9.4.2 For Thermo-Ply® Red AMG, 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.
- 4.9.5 Butted Joint with Flashing – Install panels per Figure 3 with joints butted (no overlap).
- 4.9.6 Seal butted seams with approved construction tape (see Section 3.11.3), when finished with attaching the wall panels and all fasteners in the wall line.

## 5 Findings

- 5.1 As described in Section 3, Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing have performance characteristics that were tested and/or meet pertinent standards and is suitable for use pursuant to its specified purpose.
- 5.2 When used and installed in accordance with this Listing and the manufacturer installation instructions, Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing shall be approved for:
  - 5.2.1 Lateral load resistance due to wind and seismic loads carried by shear walls.
  - 5.2.2 Transverse load resistance due to components and cladding pressures on building surfaces.
  - 5.2.3 Uplift load resistance due to wind uplift loads carried by the walls.
  - 5.2.4 Performance for use as a WRB in accordance with the IBC and IRC.
  - 5.2.5 Performance for use as an air barrier in accordance with the IRC and IECC.
  - 5.2.6 Performance for use as a draftstop in accordance with the IBC and IRC.
  - 5.2.7 Performance for use as a Class C interior finish material in accordance with the IBC and IRC.
  - 5.2.8 If Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
    - 5.2.8.1 Assistance with building design is available from OX Engineered Products, LLC.
    - 5.2.8.2 If not, section 5.3 does not apply.
- 5.3 Unless exempt by state statute, when Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing is to be used as a structural and/or building envelope component in the design of a specific building, the design shall be performed by an RDP.
- 5.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from OX Engineered Products, LLC.
- 5.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10<sup>9</sup> are similar) in pertinent part states:

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

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<sup>9</sup> 2018 IFC Section 104.9



- 5.6 **Approved:**<sup>10</sup> Building codes require that the building official shall accept duly authenticated reports<sup>11</sup> or research reports<sup>12</sup> from approved agencies and/or approved sources (i.e., licensed RDP) with respect to the quality and manner of use of new products, materials, designs, services, assemblies, or methods of construction.
- 5.6.1 Acceptance of an approved agency, by a building official, is performed by verifying that the agency is accredited by a recognized accreditation body of the International Accreditation Forum (IAF).
- 5.6.2 Acceptance of a licensed RDP by a building official is performed by verifying that the RDP and/or their business entity is listed by the licensing board of the relevant jurisdiction.
- 5.7 CBI is an approved agency through its ISO/IEC 17025 testing and an ISO/IEC 17020 inspection accreditation. CBI employs RDPs and is accredited by ANAB.<sup>13</sup>
- 5.8 Through ANAB accreditation and the IAF Multilateral Agreements, this Listing can be used to obtain innovative product approval in any jurisdiction or country that has IAF MLA Members and Signatories to meet the Purpose of the MLA – “*certified once, accepted everywhere.*” IAF specifically says, “*Once an accreditation body is a signatory of the IAF MLA, it is required to recognise certificates and validation and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope.*”<sup>14</sup>

## 6 Conditions of Use

- 6.1 Performance characteristics are specified in Section 3.
- 6.2 As defined in Section 3, where material 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.
- 6.3 As listed herein, Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing shall not be used:
- 6.3.1 As a nailing base.
- 6.3.2 To resist horizontal loads from concrete and masonry walls.
- 6.4 Fastening through the Thermo-Ply® Red Structural Sheathing into the framing is acceptable.
- 6.5 When Thermo-Ply® Red Structural Sheathing is installed as a wall sheathing but is not installed per structural requirements, light-frame walls shall be braced by other means. When used as a WRB, installation shall be in accordance with Section 3.11.
- 6.5.1 When Thermo-Ply® Structural Sheathing is not installed as a WRB, other means of providing a WRB shall be required, as per the code.
- 6.6 When used in accordance with the IBC in Seismic Design Categories C, D, E, or F, special inspections shall comply with the IBC.
- 6.7 When used in accordance with the IBC in high wind areas, special inspections shall comply with the IBC

<sup>10</sup> Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC [Section 201.4](#) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

<sup>11</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1>

<sup>12</sup> <https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2>

<sup>13</sup> Please see the ANAB directories and search for Center for Building Innovation - <https://anab.ansi.org/laboratory-accreditation> and <https://anab.ansi.org/inspection-body-accreditation>

<sup>14</sup> <https://iaf.nu/en/about-iaf-mla/#:~:text=required%20to%20recognise>





- 6.8 When required by adopted legislation and enforced by the building official (AHJ)<sup>15</sup> in which the project is to be constructed:
- 6.8.1 This Listing and the installation instructions shall be submitted at the time of permit application.
  - 6.8.2 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.
  - 6.8.3 These Innovative Products have an internal quality control program and a third-party quality assurance program.
  - 6.8.4 At a minimum, this innovative product shall be installed per Section 4 of this Listing.
- 6.9 The approval of this Listing by the AHJ shall comply with IBC Section 1707.1, where legislation states in pertinent part, “*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 104.11”*, all of IBC Section 104, and IBC Section 105.4.
- 6.10 These Innovative Products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.
- 6.11 The application of these Innovative Products, in the context of this Listing, are 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.
- 6.12 The actual design, suitability, and use of this Listing for any particular building is the responsibility of the owner or the owner’s authorized agent.
- 6.13 Any required design loads shall be provided by the building designer (i.e., owner or RDP) and/or determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.
- 6.14 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies (i.e., ANAB accredited agencies), approved sources (i.e., RDPs), and/or professional engineering regulations. Accuracy of external test data and resulting analysis is relied upon.
- 6.15 Where pertinent, testing and/or engineering analysis is based upon state or local code and/or standard provisions that have been codified into law through legislation. The developers of the codes and standards are legally responsible for the accuracy of any legislatively adopted material properties and/or analytical methods. Any testing and/or engineering mechanics-based analysis may use legislatively and/or code adopted provisions as the control condition. The use of a control condition to compare to a test condition establishes equivalency to that prescribed in the adopted legislation with respect to quality, strength, effectiveness, fire resistance, durability, and safety.
- 6.16 The reliability of the attributes provided herein may be dependent upon published design properties by others. These properties are defined by the grade mark, grade stamp, mill certificate, Listings, certified reports, duly authenticated reports, and/or research reports prepared by approved agencies and/or approved sources furnished by suppliers of products, materials, designs, assemblies, and/or methods of construction. These are presumed to be minimum properties and relied upon to be accurate.
- 6.17 Testing and engineering analysis: The strength, rigidity and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.<sup>16</sup>
- 6.18 Where additional condition of use and/or code compliance information is required, please search for Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing on the DrJ Engineering website.

<sup>15</sup> Also known as the Authority Having Jurisdiction (AHJ)

<sup>16</sup> See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition.



## 7 Identification

- 7.1 Labeling<sup>17,18</sup> shall include, but not be limited to, the manufacturer name, manufacturing location/identifier, and the CBI Listing number.
- 7.2 Labeling may include, but not be limited to, the CBI mark and any other numerical designations related to layout locations for a given project.

## 8 Review Schedule

- 8.1 This Listing is subject to periodic review and revision. For the most recent version, visit [cbitest.com](http://cbitest.com).
- 8.2 For information on the status of this Listing, contact [CBI](#).

## 9 Approved for Use Pursuant to US and International Legislation Defined in Appendix A

- 9.1 Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing are included in this [list](#) published by an [approved agency](#) concerned with evaluation of products or services that maintains periodic inspection of production of listed materials or periodic evaluation of services and whose Listing states either that the material, product, or service meets identified standards or has been tested and found suitable for a specified purpose. This Listing meets the legislative intent and definition of being acceptable to the AHJ.

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<sup>17</sup> LABEL: An identification applied on a product by the manufacturer that contains the name of the manufacturer, the function and performance characteristics of the product or material and the name and identification of an [approved agency](#), and that indicates that the representative sample of the product or material has been tested and evaluated by an [approved agency](#) (see [IBC Section 1703.5](#), "Manufacturer designation" and "Mark").

<sup>18</sup> LABELED: Equipment, materials or products to which has been affixed a [label](#), seal, symbol or other identifying mark of a nationally recognized testing laboratory, [approved agency](#) or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-[labeled](#) items and whose labeling indicates either that the equipment, material or product meets identified standards or has been tested and found suitable for a specified purpose.



## Appendix A

### 1 Innovation Legislation that Mandates Approval by any AHJ

- 1.1 **Fair Competition:** Many state legislatures have adopted regulations for the examination and approval of both building codes referenced and alternative materials, products, designs, services, and/or methods of construction that:
- 1.1.1 Advance innovation,
  - 1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and
  - 1.1.3 Benefit consumers through lower prices, better quality, and greater choice.
- 1.2 **Adopted Legislation:** The following local, state, and federal regulations affirmatively authorize Thermo-Ply® Red and Thermo-Ply® Red AMG Structural Sheathing to be found acceptable to AHJs, delegates of building departments, and/or delegates of an agency of the federal government:
- 1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative materials, products, designs, services, and/or methods of construction. The goal is to “protect economic freedom and opportunity by promoting free and fair competition in the marketplace.”
  - 1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have alternative to code-referenced materials, products, services, designs, and/or methods of construction approved for use in commerce. Disapproval of alternative to code applications shall be based upon specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved with reference to legislation violated.
  - 1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),<sup>19</sup> where providing test reports, engineering analysis and/or other related Intellectual Property (IP)/Trade Secrets (TS), is subject to prison of not more than 10 years<sup>20</sup> and/or a \$5,000,000 fine or 3 time the value of<sup>21</sup> the IP and TS.
    - 1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, duly authenticated reports from approved agencies, valid research reports prepared by approved agencies and/or approved sources, and/or Technical Evaluation Reports.
  - 1.2.4 For new materials that are not specifically provided for in any building code, the design strengths and permissible stresses shall be established by tests, where suitable load tests simulate the actual loads and conditions of application that occur.
  - 1.2.5 The design strengths and permissible stresses of any structural material....shall conform to the specifications and methods of design using accepted engineering practice....<sup>22</sup>
  - 1.2.6 The commerce of approved sources (i.e., registered PEs) is regulated by professional engineering legislation. Professional engineering commerce shall always be approved by AHJs, except where there is evidence, provided in writing, that specific legislation has been violated by an individual registered PE.
  - 1.2.7 The AHJ shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in IBC Section 104.11.<sup>23</sup>

<sup>19</sup> <http://www.drjengineering.org/AppendixC> and <https://www.drjcertification.org/cornell-2016-protection-trade-secrets>

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

<sup>21</sup> <https://www.law.cornell.edu/uscode/text/18/1832#:~:text=Any%20organization%20that,has%20thereby%20avoided>

<sup>22</sup> [IBC 2021, Section 1706.1 Conformance to Standards](#)

<sup>23</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#)



- 1.3 **Approval by Los Angeles:** The Los Angeles Municipal Code (LAMC) states in pertinent part that the provisions of LAMC are not intended to prevent the use of any material, device, or method of construction not specifically prescribed by LAMC. The Department shall use Part III, Recognized Standards in addition to Part II, Uniform Building Code Standards of Division 35, Article 1, Chapter IX of the LAMC in evaluation of products for approval where such standard exists for the product or the material and may use other approved standards which apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The Superintendent of Building shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 104.11. The testing agency shall publish the scope and limitation(s) of listed material or fabricated assembly.<sup>24</sup> The Superintendent of Building roster of approved testing agencies is provided by the Los Angeles Department of Building and Safety (LADBS).
- 1.4 **Approval by Chicago:** The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, or assembly. Supporting technical data to assist in the approval of products, materials, or assemblies not specifically provided for in MCC, shall consist of valid research reports from approved sources (i.e., MCC defined Approved Agencies).
- 1.5 **Approval by New York City:** The NYC Building Code 2022 (NYCBC) states in pertinent part that an approved agency shall be deemed<sup>25</sup> an approved testing agency via ISO/IEC 17025 accreditation, an approved inspection agency via ISO/IEC 17020 accreditation, and an approved product evaluation agency via ISO/IEC 17065 accreditation. Accrediting agencies, other than federal agencies, must be members of an internationally recognized cooperation of laboratory and inspection accreditation bodies subject to a mutual recognition agreement<sup>26</sup> (i.e., ANAB, International Accreditation Forum (IAF), etc.).
- 1.6 **Approval by Florida:** Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation, by 1) A certification mark or listing of an approved certification agency, 2) A test report from an approved testing laboratory, 3) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity; 4) A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a professional engineer or architect, licensed in Florida. For local product approval, products or systems of construction shall demonstrate compliance with the structural wind load requirements of the Florida Building Code (FBC) through one of the following methods; 1) A certification mark, listing, or label from a commission-approved certification agency indicating that the product complies with the code; 2) A test report from a commission-approved testing laboratory indicating that the product tested complies with the code; 3) A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code; 4) A product-evaluation report or certification based upon testing or comparative or rational analysis, or a combination thereof, developed and signed and sealed by a Florida professional engineer or Florida registered architect, which indicates that the product complies with the code; 5) A statewide product approval issued by the Florida Building Commission. The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVL13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

<sup>24</sup> Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

<sup>25</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies

<sup>26</sup> New York City, The Rules of the City of New York, § 101-07 Approved Agencies



- 1.7 **Approval by Miami Dade (i.e., Notice of Acceptance [NOA]):** A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami Dade shall accept the statewide and local Florida Product Approval as provided for in Florida legislation [553.842](#) and [553.8425](#).
- 1.8 **Approval by New Jersey:** Pursuant to Building Code 2018 of New Jersey in [Section 1707.1 General](#)<sup>27</sup> says: *“In the absence of approved rules or other approved standards, ...the building official shall accept duly authenticated reports from [approved agencies](#) in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the [Uniform Construction Code \(N.J.A.C. 5:23\)](#)”*.<sup>28</sup> § 5:23-3.7 Municipal approvals of alternative materials, equipment, or methods of construction. (a) Approvals: Alternative materials, equipment, or methods of construction **shall be approved** by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability and safety of those conforming with the requirements of the regulations. 1. A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, **shall be accepted** by the appropriate subcode official as meeting the requirements of (a) above. 2. Reports of engineering findings issued by nationally recognized evaluation service programs, such as, **but not limited to**, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., **shall be accepted** by the appropriate subcode official as meeting the requirements of (a) above. The [New Jersey Department of Community Affairs](#) has confirmed that reports of engineering findings from any accredited entity listed by [ANAB](#) meets the requirements of item 2 given the listed entities no longer exist.
- 1.9 **Code of Federal Regulations Manufactured Home Construction and Safety Standards Approval:** Pursuant to Title 24, Subtitle B, Chapter XX, [Part 3282](#)<sup>29</sup> and [Part 3280](#)<sup>30</sup>, *“the Department encourages innovation and the use of new technology in manufactured homes”* and the design and construction of a manufactured home shall conform to the provisions of this standard where key approval provisions in mandatory language follow; *“All construction methods shall be in conformance with accepted engineering practices”, “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”, and “the design stresses of all materials shall conform to accepted engineering practice”*.
- 1.10 **Other US Local and State Approval Processes:** In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:
  - 1.10.1 For [new materials](#) that are not specifically provided for in this code, the [design strengths and permissible stresses](#) shall be established by tests.<sup>31</sup>
  - 1.10.2 For [innovative alternative products, materials, designs, services and/or methods of construction](#), in the absence of approved rules or other approved standards...the building official shall accept [duly authenticated reports](#) (i.e., listing and/or research report) from [approved agencies](#) with respect to the quality and manner of use of [new materials or assemblies](#).<sup>32</sup> A building official [approved agency](#) is deemed to be approved via certification from an [accreditation body](#) that is listed by the [International Accreditation Forum](#),<sup>33</sup> or the equivalent.

<sup>27</sup> [https://up.codes/viewer/new\\_jersey/lbc-2018/chapter/17/special-inspections-and-tests#1707.1](https://up.codes/viewer/new_jersey/lbc-2018/chapter/17/special-inspections-and-tests#1707.1)

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

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

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

<sup>31</sup> [IBC 2021, Section 1706 Design Strengths of Materials, 1706.2 New Materials](#). Adopted law pursuant to IBC model code language 1706.2.

<sup>32</sup> [IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General](#). Adopted law pursuant to IBC model code language 1707.1.

<sup>33</sup> Please see the [ANAB directory](#) for building official approved agencies.





- 1.10.3 The design strengths and permissible stresses of any structural material...shall conform to the specifications and methods of design of accepted engineering practice performed by an approved source.<sup>34</sup> An approved source is defined as a PE subject to professional engineering laws, where a research and/or a technical evaluation report, certified by a PE, shall be approved.
- 1.11 **International Approval Process:** The USMCA and GATT agreements provide for approval of innovative materials, products, designs, services, and/or methods of construction through the Technical Barriers to Trade agreements and the International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA), where these agreements state in pertinent part:
- 1.11.1 Permit participation of conformity assessment bodies located in the territories of other Members under conditions no less favourable than those accorded to bodies located within their territory or the territory of any other country.
- 1.11.2 Conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.
- 1.11.3 Conformity assessment procedures are not prepared, adopted, or applied with a view to or with the effect of creating unnecessary obstacles to international trade. This means that conformity assessment procedures shall not be more strict or be applied more strictly than is necessary to give the importing Member adequate confidence that products conform to the applicable technical regulations or standards.
- 1.11.4 **International Approval:** The purpose of the IAF MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA, and subsequently acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, products, designs, services, and/or methods of construction. Accreditations granted by IAF MLA signatories are recognized worldwide based on their equivalent accreditation programs, therefore reducing costs and adding value to businesses and consumers.

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