# Listing and Technical Evaluation Report™

**A Duly Authenticated Report from an Approved Agency**

**Report No: 1306-03**

Issue Date: July 23, 2013

Revision Date: November 3, 2026

Subject to Renewal: January 1, 2028

## Fire Performance of EnergyShield® Products in Buildings of Type I-V Construction

### Trade Secret Report Holder:

### Atlas® Roofing Corporation

Phone: 800-388-6134 Website: atlasrwi.com

### CSI Designations:

**DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION** Section: 07 21 00 - Thermal Insulation

## 1 Innovative Products Evaluated[1]

1.1 EnergyShield® Pro

1.2 EnergyShield® CGF Pro[2]

1.3 EnergyShield® Ply Pro

1.4 EnergyShield® XR

## 2 Product Description and Materials

2.1 The innovative products evaluated in this report are shown in **Figure 1**, and are described in **Table 1**.




**Figure 1**. EnergyShield Continuous Wall Insulation Products


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**Table 1**. Product Descriptions[1]

| EnergyShield Pro, EnergyShield CGF Pro, and EnergyShield XR | |
|---|---|
| ***Description*** | 1. Atlas EnergyShield insulation boards consist of closed-cell, rigid polyisocyanurate (polyiso) foam cores bonded to various facer materials.<br>a. Nominal density of the polyiso foam core is 2.0-pcf.<br>b. Foam core for EnergyShield Pro, EnergyShield CGF Pro, and EnergyShield XR is Class A fire rated.<br>*EnergyShield Pro:*<br>Foam core is ASTM C1289 Type I, Class 1 and 2 compliant.<br>*EnergyShield CGF Pro:*<br>Foam core is ASTM C1289 Type II, Class 2 compliant.<br>*EnergyShield XR:*<br>Foam core is ASTM C1289 Type I, Class 1 and 2 compliant. |
| ***Facer Material(s)*** | *EnergyShield Pro:*<br>Reflective, 12 mil reinforced foil facer on one side and a white, 12 mil reinforced acrylic-coated aluminum facer on the other side<br>*EnergyShield CGF Pro:*<br>High performance coated glass facer on front and back; one side is dark gray for use in open joint Rainscreen applications<br>*EnergyShield XR:*<br>Impermeable foil facers on both sides |
| ***Dimensions*** | 1. *Standard Product Width:* 48" (1,219 mm)<br>2. *Standard Product Length:* 96" or 108" (2,438 mm or 2,743 mm)<br>*Note:* Nominal 16" or 24" (406 mm or 610 mm) widths for use in cavity wall applications are available as well as custom sizes. |
| ***Available Thicknesses (in)*** | 1. *EnergyShield Pro:* 3/4" through 4"<br>2. *EnergyShield CGF Pro:* 1/2" through 4"<br>3. *EnergyShield XR:* 1/2" through 4" |
| **EnergyShield Ply Pro** | |
| ***Description*** | 1. Atlas EnergyShield Ply Pro is composed of a glass-faced, closed-cell, rigid polyisocyanurate (polyiso) foam core complying with ASTM C1289, Type V, with Type II, Class 2 foam bonded to fire treated plywood.<br>a. Nominal density of the polyiso foam core is 2.0-pcf.<br>b. Foam core for EnergyShield Ply Pro is Class A, NFPA 285 compliant. |
| ***Facer Material(s)*** | 1. Coated glass facers, laminated to a 5/8" or 3/4" fire treated PS 2 compliant plywood panel (one side) |
| ***Dimensions (in)*** | 1. *Standard Product Width:* 48" (1,219 mm)<br>2. *Standard Product Length:* 96" or 108" (2,438 mm or 2,743 mm) |
| ***Available Thicknesses (in)*** | 1. 1 5/8" through 4 5/8" (5/8" fire-treated plywood bonded to 1" to 4" polyiso foam core)<br>2. 1 3/4" through 4 3/4" (3/4" fire-treated plywood bonded to 1" to 4" polyiso foam core) |
| SI: 1 in = 25.4 mm, 1-psi = 0.0069 MPa<br>1. Where applicable, meets or exceeds minimum compressive strength of 15-psi. | |

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


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## 3 Definitions[3]

3.1 New Materials[4] 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.[5] The design strength and permissible stresses shall be established by tests[6] and/or engineering analysis.[7]

3.2 Duly authenticated reports[8] and research reports[9] are test reports and related engineering evaluations that are written by an approved agency[10] and/or an approved source.[11]

3.2.1 This report utilizes 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).[12]

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.[13]

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[14] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[15] 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[16] 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.[17]

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.[18] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[19] 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.[20]

## 4 Applicable Local, State, and Federal Approvals; Standards; Regulations[21]

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, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.[22]

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.[23]


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4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[24] and Part 3280[25] 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 *IMC – 18, 21, 24: International Mechanical Code®*

4.2.5 *FBC-B—20, 23: Florida Building Code[26] – Building*

4.2.6 *FBC-R—20, 23: Florida Building Code[26] – Residential*

4.3 *Standards*

4.3.1 *ASTM C1289: Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board*

4.3.2 *ASTM D1929: Standard Test Method for Determining Ignition Temperature of Plastics*

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

4.3.4 *ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials*

4.3.5 *ASTM E136: Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C*

4.3.6 *ASTM E1354: Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*

4.3.7 *NFPA 259: Standard Test Method for Potential Heat of Building Materials*

4.3.8 *NFPA 285: Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

4.3.9 *NFPA 286: Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth*

4.3.10 *UL 263: Standard for Fire Tests of Building Construction and Materials*

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

4.3.12 *UL 1715: Fire Test of Interior Finish Material*

## 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 an 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 *General*

6.1.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are Foam Plastic Insulating Sheathing (FPIS) in compliance with IBC Section 2603.

6.1.1.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR comply with IRC Section R303.[28]


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6.1.2 The insulation boards are used in buildings of Type I-IV construction in accordance to IBC Section 2603.5.

6.1.2.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are also used in buildings of Type V construction in accordance with IBC Section 2603.4, IBC Section 2603.5, IBC Section 2603.10, and in residential construction in accordance with IRC Section R303.[29]

6.1.3 Environmental Product Declarations (EPD) for EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are available at polyiso.org/page/epds.

6.2 *Fire-Resistance Rated Walls*

6.2.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR were tested to assess performance with regard to fire resistance-rated walls in accordance with UL 263 (or ASTM E119) and IBC Section 2603.5.1.

6.2.1.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR have been accorded a UL BRYX listing per UL 723, which allows them to be used in UL 263-tested assemblies permitting products classified in accordance with the UL BRYX classification. Therefore, EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are approved for the following UL assemblies:

6.2.1.1.1 *1-Hour:* BXUV.W307, BXUV.U356

6.2.1.1.2 *2-Hour:* BXUV.W307

6.2.1.2 Additionally, EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are listed by name in the following designs:

6.2.1.2.1 *45 Minutes:* BXUV.U424, BXUV.U425, BXUV.V321, BXUV.V499, BXUV.W456

6.2.1.2.2 *1 Hour:* BXUV.U026, BXUV.U326, BXUV.U330, BXUV.U354, BXUV.U355, BXUV.U364, BXUV.U424, BXUV.U425, BXUV.U460, BXUV.V499, BXUV.V454, BXUV.V455, BXUV.W417, BXUV.W429, BXUV.W456, BXUV.U349, BXUV.V302, BXUV.V303, BXUV.V318

6.2.1.2.3 *1.5 Hour:* BXUV.U424, BXUV.U425, BXUV.V499, BXUV.W456

6.2.1.2.4 *2 Hour:* BXUV.U424, BXUV.U425, BXUV.V499, BXUV.U905, BXUV.U906, BXUV.U939, BXUV.V455, BXUV.W456, BXUV.U301, BXUV.U302, BXUV.U349, BXUV.V332

6.2.1.2.5 *3 Hour:* BXUV.U904, BXUV.U907, BXUV.U939, BXUV.W429

6.2.1.2.6 *4 Hour:* BXUV.U902, BXUV.U907, BXUV.U939, BXUV.U912

6.3 *Installation in Occupied Spaces Without a Thermal Barrier*

6.3.1 EnergyShield Pro insulation boards were tested on walls and on ceilings, meeting the requirements for foam plastics exposed to the interior of occupied spaces, and have met the acceptance criteria of IBC Section 803.1.1.1 and IRC Section R302.9.4 for use on walls only, without a thermal barrier, up to a maximum combined thickness of 4" and on ceilings only without a thermal barrier up to a maximum of 12", in accordance with IBC Section 2603.4, IBC Section 2603.5.2, IBC Section 2603.9, IRC Section R303.4,[30] and IRC Section R303.6.[31]

6.4 *Installation in Attics and Crawl Spaces Without an Ignition Barrier*

6.4.1 In accordance with requirements for foam plastics exposed to interior of attics or crawl spaces, EnergyShield Pro insulation boards were tested on walls and on ceilings up to a maximum thickness of 4" and have met the acceptance criteria of IBC Section 803.1.1.1 and IRC Section R302.9.4 for use on either walls only or ceilings only without an ignition barrier, in accordance with IRC Section R303.5.3,[32] IRC Section R303.5.4,[33] IRC Section R303.6,[34] IBC Section 2603.4.1.6, IBC Section 2603.5.2, and IBC Section 2603.9.


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6.4.2 In accordance with requirements for foam plastics exposed to interior of attics or crawl spaces, EnergyShield CGF Pro insulation boards were tested on walls and on ceilings up to a maximum thickness of 4" and have met the acceptance criteria of IBC Section 803.1.1.1 and IRC Section R302.9.4 for use on walls and ceilings without an ignition barrier, in accordance with IRC Section R303.5.3,[35] IRC Section R303.5.4,[36] IRC Section R303.6,[37] IBC Section 2603.4.1.6, IBC Section 2603.5.2, and IBC Section 2603.9.

6.4.3 In accordance with requirements for foam plastics exposed to interior of attics or crawl spaces, EnergyShield XR insulation boards were tested on walls and on ceilings up to a maximum thickness of 4" and have met the acceptance criteria of IBC Section 803.1.1.1 and IRC Section R302.9.4 for use on walls and ceilings without an ignition barrier, in accordance with IRC Section R303.5.3,[38] IRC Section R303.5.4,[39] IRC Section R303.6,[40] IBC Section 2603.4.1.6, IBC Section 2603.5.2, and IBC Section 2603.9.

6.5 *Potential Heat*

6.5.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR were tested to assess the potential heat generated by the FPIS, in accordance with IBC Section 2603.5.3. The results are shown in **Table 2**.

**Table 2**. Potential Heat

| Product | Potential Heat (Btu/lb)[1] | Potential Heat (Btu/ft² per in) |
|---|---|---|
| EnergyShield Pro | 12,000 | 2,000 |
| EnergyShield CGF Pro | | |
| EnergyShield Ply Pro[2] | | |
| EnergyShield XR | | |

SI: 1 Btu/lb = 2.326 kJ/kg, 1 Btu/ft² per in = 4.471 kJ/m² per cm
1. Tested in accordance with NFPA 259.
2. EnergyShield Ply Pro foam only.

6.6 *Surface Burning Characteristics*

6.6.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR were evaluated for the surface burning characteristics listed in **Table 3** in accordance with ASTM E84 / UL 723 as specified in IBC Section 2603.3, IBC Section 2603.5.4, and IRC Section R303.3.[41]

**Table 3**. Surface Burning Characteristics[3]

| Product[1] | Flame Spread Index | Smoke Developed Index | Classification |
|---|---|---|---|
| EnergyShield Pro | ≤ 25 | < 450 | Class A |
| EnergyShield CGF Pro | | | |
| EnergyShield Ply Pro | | | |
| EnergyShield XR[2] | | | |

1. Tested in accordance with UL 723.
2. Tested in accordance with ASTM E84.
3. Flame spread and smoke-developed indices are for the foam core and are not intended to reflect hazards presented by the product under actual fire conditions.


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6.7 *Vertical and Lateral Fire Propagation*

6.7.1 EnergyShield Pro and EnergyShield XR were tested to assess performance with regard to vertical and lateral fire propagation in accordance with NFPA 285 and IBC Section 2603.5.5.

6.7.1.1 Engineering analysis has also been conducted to assess substitution of other products within the approved wall assemblies, including EnergyShield CGF Pro and EnergyShield Ply Pro.

6.7.1.2 The wall assemblies listed in **Table 4** are approved for use in buildings of Type I-IV construction.

6.7.2 The use of firestopping as described in **Table 4** is required. The use of additional firestopping extending from the base wall through EnergyShield products, and terminating at the backside of the cladding, is not approved.

6.7.3 The EnergyShield products in the assemblies included in **Table 4** are proprietary products that may NOT be substituted by other non-Atlas foam products. Comparing Atlas products to other foam boards and deeming substitution on the basis of potential heat or other small-scale tests that ignore other contributions by proprietary formulations is not permitted.

**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Base Wall***<br>Use any item 1 – 4.<br>No Sheathing is needed for items 1 and 2. | 1. Cast Concrete Walls (1" minimum)<br>2. CMU Concrete Walls (1" minimum)<br>3. 20-gauge (minimum) 3 5/8" (minimum) steel studs with 5/8" thick Type X gypsum wallboard on interior or 1/2" (minimum) Type C Special Fire Resistant gypsum wallboard interior<br>4. Fire-Retardant Treated (FRT) wood studs spaced 24" o.c. (maximum) with 5/8" thick Type X gypsum wallboard on interior |
| ***Floor Line Fire-Stopping***<br>Use any of these items. | 1. None – only with exterior sheathing option 1, 3, 4, or 5 (gypsum wallboard, concrete, DensElement®, or Securock® ExoAir® 430)<br>2. 4" thick, 4-pcf mineral fiber (wool) safing insulation installed with Z-clips or equivalent<br>3. 1 1/2" FRT lumber for use with FRT studs |
| ***Cavity Insulation***<br>Use any of these items.<br>*Note:* SPF cavity insulations 5 - 22 must use fire stopping at floor lines and exterior gypsum sheathing (thickness as noted). | 1. None<br>2. Any noncombustible insulation per ASTM E136<br>3. Any mineral fiber (Board Type Class A ASTM E84 faced or unfaced)<br>4. Any fiberglass (Batt Type Class A ASTM E84 faced or unfaced)<br>5. 5 1/2" (maximum) Icynene LD-C-50 spray foam in 6" deep studs (maximum) full fill without an air gap; use with 5/8" exterior gypsum sheathing<br>6. 5 1/2" (maximum) Icynene MD-C-200™, 2-pcf spray foam in 6" deep studs (maximum) full fill without an air gap; use with 5/8" exterior gypsum sheathing<br>7. 5 1/2" (maximum) Icynene MD-R-210, 2-pcf spray foam in 6" deep studs (maximum) full fill without an air gap; use with 5/8" exterior gypsum sheathing<br>8. 6" (maximum) SWD Urethane Quik-Shield® (QS) 112, 2-pcf spray foam in 6" deep studs (maximum) or partial fill with a maximum 2 1/2" air gap; use with 5/8" exterior gypsum sheathing<br>9. 3 1/2" (maximum) Gaco™ Western 183M spray foam in 3 5/8" deep studs (maximum); use with 5/8" exterior gypsum sheathing<br>10. 3 1/2" (maximum) Gaco™ Western F1850 with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>11. 3 5/8" (maximum) Demilec Sealection® 500 with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>12. 3 3/8" (maximum) Demilec HeatLok Soy 200 Plus® with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>13. 3" (maximum) Bayer Bayseal® with 5/8" exterior sheathing |


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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Cavity Insulation*** Continued | 14. 3" (maximum) Lapolla FoamLok™ FL 2000 with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>15. 3 5/8" (maximum) BASF SPRAYTITE® 81206 or WALLTITE® (US and US-N) with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>16. 3 5/8" (maximum) Accella (Premium Spray Products) Foamsulate™ 220 with 5/8" exterior sheathing in 3 5/8" deep studs (maximum)<br>17. 3 5/8" (maximum) JM Corbond III or IV – Full stud Cavity depth or less for use with 5/8" exterior gypsum sheathing<br>18. BASF WALLTITE® (LWP, Max, XL, Plus) – 3 5/8" (maximum); use with 1/2" exterior gypsum sheathing<br>19. Carlisle SealTite™ PRO HFO, SealTite™ PRO Closed Cell, SealTite™ Pro One Zero, SealTite™ Pro Open Cell, SealTite™ Pro High Yield, SealTite™ Pro No Mix, SealTite™ Pro No Trim 21, SealTite™ Pro OCX – 3 5/8" (maximum); use with 1/2" exterior gypsum sheathing<br>20. Huntsman HeatLok® HFO or HFO Pro – 3 5/8" (maximum); use with 5/8" exterior gypsum sheathing<br>21. Holcim Enverge EasySeal .5®, Enverge SucraSeal – 3 5/8" (maximum); use with 1/2" exterior gypsum sheathing<br>22. SWD Urethane (Quick-Shield Goblin or Yeti – 1" to 3 5/8" thick for use in 3 5/8" studs (maximum); use with 5/8" exterior gypsum sheathing) |
| ***Exterior Sheathing***<br>Use items 1 – 7.<br>*Note:* When Items 4 or 5 (integrated sheathing WRB) are used, WRB listed below may not be added on top of the sheathing.<br>Sheathings 1 - 7 are only used for stud base walls.<br>No sheathing is needed for Base Walls 1 or 2. | 1. 1/2" or thicker exterior type gypsum sheathing<br>2. None – only when cavity SPF insulation is not used and a special opening perimeter is used (see the last entry in this table)<br>3. 2" thick precast concrete panels attached to structural elements of building<br>4. 1/2" or thicker GP DensElement® sheathing with integrated WRB<br>5. 1/2" or 5/8" thick USG Securock® ExoAir 430<br>6. 7/16" (minimum) FRT plywood panels complying with IBC Section 2303.2 and installed following code allowances for Types I, II, III, or IV construction<br>7. NexGen Maxterra MgO 12 mm, 16 mm, or 20 mm<br>*Note:* When SPF is used in the cavity, exterior sheathing must be used. See specific sheathing thicknesses above. |
| ***WRB Over Base Wall***<br>Use any of these items. | 1. None<br>2. DuPont® Tyvek® Wraps in ESR-2375 – stapled (one or two layers), Dupont® Tyvek® HomeWrap Style 1055B, Dupont® Tyvek® StuccoWrap Style 1062X, Dupont® Tyvek® DrainWrap Style 1063X, Dupont® Tyvek® CommercialWrap Style 1062B, Dupont® Tyvek® CommercialWrap D Style 1083<br>3. Henry Air-Bloc® 32MR (75 wet mils) – *Discontinued*<br>4. Any WRB that has been tested per ASTM E1354 (at a minimum of 50 kW/m² heat flux) and shown by analysis to be less flammable (improved $T_{ign}$, Pk. HRR) than those listed above[2]<br>Examples of such are detailed below:<br>a. BASF Enershield® HP, Enershield®-I<br>b. CCW 705, Fire Resist 705 VP, Metal Clad 705FR, Metal Clad 705FR LT, Fire Resist 705 FR-A, Fire Resist Barritech NP, NP LT, VP, or VP LT<br>c. Dow Chemical DefendAir™ 200 Low Temp or DefendAir™ 200 C (Charcoal)<br>d. Dryvit Backstop® NT™, Backstop® NT™ Smooth, Backstop® NT™ Spray, Backstop® NT™ Texture, Backstop® NTX™ Smooth, Backstop® NTX Texture, or Backstop® NT-VB<br>e. DuPont® Tyvek Fluid Applied (0.8 mm)<br>f. GE Momentive Elemax™ 2600 |


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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***WRB Over Base Wall*** Continued | g. GCP Perm-A-Barrier® VPL LT, NPL 10, NPL, NPS, VPS, VPL, AWM, VPL 50RS,VPS 30, or VPL 50<br>h. Henry® Air-Bloc® 21FR, Air-Bloc® 17MR, Air-Bloc® 16MR<br>i. Henry Blueskin® SA, Blueskin® VP 160<br>j. Henry WeatherSmart®, WeatherSmart® Drainable, WeatherSmart® Commercial (previously Fortifiber)<br>k. Hohmann & Barnard Enviro-Barrier™ VP, X Barrier™, Enviro-Barrier™<br>l. Jumpstart HWW-65A, HWW-65B, HWHP-80A, HWMP-90A, HWD2-72A, HWHPT-92A, HWMPC-110A<br>m. Parex® WeatherSeal Spray and Roll On<br>n. Prosoco R-Guard® Spray Wrap, Spray Wrap MVP, R-Guard® MVP , R-Guard® VB, R-Guard® Cat-5, or Cat-5 Rainscreen<br>o. Sto Emerald Coat® or Gold Coat®<br>p. STS Wall Guardian® FW 100A<br>q. Tremco ExoAir® 230 (31.5 mils), ExoAir® 130, ExoAir® 111<br>r. Vaproshield Wrapshield SA®, Revealshield SA®<br>s. WR Meadows Air-Shield™ LMP (Gray), Air-Shield™ LMP (Black), Air-Shield™ TMP, Air-Shield™ LSR, Air-Shield™ SMP<br>t. Soprema® LM 204 VP, Sopraseal® Stick VP, Sopraseal® 1100T, Soprasolin® HD<br>u. Siga Majvest 500 SA, Majvest 700 SOB, Majvest 200<br>v. Dörken Systems Inc. DELTA®-STRATUS SA<br>w. Pecora XL-Perm$^{ULTRA}$ VP, XL-Perm$^{ULTRA}$ NP, ProPerm VP<br>x. NaturaSeal NS-A-250LP, NS-A-250HP<br>y. Master Wall Rollershield-RS<br>z. Siplast WALLcontrol™ Modified Silicone (STPE) VP Liquid AWB<br>aa. Siplast WALLcontrol™ Reinforced Aluminum Butyl Adhered AWB<br>bb. Siplast WALLcontrol™ Monolith VP Adhered AWB<br>cc. FT Synthetics Block-Aide<br>dd. Atlas EnergyShield WAVE Modified Silicone (STPE) VP Liquid AWB<br>ee. Sika® SikaGard® 535<br>ff. Dörken Delta-Vent SA, Delta-Vent S or Delta-Vent S/Plus, Delta-Fassade S, Delta-Foxx/Plus, Delta-Maxx/Plus<br>gg. Karnak 321 K-NRG Seal VP<br>hh. Polyglass VertiWrap VPS, VertiWrap NPS, VertiWrap VPL, VertiWrap VPL LT, VertiWrap NPL<br>ii. PolyGuard Spray-N-Roll (aka STPE), Airlok Sheet 400 NP, Airlok Sheet UV400 NP, Airlok Flex VP, Stretch Flex, FlexGuard<br>jj. 3M 3015, 3015VP, 3015NP<br>kk. GMX AirGuard HVWZ |


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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Z Girts***<br>Use any of these items for claddings requiring girts. | 1. Metallic Z Girts<br>2. Horizontal Smart Ci-GreenGirt<br>3. Horizontal Armatherm™ FRR Z Girt<br>4. Knight® Wall Systems ThermaZee®<br>5. Strongirt (Horizontal only) – Claddings must be 8 mm minimum thickness, and not for use with Claddings 7, 8, 10, or 12<br>6. SFS NH3 (horizontal only)<br>7. Cascadia Clip (horizontal only)<br>*Note:* Girt spacing should be to comply with wind load per manufacturer instructions. |
| ***Exterior Insulation***<br>Use any of these items.<br>Items 1, 2, 3, and 4 may be multiple layers of thinner product with facers on each side. | 1. 4" (maximum) Atlas® EnergyShield® Pro<br>2. 4" (maximum) Atlas® EnergyShield® CGF Pro<br>3. 4 3/4" (maximum) Atlas® EnergyShield® Ply Pro (4" EnergyShield CGF Pro with 5/8" or 3/4" FRT Plywood)<br>4. 4" (maximum) Atlas® EnergyShield® XR<br>*Note1:* 1/2" (minimum) exterior gypsum sheathing may be attached to exterior side of any item listed above. 5/8" (min) FRT plywood may be attached to exterior side of Item 1, 2, or 4 listed above.<br>*Note2:* GP DensGlass and GP DensElement (both minimum 1/2") may be installed exterior to items 1, 2, or 4 as listed above.<br>*Note3:* MgO Board may be installed over the polyiso foam boards. NexGen MaxTerra 12mm, 16mm, or 20mm mechanically attached or adhered with construction adhesive 2" dabs spaced 18" apart or 1' long, 1/4" wide ribbons spaced 1' apart.<br>*Note4:* The listed sheathing products installed over Items 1, 2, or 4 may only be covered with the WRB products listed to be used over insulation (see WRB list below this section), but are now used over the sheathing covering the insulation unless other are justified via Fire Engineering Evaluation. DensElement already has a WRB. No WRB goes over this product except the sheathing joint flashing listed in ICC ESR 3786.<br>*Note5:* Mineral Wool (unfaced) that meets ASTM E136 as noncombustible may be used over Items 1, 2, 3, or 4. When the mineral wool thickness is 2" or greater and density is 4-pcf (minimum), the air gap from the mineral wool surface to the back of the listed claddings is unlimited, except Cladding #7 and #12 are restricted to a 2.25" air gap. When the mineral wool is less than 2" thick or 4-pcf density, the air gap from the mineral wool surface to the back of the cladding is restricted to that listed for each Exterior Cladding below.<br>*Note6:* See the Special Cladding section of this Table when insulation items 1, 2, or 4, as listed above, are covered with 5/8" gypsum sheathing and exterior claddings as listed below are not being used. |
| ***WRB Over Exterior Insulation***<br>Use any of these items.<br>*Note:* Item 2 is an insulation joint tape, not full coverage.<br>Items 17 and 18 may only be used with claddings 1 – 6. | 1. None<br>2. Atlas 3" IPG Cold Weather Foil Tape<br>3. CCW Metal Clad 705FR, Metal Clad 705FR LT, Fire Resist 705VP, Fire Resist Barritech NP, NP-LT,VP, VP LT<br>4. Dow Chemical DefendAir 200 Low Temp or DefendAir 200 C (Charcoal)<br>5. Dryvit Backstop® NT™, Backstop NT™ Smooth, Backstop NT™ Spray, Backstop NT™ Texture, Backstop NTX Smooth, Backstop NTX Texture<br>6. GE Momentive SEC 2500 SilShield, SilShield SEC2600 AWB (aka Elemax 2600)<br>7. GCP Perm-a-Barrier® AWM, VPL, VPS, NPS, NPL, VPL LT<br>8. Henry Foilskin, Metal Clad, Air-Bloc® 21FR, Blueskin VP 160, or Air-Bloc 17MR |


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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***WRB Over Exterior Insulation*** Continued | 9. Henry WeatherSmart, WeatherSmart Drainable, WeatherSmart Commercial<br>10. Henry 2 layers Super Jumbo Tex (Only with Cladding #2 at 3/4" minimum thickness stucco and maximum 3 1/2" Atlas polyiso board listed above)<br>11. Jumpstart HWW-65A, HWW-65B, HWHP-80A, HWMP-90A, HWD2-72A, HWHPT-92A, HWMPC-110A<br>12. Parex WeatherSeal Spray and Roll On<br>13. Prosoco R-Guard® VB, R-Guard® Cat-5, R-Guard® Cat-5 Rainscreen, Spraywrap MVP<br>14. Sto EmeraldCoat®<br>15. Vaproshield Wrapshield SA®, Vaproshield Revealshield SA®<br>16. Soprema® Soprasolin HD (with any cladding)<br>17. Soprema® Sopraseal Stick VP (only with exterior claddings 1 - 6)<br>18. Siga Majvest® 500 SA (only with exterior claddings 1 - 6)<br>19. DuPont® Tyvek® Wraps in ESR-2375 - Dupont® Tyvek® HomeWrap Style 1055B, Dupont® Tyvek® StuccoWrap Style 1062X, Dupont® Tyvek® DrainWrap Style 1063X, Dupont® Tyvek® CommercialWrap Style 1062B, Dupont® Tyvek® CommercialWrap D Style 1083<br>20. WR Meadows Air-Shield SMP<br>21. Pecora XL-Perm[ULTRA] VP, XL-Perm[ULTRA] NP, ProPerm VP<br>22. Master Wall Rollershield-RS<br>23. Siplast WALLcontrol™ Monolith VP Adhered AWB<br>24. 3M 3015, 3015VP<br>25. Dörken Delta-Vent SA, Delta-Vent S or Delta-Vent S/Plus, Delta-Fassade S, Delta-Foxx/Plus, Delta-Maxx/Plus<br>26. Karnak 321 K-NRG Seal VP<br>27. Polyglass VertiWrap VPS, VertiWrap NPS<br>28. PolyGuard Airlok Sheet UV400 NP, Airlok Flex VP, FlexGuard<br>29. Siga Majvest 700 SOB, Majvest 200 |
| ***Exterior Cladding*** Use any of these items. *Important:* Maximum air gap 2 1/4" (distance from cladding inner face to insulation) *Note:* Cladding 8 (zinc) may only be used with EnergyShield® Pro, EnergyShield® XR or EnergyShield® Ply Pro. *Note:* Diamond<>Furr® TT-4 (manufactured by Brand X Metals) may be used to install 3-coat stucco item 2 in the cladding list. Cladding may be attached with Knight® Wall Systems THERMAZEE® or other metallic Z girt. | 1. Brick – nominal 4" clay brick or CMU veneer (hollow or solid) with maximum 2 1/4" air gap behind the brick or CMU; Brick ties/anchors 24" o.c. (maximum)<br>2. Stucco – minimum 3/4" thick exterior cement plaster and lath<br>An optional secondary WRB (WRB allowed OVER foam over first WRB) can be installed between the insulation and lath. The optional second WRB may be any mechanically attached sheet product, asphalt, or butyl-based building paper (stapled or other mechanical attachment) with no adhesive. The second WRB may not be self-adhering full coverage asphalt or self-adhering full coverage butyl-based membranes. See note for Diamond Furr TT-4 installation. For example, the secondary WRB may be paper backing attached to lath meeting Federal Specification UUB790A: Type 1, Grade D, Style 2, or Fortifiber / Henry Super Jumbo Tex 60 Minute.<br>3. Limestone – minimum 2" thick<br>4. Natural stone veneer – minimum 2" thick<br>5. Cast artificial stone – minimum 1 1/2" thick complying with ICC-ES AC 51<br>6. Terracotta cladding – minimum 1 1/4" thick<br>7. Any ACM that has successfully passed NFPA 285 with foam insulation of comparable thickness<br>8. Uninsulated sheet metal building panels including aluminum, steel, copper, or zinc (see *Note*)<br>9. Uninsulated fiber-cement cladding or siding minimum 1/4" thick; must be 8 mm minimum when Strongirt is used |

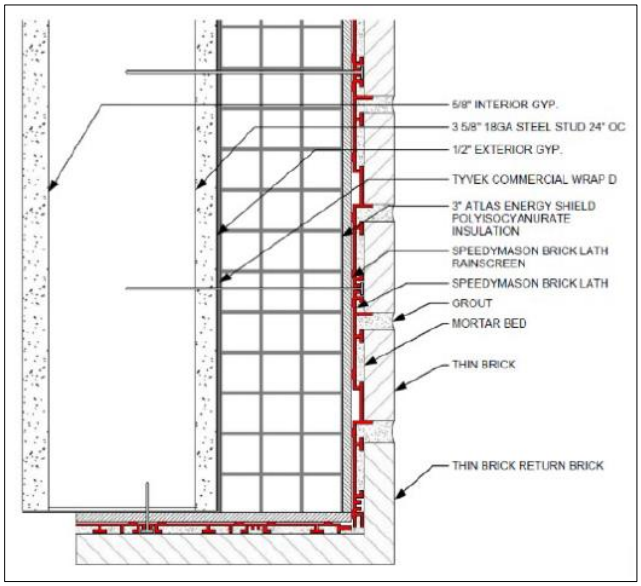

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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Exterior Cladding*** Continued | 10. Stone/aluminum honeycomb composite building panels that have successfully passed NFPA 285 criteria<br>11. Autoclaved-aerated-concrete (AAC) panels (minimum 1 1/2" thick)<br>12. Reynobond® ZCM zinc metal composite panel<br>13. Terreal Zephir® Evolution Rainscreen System (terra cotta), minimum 9/16" thick<br>14. *User Note:* Reserved for FunderMax m.look cladding with maximum 1 1/2" air space; cladding manufacturer no longer supports use of this cladding in U.S. exterior walls.<br>15. CERACLAD using the manufacturer standard installation technique, air gap not to exceed 15 mm<br>16. CUPACLAD Slate: 101 Logic, 101 Random, 101 Parallel, 210 Vanguard; must be 8 mm minimum when Strongirt is used<br>17. Glen-Gery Thin Tech® Masonry Veneer (only with optional noncombustible mortar)<br>18. Glen-Gery Tru-Brix (only with optional noncombustible mortar)<br>19. Telling Corium Thin Brick System (only with steel or aluminum brick tray and optional noncombustible mortar)<br>20. Thin brick or stone (minimum 3/4" thick clay brick) fully adhered with cementitious mortar (standard or polymer-modified) to the base wall. A secondary WRB can be installed between the exterior sheathing and the brick or stone. The secondary WRB shall not be full-coverage asphalt or butyl-based self-adhered membranes. See cladding #2 for examples.<br>21. Telluride Stone (minimum 1") applied to the base wall (with Atlas approved WRB or WRB in Cladding #20) using plaster/lath<br>22. 5/8" Nichiha Architectural Wall Panels (AWP 3030), Nichiha Cladding 5/16" per Intertek CCRR 0258; Nichiha Cladding must be 8 mm minimum when Strongirt is used<br>23. Ceramic or Porcelain Tile; must be 8 mm minimum when Strongirt is used:<br>a. 1/4" minimum generic Ceramic or Porcelain tile – mechanically attached<br>b. Ceramic or Porcelain tile – 3/8" thick (minimum) bonded using noncombustible mortar adhesive to a 1/2" thick (minimum) cement board or gypsum sheathing<br>c. 12 mm Porcelanosa XTone per ESR 4555<br>24. Any one-coat stucco (3/8" to 1/2" min) that meets any of the following:<br>a. AC11 acceptance criteria for one coat stucco; or<br>b. is approved for use in Type I-IV construction; or<br>c. has been tested per NFPA285; or<br>d. stays in place when tested per ASTM E119 (stucco exposed to fire) for at least 30 minutes<br>25. Any noncombustible cement board (8 mm minimum when Strongirt is used) adhered to the exterior side or mechanically attached to framing through EnergyShield Pro, EnergyShield XR, or EnergyShield CGF Pro. The cement board is covered with NFPA 285 approved EIFS lamina (mesh, base coat, and finish coat) WITHOUT the EIFS Expanded Polystyrene (EPS) board. Adhered cement board may be installed over the polyiso with construction adhesive of 2" D dabs spaced 18" apart or 1' long 1/4" wide ribbons spaced 1' apart. EIFS Approval Examples: MasterWall (IAPMO ER0433), Dryvit (ESR 1543), STO (ESR 2536), and other accredited third party EIFS approvals.<br>26. 8 mm (min) or 5/16" (min) SwissPearl Fiber Cement Cladding |

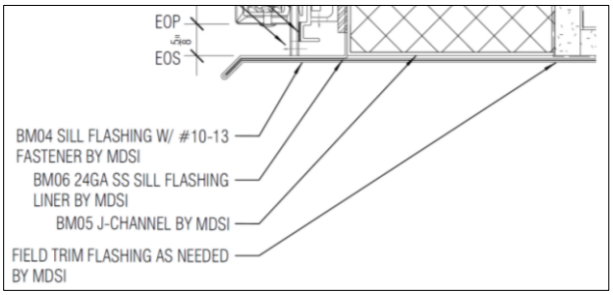

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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Exterior Cladding*** Continued | 27. Thin Brick with SpeedyMason Brick Lath and Brick Lath Rainscreen – minimum $^{9}/_{16}$" thick<br>a. May be used without exterior stud sheathing<br>b. All screws must penetrate through to studs, with the exception of EnergyShield Ply Pro, where the system can attach directly to the FRT plywood<br>c. Must use Spec Mix Adhered Veneer Thin Veneer Adhesion Mortar XP500 or cementitious mortar (standard or polymer modified)<br>d. Must use header as test (thin brick return – see image below)<br> |
| ***Special Claddings***<br>Use the base walls listed above. When gypsum sheathing is not used on stud exterior, do not use spray foam in stud cavity. ONLY use WRBs over $^{5}/_{8}$" gypsum that are explicitly approved together with the Special Claddings. | 1. When $^{5}/_{8}$" gypsum sheathing is used over Atlas polyiso with or without exterior sheathing on the exterior of studs (and the window opening is lined with $^{5}/_{8}$" gypsum board over 16-gauge steel), the following claddings may be used:<br>a. High Pressure Laminate (HPL) exterior veneers are allowed for use when the HPL veneer and the water resistive barrier proposed for use have been successfully tested/approved together per NFPA 285. The installation requirements outbound from the $^{5}/_{8}$" gypsum layer in the approval report must be followed, including all exterior layers, furring, attachment depth, and maximum air gap behind the cladding. As an example, Trespa® Meteon FR Wall Panel Cladding System (exposed fasteners) installed over one of the WRB in Table 2 of report ESR-1687.<br>b. Exterior veneers of NFPA 285–compliant combustible materials are allowed for use when the combustible veneer and the WRB contemplated for use have been successfully tested/approved together per NFPA 285. The installation requirements outbound from the $^{5}/_{8}$" gypsum layer in the approval report must be followed, including all exterior layers, furring, attachment depth, and maximum air gap behind the cladding. As an example, Parklex Prodema Naturclad-B F wood laminate panel system installed over Dupont Tyvek Firecurb HDPE Membrane water-resistive barrier per Intertek Design PUI/CWP 30-05. |


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**Table 4**. Approved NFPA 285-23 Wall Assemblies[1,2]

| Wall Component | Materials |
|---|---|
| ***Flashing of Opening Perimeter (Windows, Doors, etc.)***<br>Use items 1, 2, or 3. | 1. There is no restriction on flashings of openings for wall designs referencing compliance with NFPA 285-12, when using gypsum sheathing on the exterior of studs or Base Wall 1 or 2.<br>2. For wall designs referencing NFPA 285-23 or older editions of NFPA 285 with gypsum sheathing on the stud exterior, or for Base Wall 1 or 2, use the following: Header 24-gauge Steel w/ 0.040 aluminum surrounding the steel. See example below:<br><br><br>3. When the Atlas polyiso is directly attached to studs with no sheathing over the exterior side of studs, 5/8" Type X gypsum board on the opening perimeter and 24-gauge (min) steel flashing shall be used. This meets NFPA 285-23 or older versions of NFPA 285.<br>*Note1:* *Exception:* When the Atlas polyiso is directly attached to studs and is covered with 1/2" (minimum) gypsum sheathing, 12 mm (minimum) NexGen MgO, GP DensGlass, or DensElement, the 24-gauge steel flashing restriction is waived if the studs are fire stopped at every floor line with mineral wool.<br>*Note2:* Nichiha panels may use 24-gauge steel with no aluminum surrounding the steel for the header detail in item 2.<br>*Note3:* For all window perimeter assemblies, FRT wood bucks may line window openings, provided that the opening details above (24-gauge steel and/or gypsum) are used under or over the wood buck and secured to the structural framing.<br>*Note4:* For all window perimeter assemblies, where FRT wood bucks (1 1/2" thick minimum) extend from the interior gypsum board out to the inner face of the cladding, the 5/8" gypsum or 24-gauge steel flashing details are not required. |

SI: 1 inch = 25.4 mm

1. The assemblies combinations created herein and the various substitutions of products, are based on testing and professional thermal engineering analysis by Jensen Hughes, Inc. and Priest & Associates.
2. Acceptance criteria for ASTM E1354 testing have not been well established in the referenced building codes and foam sheathing related sections. The criteria stated here for substitution of products is based on testing and professional thermal engineering analysis by Priest & Associates. $T_{ign}$ is the time to ignition from the start of the test until the sheathing ignites. Pk HRR is the peak heat release rate during the test.


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6.7.4 *Special Condition – Soffits and Parapets*

6.7.4.1 Soffits and parapets are not subject to NFPA 285-23. See NFPA 285-23 Annex Section below:

> **B.23 Other Building Construction Details.**
>
> **B.23.1** Due to their orientation – horizontal versus vertical – the NFPA 285 test cannot be used to evaluate soffit, balconies, or canopies.
>
> **B.23.2** In the NFPA 285 test, the parapet of the test wall is above the failure points used to evaluate vertical flame spread. In actual construction, parapets include part of the roof, but this is not addressed in the NFPA 285 test. Thus, the NFPA 285 test cannot be used to evaluate parapets.

6.7.4.2 The NFPA 285 committee meeting for this paragraph discussed that ASTM E84 is best suited for horizontal items. The building code official shall make the final determination. The Atlas polyiso products in this report all have a foam core flame spread of 25 or less per ASTM E84.

6.8 *Ignition*

6.8.1 The insulation boards were evaluated to assess performance with regard to ignition in accordance with IBC Section 2603.5.7.

6.8.2 The insulation boards comply with this section when the exterior side of the sheathing is protected with one or more of the following materials:

6.8.2.1 A thermal barrier complying with IBC Section 2603.4.

6.8.2.2 A minimum 1" (25 mm) thickness of concrete or masonry.

6.8.2.3 Glass-fiber reinforced concrete panels of a minimum thickness of $^{3}/_{8}$" (9.5 mm).

6.8.2.4 Metal-faced panels having minimum 0.019" thick (0.48 mm) aluminum or 0.016" thick (0.41 mm) corrosion-resistant steel outer facings.

6.8.2.5 A minimum $^{7}/_{8}$" (22.2 mm) thickness of stucco complying with IBC Section 2510.

6.8.2.6 A minimum $^{1}/_{4}$" (6.4 mm) thickness of fiber-cement lap, panel, or shingle siding complying with IBC Section 1404.17, and IBC Section 1404.17.1, or IBC Section 1404.17.2.

6.9 *Approval for Use in Ceilings of Podium Type Parking Garages*

6.9.1 EnergyShield Pro insulation is approved for use in parking garage ceilings where the ceiling serves as the floor of occupied conditioned space above based on the following:

6.9.1.1 EnergyShield Pro foam core is Class A rated with a flame spread less than or equal to 25 per ASTM E84.

6.9.1.2 EnergyShield Pro has been tested in a ceiling configuration at 12" combined thickness and passes the criteria of IBC Chapter 26 for exposed installation with no thermal barrier covering the product.

6.9.1.3 Addition of EnergyShield Pro to the underside of a fire-rated ceiling assembly will not negatively affect the rating of the assembly.

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.


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## 7 Certified Performance[42]

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.[43]

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.[44]

## 8 Regulatory Evaluation and Accepted Engineering Practice

8.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 Performance for use in buildings of Type V construction in accordance with IBC Section 2603 and IRC Section R303.[45]

8.1.2 Performance for use in buildings of Type I-IV construction in accordance with IBC Section 2603.5.

8.1.3 Use in fire-resistance rated wall assemblies in accordance with IBC Section 2603.5.1.

8.1.4 Use without a thermal barrier in accordance with IBC Section 2603.4 and IBC Section 2603.5.2.

8.1.5 Use without an ignition barrier in accordance with IBC Section 2603.4.1.6 and IBC Section 2603.5.7.

8.1.6 Potential heat generated by the FPIS in accordance with IBC Section 2603.5.3.

8.1.7 Surface-burning characteristics in accordance with IBC Section 2603.3 and IBC Section 2603.5.4.

8.1.8 Performance with regard to vertical and lateral fire propagation in accordance with IBC Section 2603.5.5.

8.1.9 Performance with regard to ignition in accordance with IBC Section 2603.5.7.

8.2 Any building code, regulation and/or accepted engineering evaluations (e.g., 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[46] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[47] respectively.

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

## 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 *Installation Procedure*

9.3.1 All required wall bracing shall be installed prior to the installation of any Atlas EnergyShield products.

9.3.2 Insulation boards shall be installed with sheathing edges bearing directly on framing members and edges of abutting panels in moderate contact with each other.


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9.3.3 Secure the insulation boards to framing members with fasteners capable of resisting the imposed loads. Fasteners will vary, depending on the substrate and cladding materials.

9.3.3.1 Fastener heads shall be a minimum of $^{3}/_{8}$" diameter. Do not allow the fastener head to penetrate the insulation board facer. Use of washers at the fastener head is recommended.

9.3.3.2 Fastener spacing shall be in accordance with manufacturer instructions.

9.3.3.3 For steel construction, fasteners shall be corrosion resistant, self-drilling screws with a minimum $^{3}/_{4}$" diameter cap washer. Fasteners shall be of sufficient length to penetrate through the framing a minimum of three (3) threads.

9.3.4 Cladding materials shall be installed in accordance with the cladding manufacturer installation instructions.

9.3.5 Acceptable window header examples can be found at atlasrwi.com.

9.3.6 Additional information on the installation and detailing of foam sheathing can be found on the American Chemistry Council's Foam Sheathing Committee website at americanchemistry.com.

## 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 Contribution of materials to room fire growth in accordance with NFPA 286 and UL1715.

10.1.2 Potential heat in accordance with NFPA 259.

10.1.3 Flame spread and smoke developed ratings in accordance with ASTM E84 and UL 723.

10.1.4 Fire performance criteria in accordance with NFPA 285.

10.1.5 Ignition temperature in accordance with ASTM D1929.

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.[48]

10.6 Where additional condition of use and/or regulatory compliance information is required, please search for EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR on the DrJ Certification website.


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## 11 Findings

11.1 As outlined in **Section 6**, EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR 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, EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR shall be approved for the following applications:

11.2.1 EnergyShield Pro is approved for use in exterior or interior walls only, or in ceilings only without a thermal barrier, in accordance with IBC Section 2603.9. However, installation on walls and ceilings in the same room is not approved.

11.2.2 EnergyShield Pro may be installed at a maximum thickness of 4" (102 mm) to either walls only or ceilings only of attics and crawl spaces. The insulation boards are permitted to be installed exposed in attics and crawl spaces without a covering applied to the attic or crawl space side of the insulation boards provided all of the following conditions apply:

11.2.2.1 Attic ventilation is provided when required by IBC Section 1202.2.1 or IRC Section R806, except air impermeable insulation is permitted in unvented attics in accordance with IRC Section R806.5.

11.2.2.2 Under-floor (crawl space) ventilation is provided when required by IBC Section 1202.4 or IRC Section R408.1, as applicable.

11.2.2.3 Combustion air is provided in accordance with International Mechanical Code, IMC Section 701.

11.2.3 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR may be installed at a maximum thickness of 4" (102 mm) on walls and ceilings of attics and crawl spaces. The insulation boards are permitted to be installed exposed in attics and crawl spaces without a covering applied to the attic or crawl space side of the insulation boards provided all of the following conditions apply:

11.2.3.1 Entry into the attic is only for service to utilities and no storage is permitted.

11.2.3.2 There are no interconnected attic areas or crawl space areas.

11.2.3.3 Air in the attic or crawl space is not circulated to other parts of the building.

11.2.3.4 Attic ventilation is provided when required by IBC Section 1202.2.1 or IRC Section R806, except air impermeable insulation is permitted in unvented attics in accordance with IRC Section R806.5.

11.2.3.5 Under-floor (crawl space) ventilation is provided when required by IBC Section 1202.4 or IRC Section R408.1, as applicable.

11.2.3.6 Combustion air is provided in accordance with IMC Section 701.

11.2.4 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are approved for use in exterior walls of buildings of Type I-IV construction in accordance with IBC Section 2603.5.

11.2.5 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are approved for use in exterior walls of buildings of Type I-IV construction in accordance with IBC Section 2603.5.1 for fire resistance rated walls per the assemblies listed in **Section 6.2**.

11.2.6 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR are approved for use in wall assemblies meeting the requirements of NFPA 285 testing, when constructed in accordance with **Table 4**.

11.2.7 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR described in this report comply with, or are a suitable alternative to, the applicable sections of the codes listed in **Section 4**.


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11.3 Unless exempt by state statute, when EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR 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 Atlas Roofing Corporation.

11.5 IBC Section 104.2.3[49] (IRC Section R104.2.2[50] and IFC Section 104.2.3[51] 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:**[52] Building regulations require that the building official shall accept duly authenticated reports.[53]

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.[54]

## 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 EnergyShield Pro is approved for use in both interior and exterior walls.

12.3 When the insulation boards are used on exterior walls of buildings of Type I, II, III, or IV construction, they must be as described in **Table 4**.

12.4 In areas where the probability of termite infestation is "very heavy," installation shall comply with IBC Section 2603.8 or IRC Section R305.4,[55] as applicable. There shall be a 6" (152 mm) minimum clearance between foam plastic installed above grade and exposed earth.

12.4.1 Use of EnergyShield XR below grade in these areas is addressed in TER 2209-01.

12.5 EnergyShield Ply Pro may be used as an attachment for cladding per IRC Section R703.3.3.

12.5.1 Reductions for fasteners in FRT material must be accounted for in accordance with the FRT manufacturer requirements.

12.6 As listed herein, EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR shall be subjected to the following:

12.6.1 The plywood component of EnergyShield Ply-Pro may be used as a nailbase for cladding attachment as specified in **Section 12.5**.

12.6.2 Wall bracing and lateral-load resistance shall be provided by other materials in accordance with the applicable code.


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12.6.3 The exterior wall covering shall be capable of resisting the full design wind pressure.

12.7 The wall assemblies listed in **Table 4** are based on compliance with the fire provisions of the codes listed in **Section 4**. Consideration of wall assembly performance with regard to other attributes, such as water vapor control, condensation, energy code requirements, etc. are outside the scope of this report.

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

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

12.8.5 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.

12.8.6 The application of these innovative products in the context of this report is dependent upon the accuracy of the construction documents, implementation of installation instructions, inspection as required by IBC Section 110.3, IRC Section R109.2, and any other regulatory requirements that may apply.

12.9 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 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR, as listed in **Section 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 atlasrwi.com/products/wall/commercial.

## 14 Review Schedule

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

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


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Issue Date: March 7, 2022
Supplement Revision Date: April 21, 2025
Subject to Renewal: January 1, 2028

# FBC Supplement to Report Number 1306-03

**REPORT HOLDER:** Atlas® Roofing Corporation

## 1 Evaluation Subject

1.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR

## 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR, recognized in Report Number 1306-03, 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 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR, described in Report Number 1306-03, 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 110.3 replaces IBC Section 110.3.

3.2.8 FBC-B Section 803.1.2.1 replaces IBC Section 803.1.1.1.

3.2.9 FBC-B Section 1203.2 replaces IBC Section 1202.2.1.

3.2.10 FBC-B Section 1203.4 replaces IBC Section 1202.4.

3.2.11 FBC-B Section 1405.16 replaces IBC Section 1404.17.

3.2.12 FBC-B Section 1405.16.1 replaces IBC Section 1404.17.1.

3.2.13 FBC-B Section 1405.16.2 replaces IBC Section 1404.17.2.

3.2.14 FBC-B Section 1707.1 replaces IBC Section 1707.1.


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3.2.15 FBC-B Section 2303.2 replaces IBC Section 2303.2.

3.2.16 FBC-B Section 2306.1 replaces IBC Section 2306.1.

3.2.17 FBC-B Section 2306.3 replaces IBC Section 2306.3.

3.2.18 FBC-B Section 2603 replaces IBC Section 2603.

3.2.19 FBC-B Section 2603.3 replaces IBC Section 2603.3.

3.2.20 FBC-B Section 2603.4 replaces IBC Section 2603.4.

3.2.21 FBC-B Section 2603.4.1.6 replaces IBC Section 2603.4.1.6.

3.2.22 FBC-B Section 2603.5 replaces IBC Section 2603.5.

3.2.23 FBC-B Section 2603.5.7 replaces IBC Section 2603.5.7.

3.2.24 FBC-B Section 2603.8 replaces IBC Section 2603.8.

3.2.25 FBC-B Section 2603.9 replaces IBC Section 2603.9.

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

3.2.27 FBC-R Section R316.4 replaces IRC Section R303.4.

3.2.28 FBC-R Section R316.5.3 replaces IRC Section R303.5.3.

3.2.29 FBC-R Section R316.5.4 replaces IRC Section R303.5.4.

3.2.30 FBC-R Section R316.6 replaces IRC Section R303.6.

3.2.31 FBC-R Section R316 replaces IRC Section R303.

3.2.32 FBC-R Section R703.3.2 replaces IRC Section R703.3.3.

3.2.33 FBC-R Section R806 replaces IRC Section R806.

3.2.34 FBC-R Section R806.5 replaces IRC Section R806.5.

## 4 Conditions of Use

4.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield Ply Pro, and EnergyShield XR, described in Report Number 1306-03, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 1306-03.

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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# Notes

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

2 EnergyShield CGF Pro is formerly known as Rboard® Pro.

3 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 Appendix A: Definitions/Commentary, Qualtim Appendix B: Project/Deliverables, Qualtim 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.

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

5 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.

6 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

7 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

8 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.

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

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

11 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_source_

12 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.

13 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/

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

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

16 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

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

18 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

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

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

21 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 2000-2021 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.

22 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

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

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

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

26 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.

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 2021 IRC Section R316

29 2021 IRC Section R316

30 2021 IRC Section R316.4

31 2021 IRC Section R316.6

32 2021 IRC Section R316.5.3

33 2021 IRC Section R316.5.4


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34 2021 IRC Section R316.6

35 2021 IRC Section R316.5.3

36 2021 IRC Section R316.5.4

37 2021 IRC Section R316.6

38 2021 IRC Section R316.5.3

39 2021 IRC Section R316.5.4

40 2021 IRC Section R316.6

41 2021 IRC Section R316.3

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

43 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

44 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

45 2021 IRC Section R316

46 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.

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

48 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

49 2021 IBC Section 104.11

50 2021 IRC Section R104.11

51 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

52 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.

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

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

55 2021 IRC Section R318.4


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