Listing and Technical Evaluation Report™

Report No: 2202-01

Issue Date: June 24, 2022

Revision Date: March 26, 2024

Subject to Renewal: July 1, 2025

EnergyShield® Products as the Primary Water-Resistive Barrier and Air Barrier

Trade Secret Report Holder:

Atlas® Roofing Corporation

Phone: 770-933-4478 Website: www.atlasrwi.com

CSI Designations:

DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION

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

1 Innovative Products Evaluated[i]

1.1 EnergyShield Products:

1.1.1 EnergyShield®

1.1.2 EnergyShield® XR

1.1.3 EnergyShield® Pro

1.1.4 EnergyShield® CGF

1.1.5 EnergyShield® CGF Pro

2 Product Description and Materials

2.1 EnergyShield products are proprietary Foam Plastic Insulating Sheathing (FPIS) products.

2.1.1 EnergyShield is a polyisocyanurate (polyiso) insulation board that includes a tri-laminate foil facer material on both sides (ASTM C1289 Type I, Class 1 and Type I, Class 2 sheathing).

2.1.2 EnergyShield XR is a polyiso insulation board that includes tri-laminated foil facer material on both sides (ASTM C1289 Type I Class 1 and Type I Class 2 sheathing).

2.1.3 EnergyShield Pro is a polyiso insulation board that includes a white coated aluminum foil facer material on one side and a reflective aluminum facer on the other side (ASTM C1289 Type I, Class 1 and Type I, Class 2 sheathing).

2.1.4 EnergyShield CGF is a polyiso insulation board that includes a coated glass mat facer on both sides (ASTM C1289 Type II Class 2 sheathing).

2.1.5 EnergyShield CGF Pro is a polyiso insulation board that includes a light color coated glass mat facer on one side and a dark color coated glass mat facer on the other side (ASTM C1289 Type II, Class 2 sheathing).

2.2 *Material Availability*

2.2.1 *Thickness:*

2.2.1.1 $^1/_2$″ (13 mm) through 4$^1/_2$″ (114 mm)

2.2.2 *Standard Product Width:*

2.2.2.1 48″ (1,219 mm)

2.2.2.2 Panels can also be supplied in nominal 16″ and 24″ (406 mm and 610 mm) widths for use in cavity wall applications.

2.2.3 *Standard Lengths:*

2.2.3.1 96″ (2,438 mm)

2.2.3.2 108″ (2,743 mm)

2.2.3.3 Panels can be supplied in other lengths upon request.

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

3 Definitions

3.1 New Materials[ii] 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.[iii] The design strengths and permissible stresses shall be established by tests[iv] and/or engineering analysis.[v]

3.2 Duly Authenticated Reports[vi] and Research Reports[vii] are test reports and related engineering evaluations, which are written by an approved agency[viii] and/or an approved source.[ix]

3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).[x]

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

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

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 Registered Design Professional (RDP).

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

3.6 The regulatory authority shall enforce[xiii] 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[xiv] 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.[xv]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope, shall be approved.[xvi] Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.[xvii]

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

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation[xix]

4.1 *Standards*

4.1.1 *AAMA 714: Voluntary Specification for Liquid Applied Flashing Used to Create a Water-Resistive Seal around Exterior Wall Openings in Buildings*

4.1.2 *AATCC TM 127: Test Method for Water Resistance: Hydrostatic Pressure*

4.1.3 *ABTG/FS 100:[xx] Standard Requirements for Wind Pressure Resistance of Foam Plastic Insulating Sheathing Used in Exterior Wall Covering Assemblies*

4.1.4 *ABTG/FS 200: Standard for Use of Foam Plastic Insulating Sheathing (FPIS) in Building Envelopes: Above Grade Walls*

4.1.5 *ASTM C203: Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation*

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

4.1.7 *ASTM C1371: Test Method for Determination of Emittance of Materials near Room Temperature Using Portable Emissometers*

4.1.8 *ASTM D903: Standard Test Method for Peel or Stripping Strength of Adhesive Bonds*

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

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

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

4.1.12 *ASTM E2357: Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies*

4.1.13 *CAN/ULC-S742: Standard for Air Barrier Assemblies – Specification*

4.2 *Regulations*

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

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

5 Listed[xxi]

5.1 A nationally recognized testing laboratory such as CBI, states that the materials, designs, methods of construction, and/or equipment have met nationally recognized standards and/or have been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 *Water-Resistive Barrier (WRB)*

6.1.1 EnergyShield products may be used as a WRB as prescribed in IBC Section 1403.2,[xxii] IRC Section R703.2, and FS 200 Section 3.2, when installed on exterior walls as described in this section and the manufacturer installation instructions.

6.1.1.1 When installed direct to framing, EnergyShield products shall be installed with board joints placed directly over vertical exterior framing spaced a maximum of 16" (405 mm) o.c. The fasteners used to attach the board shall be installed in accordance with Section **9**. Blocking of horizontal joints is not required.

6.1.1.2 EnergyShield products installed over sheathing are not required to be installed with vertical or horizontal board joints aligned to underlying framing. The fasteners used to attach the boards shall be installed in accordance with Section **9**.

6.1.2 Flashing must be installed through wall penetrations and shall comply with all applicable code sections. Results of testing using various flashing products per IBC Section 1402.2 can be found in **Table 1** and **Table 2**.

6.1.3 All joints between boards shall be tightly abutted and sealed with an approved joint sealing product shown in **Table 1** or **Table 2**.

Table 1. List of Approved Liquid Flashing Joint Sealing Products Applied to EnergyShield Insulation Boards

Product	Water Resistance[2]	Weathering[3]	Water Penetration[4]
Zip System™ Liquid Flash[1]	Pass	Pass	Pass
Prosoco R-Guard® FastFlash®			
Sto RapidGuard			
GCP Perm-A-Barrier® Universal Flashing			
Tremco Dymonic® 100			
Carlisle BarriBond HP			
Siplast® WALLcontrol™ STPE Liquid Flashing			
Atlas EnergyShield® WAVE Liquid Flashing			
Air-Bloc® LF Liquid-Applied Flashing			
Sustant™ SealSkin™ Flash & Seal			

1. A facer from one surface of the insulation board was removed and the liquid flashing was applied directly to board joints, verifying water resistance of the core.
2. Testing conducted using the AATCC-127 Test Method.
3. Testing conducted using AAMA 714-15.
4. Testing conducted using ASTM E331 per IBC Section 1402.2.

Table 2. List of Approved Adhered Joint Sealing Products for use with EnergyShield Insulation Boards

Product	Water-Resistance[1]	Weathering[2]	Water Penetration[3]
3M™ Venture Tape™ Aluminum Foil Tape 1521CW	Pass	Pass	Pass
3M™ All Weather Flashing Tape 8067			
Dupont™ Styrofoam Brand Tape			
GCP Perm-A-Barrier® Aluminum Flashing			
GCP Perm-A-Barrier® Detail Membrane			
GCP Perm-A-Barrier® Wall Flashing			
Henry® Blueskin® Butyl Flash			
Henry® Blueskin® SA			
ZIP System™ Flashing Tape			
IPG® UL723 Cold Weather Aluminum Foil Tape			
Protecto Wrap® Super Stick Building Tape®			
Protecto Wrap® Protecto Seal 45 Butyl™			
Protecto Wrap® BT20XL Butyl™ Window & Door Sealing Tape			
Protecto Wrap® BT25XL™ Window & Door Sealing Tape			
Siga Wigluv®			
Siga Wigluv® Black			
Kemper System UT-40 Seam Sealing Tape			

1. Testing conducted using the AATCC-127 Test Method
2. Testing conducted using AAMA 711-2020
3. Testing conducted using ASTM E331 per IBC Section 1402.2.

6.2 *Emittance*

6.2.1 EnergyShield Pro has an emittance value for the reflective side of less than 0.1, as measured by ASTM C1371.

6.3 *Air Barrier Material*

6.3.1 EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro, EnergyShield XR, and EnergyShield were evaluated to assess their performance and have met the requirements for use as an air barrier material in accordance with FS 200 Section 3.3.4.1 and IECC Section C402.5.1.3[xxiii] (See **Table 3**).

Table 3. Air Barrier Material Permeability of EnergyShield Products

Product	Test Method[1]	Permeance (L/s·m²)
EnergyShield CGF, EnergyShield CGF Pro, EnergyShield XR, EnergyShield Pro and EnergyShield	ASTM E2178	< 0.02
1. Minimum thickness for EnergyShield Pro & EnergyShield is ¾" and for EnergyShield CGF, EnergyShield CGF Pro is 1.1 inches tested at 75 Pa.		

6.3.2 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield CGF, EnergyShield XR and EnergyShield shall be installed in accordance with the manufacturer installation instructions and this report with all seams including the top and bottom edges, sealed.

6.4 *Air Barrier Assembly*

6.4.1 EnergyShield Pro, EnergyShield CGF Pro, EnergyShield CGF, EnergyShield XR, and EnergyShield were evaluated to assess their performance and have met the requirements for use as an air barrier assembly in accordance with FS 200 Section 3.3.4.2 and IECC Section C402.5.1.4.[xxiv] (See **Table 4**).

Table 4. Air Barrier Assembly Permeability

Product	Test Method	Permeance [L/(s·m²)][1]
EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro, EnergyShield XR & EnergyShield	ASTM E2357	< 0.2
	CAN/ULC-S742	< 0.05
2. Liter per second per square meter		

6.4.2 Any of the products listed in **Table 2** and **Table 5** may be used in the construction of the air barrier assembly.

Table 5. Approved Liquid Flashing Materials for use with EnergyShield Air Barrier Assemblies

Product	Flashing Product
EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro and EnergyShield	Zip System™ Liquid Flash
	Prosoco R-Guard® FastFlash®
	Siplast® WALLcontrol™ STPE Liquid Flashing
	Atlas EnergyShield® WAVE Liquid Flashing
	Air-Bloc® LF Liquid-Applied Flashing
	Sto RapidGuard™
	Tremco Dymonic® 100
	Sustant™ SealSkin™ Flash & Seal

6.4.3 The following requirements must be met when using EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro, EnergyShield XR and EnergyShield as an air barrier assembly:

6.4.3.1 EnergyShield, EnergyShield Pro and EnergyShield XR must be a minimum of $^{3}/_{4}$″ in thickness. EnergyShield CGF and EnergyShield CGF Pro must be a minimum of 1.1 inches.

6.4.3.2 Install directly over studs or over a structural sheathing.

6.4.3.3 Vertical joints of all rigid insulation shall be backed by studs or structural sheathing.

6.4.3.4 Joints shall be sealed with any of the approved joint sealing products listed in **Table 2** and **Table 5** or a solvent acrylic adhesive tape min. 3″ wide, such as 3M™ Venture Tape™ 1520CW or equivalent.

6.4.3.5 Penetrations, damage and transitions to other materials shall be flashed with any of the approved joint sealing products listed in **Table 2** and **Table 5** or a solvent acrylic adhesive tape min. 3" wide, butyl flashing tape min. 4″ wide, or sealant, such as Henry® 925 BES Sealant or equivalent.

6.4.3.6 Seal Block Lok brick ties from Hohmann & Barnard, Inc. with caulk, as needed.

6.4.3.7 No sealant is needed for Pos-I-Tie® brick ties with Rodenhouse Thermal-Grip ci prong washers.

6.4.3.8 No sealant is needed for Grip-Deck screws with Rodenhouse Thermal-Grip ci prong washers.

6.5 *Transverse Wind Loading*

6.5.1 EnergyShield products are permitted to resist transverse wind load forces set forth in **Table 6**.

Table 6. Load Capacity (psf) for EnergyShield Products Resisting Transverse Wind Loads[1,2,3]

Product	Minimum Thickness (in)	Maximum Stud Spacing (in)	Fastener Schedule	Fastener Spacing (edge:field) (in)	Allowable Design Value (psf)	Allowable Stress Design Wind Speed V_{asd} (mph)	Basic Wind Speed V_{ult} (mph)
EnergyShield, EnergyShield XR and EnergyShield Pro	1/2	16 o.c.	2 1/2" x 0.113" Ring Shank Nail with 1" Plastic Cap	6:12	19.1	90	115
	3/4	16 o.c.		6:12	27.0	105	140
	1	16 o.c.	3" Galvanized Roofing Nail	12:16	46.1	140	180
	1 1/2	16 o.c.			72.1	155	200
	1 1/2	24 o.c			37.3	125	160
	2	16 o.c.			123.1	155	200
EnergyShield CGF and EnergyShield CGF Pro	1/2	16 o.c.	2 1/2" x 0.113" Ring Shank Nail with 1" Plastic Cap	6:12	45.7	140	180
	3/4	16 o.c.	3" Galvanized Roofing Nail	12:16	78.7	155	200
	1	16 o.c.			120.5	155	200
	1	24 o.c.			48.2	145	185

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

1. Design wind load capacity shall be in accordance with IBC Section 1609.1.1.
2. Wind speeds are based on the methodology detailed in ASCE 7-22 and the following assumptions:
   a. A building height of 30-ft, GC_p= -1.4 for Zone 5 and an Effective Wind Area of 10 ft^2, Exposure B: K_z=0.69, Topographic Factor: K_{zt}=1.0, Ground Elevation Factor: K_e=1.0, Internal Pressure Coefficient, GC_{pi}=+/-0.18 for an enclosed building, K_d = 0.85 for 'Component and Cladding'
   b. V_{ult} is limited to 200 mph.
3. $V_{asd} = V_{ult}\sqrt{0.6}$. V_{asd} is limited to 155 mph ($200\sqrt{0.6}$).

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

7 Certified Performance[xxv]

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.[xxvi]

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.[xxvii]

8 Regulatory Evaluation and Accepted Engineering Practice

8.1 EnergyShield products comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 EnergyShield products were evaluated to determine their performance for use as a Water Resistive Barrier (WRB) in accordance with IBC Section 1403.2[xxviii] and IRC Section R703.2 when installed with various joint sealing products.

8.1.2 EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro and EnergyShield were evaluated for use as an air barrier material in accordance with IECC Section C402.5.1.3.[xxix]

8.1.3 EnergyShield, EnergyShield XR and EnergyShield Pro were evaluated for use as part of an air barrier assembly in accordance with IECC Section C402.5.1.4.[xxx]

8.1.4 EnergyShield products were evaluated to determine their ability to resist transverse loads for wall assemblies used in light-frame wood construction in accordance with IBC Section 1609.1.1 and IRC Section R301.2.1.

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

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

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

9 Installation

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

9.2 In the event of a conflict between the manufacturer installation instructions and this report, the more restrictive shall govern.

9.3 *Installation Procedure*

9.3.1 All required wall bracing shall be installed prior to insulation board installation.

9.3.2 Insulation boards shall be installed with edges tightly abutted together.

9.3.3 Secure the insulation boards using fasteners capable of penetrating into framing members or structural substrate capable of resisting imposed loads. See manufacturer installation instructions for fastening details per substrate, framing material, cladding type, duration of exposure before cladding and other relevant fastening factors dependent on imposed loads.

9.3.4 For metal construction, fasteners shall be corrosion resistant and approved by the fastener manufacturer for the framing material.

9.3.5 Fasteners shall sit flush with the insulation board surface. Do not allow the fastener head to penetrate the insulation board facer. Repair any damage with a joint sealing product.

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 Water penetration testing in accordance with ASTM E331 per IBC Section 1402.2

10.1.2 Peel adhesion testing is accordance with ASTM D903

10.1.3 Emittance of materials near room temperature in accordance with ASTM C1371

10.1.4 Air barrier material properties in accordance with ASTM E2178

10.1.5 Air barrier assembly properties in accordance with ASTM E2357 and CAN/ULC-S742

10.1.6 Transverse load testing in accordance with ASTM C203 and ASTM E330

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 RDPs. Accuracy of external test data and resulting analysis is relied upon.

10.3 Where pertinent, 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: 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.[xxxii]

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

11 Findings

11.1 As outlined in Section **6**, EnergyShield products have performance characteristics that were tested and/or meet applicable regulations and 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 products shall be approved for the following applications:

11.2.1 Use as a WRB in accordance with IBC Section 1403.2,[xxxiii] IRC Section R703.2, and FS 200 Section 3.2.

11.2.2 Use as an air barrier material in accordance with FS 200 Section 3.3.4.1 and IECC Section C402.5.1.3[xxxiv] EnergyShield CGF, EnergyShield CGF Pro, EnergyShield Pro and EnergyShield only.)

11.2.3 Use as part of an air barrier assembly in accordance with FS 200 Section 3.3.4.2 and IECC Section C402.5.1.4[xxxv] (EnergyShield, EnergyShield XR, and EnergyShield Pro only.)

11.2.4 Use in resisting transverse loads in accordance with IBC Section 1609.1.1, IRC Section R301.2.1, FS100 and FS200, Section 3.1.1.

11.2.5 EnergyShield products have been evaluated in the context of the codes listed in Section **4** and are compliant with all known state and local building codes.

11.3 Unless exempt by state statute, when EnergyShield products 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 104.11 (IRC Section R104.11 and IFC Section 104.10[xxxvi] 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.

11.6 **Approved**:[xxxvii] Building regulations require that the building official shall accept Duly Authenticated Reports.[xxxviii]

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 Agreements (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.[xxxix]

12 Conditions of Use

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

12.2 As defined in Section **6**, where material and/or engineering mechanics properties are created for load resisting design purposes, the resistance to the applied load shall not exceed the ability of the defined properties to resist those loads using the principles of accepted engineering practice.

12.3 In areas where the probability of termite infestation is very heavy, in accordance with IBC Section 2603.8, the product must not be placed on exterior walls located within 6″ (152 mm) of the ground.

12.4 As listed herein, EnergyShield products shall not be used:

12.4.1 As a structural nailing base for claddings.

12.5 Use of the insulation boards to resist lateral loads is outside the scope of this report.

12.5.1 Walls shall be braced by other materials in accordance with the applicable code, and the exterior wall covering shall be capable of resisting the full design wind pressure.

12.6 When required by adopted legislation and enforced by the building official, also known as the authority having jurisdiction (AHJ) in which the project is to be constructed:

12.6.1 Any calculations incorporated into the construction documents shall conform to accepted engineering practice and, when prepared by an approved source, shall be approved when signed and sealed.

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

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

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

12.6.5 The review of this report by the AHJ shall comply with IBC Section 104 and IBC Section 105.4.

12.6.6 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.4, IBC Section 110.4, IBC Section 1703, IRC Section R104.4, and IRC Section R109.2.

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

12.7 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, "*the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new material or assemblies as provided for in Section 104.11*," all of IBC Section 104, and IBC Section 105.4.

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

12.9 The actual design, suitability, and use of this report for any particular building, is the responsibility of the owner or the authorized agent of the owner.

13 Identification

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

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

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.

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

15.1 EnergyShield products are included in this report published by an approved agency that is concerned with evaluation of products or services, maintains periodic inspection of the production of listed materials or periodic evaluation of services. This report states either that the material, product, or service meets recognized standards or has been tested and found suitable for a specified purpose. This report meets the legislative intent and definition of being acceptable to the AHJ.

Appendix A

1 Legislation that Authorizes AHJ Approval

1.1 **Fair Competition**: State legislatures have adopted Federal regulations for the examination and approval of building code referenced and alternative products, materials, designs, services, assemblies, and/or methods of construction that:

1.1.1 Advance innovation,

1.1.2 Promote competition so all businesses have the opportunity to compete on price and quality in an open market on a level playing field unhampered by anticompetitive constraints, and

1.1.3 Benefit consumers through lower prices, better quality, and greater choice.

1.2 **Adopted Legislation**: The following local, state, and federal regulations affirmatively authorize these innovative products to be approved by AHJs, delegates of building departments, and/or delegates of an agency of the federal government:

1.2.1 Interstate commerce is governed by the Federal Department of Justice to encourage the use of innovative products, materials, designs, services, assemblies, and/or methods of construction. The goal is to "*protect economic freedom and opportunity by promoting free and fair competition in the marketplace*."

1.2.2 Title 18 US Code Section 242 affirms and regulates the right of individuals and businesses to freely and fairly have new products, materials, designs, services, assemblies, and/or methods of construction approved for use in commerce. Disapproval of alternatives shall be based upon non-conformance with respect to specific provisions of adopted legislation and shall be provided in writing stating the reasons why the alternative was not approved, with reference to the specific legislation violated.

1.2.3 The federal government and each state have a public records act. In addition, each state also has legislation that mimics the federal Defend Trade Secrets Act 2016 (DTSA),[xl] where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years[xli] and/or a $5,000,000 fine or 3 times the value of[xlii] the Intellectual Property (IP) and Trade Secrets (TS).

1.2.3.1 Compliance with public records and trade secret legislation requires approval through the use of Listings, certified reports, Technical Evaluation Reports, Duly Authenticated Reports, and/or research reports prepared by approved agencies and/or approved sources.

1.2.4 For new materials[xliii] that are not specifically provided for in any regulation, 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.[xliv]

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 have 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.[xlv]

1.3 **Approved**[xlvi] **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 that apply. Whenever tests or certificates of any material or fabricated assembly are required by Chapter IX of the LAMC, such tests or certification shall be made by a testing agency approved by the Superintendent of Building to conduct such tests or provide such certifications. The testing agency shall publish the scope and limitation(s) of the listed material or fabricated assembly.[xlvii] The Superintendent of Building Approved Testing Agency Roster is provided by the Los Angeles Department of Building and Safety (LADBS). The Center for Building Innovation (CBI) Certificate of Approval License is TA24945. Tests and certifications found in a DrJ Listing are LAMC approved. In addition, the Superintendent of Building shall accept Duly Authenticated Reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the California Building Code (CBC) Section 1707.1.[xlviii]

1.4 **Approved by Chicago**: The Municipal Code of Chicago (MCC) states in pertinent part that an Approved Agency is a Nationally Recognized Testing Laboratory (NRTL) acting within its recognized scope and/or a certification body accredited by the American National Standards Institute (ANSI) acting within its accredited scope. Construction materials and test procedures shall conform to the applicable standards listed in the MCC. Sufficient technical data shall be submitted to the building official to substantiate the proposed use of any product, material, service, design, assembly, and/or method of construction not specifically provided for in the MCC. This technical data shall consist of research reports from approved sources (i.e., MCC defined Approved Agencies).

1.5 **Approved by New York City**: The 2022 NYC Building Code (NYCBC) states in part that an approved agency shall be deemed[xlix] 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[l] (i.e., ANAB, International Accreditation Forum [IAF], etc.).

1.6 **Approved by Florida**: Statewide approval of products, methods, or systems of construction shall be approved, without further evaluation by:

1.6.1 A certification mark or listing of an approved certification agency,

1.6.2 A test report from an approved testing laboratory,

1.6.3 A product evaluation report based upon testing or comparative or rational analysis, or a combination thereof, from an approved product evaluation entity, or

1.6.4 A product evaluation report based upon testing, comparative or rational analysis, or a combination thereof, developed, signed and sealed by a professional engineer or architect, licensed in Florida.

1.6.5 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:

1.6.5.1 A certification mark, listing or label from a commission-approved certification agency indicating that the product complies with the code,

1.6.5.2 A test report from a commission-approved testing laboratory indicating that the product tested complies with the code,

1.6.5.3 A product-evaluation report based upon testing, comparative or rational analysis, or a combination thereof, from a commission-approved product evaluation entity which indicates that the product evaluated complies with the code,

1.6.5.4 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, or

1.6.5.5 A statewide product approval issued by the Florida Building Commission.

1.6.6 The Florida Department of Business and Professional Regulation (DBPR) website provides a listing of companies certified as a Product Evaluation Agency (i.e., EVLMiami 13692), a Product Certification Agency (i.e., CER10642), and as a Florida Registered Engineer (i.e., ANE13741).

1.7 **Approved by Miami-Dade County (i.e., Notice of Acceptance [NOA])**: A Florida statewide approval is an NOA. An NOA is a Florida local product approval. By Florida law, Miami-Dade County shall accept the statewide and local Florida Product Approval as provided for in Florida legislation 553.842 and 553.8425.

1.8 **Approved by New Jersey**: Pursuant to the 2018 Building Code of New Jersey in IBC Section 1707.1 General,[li] it states: "*In the absence of approved rules or other approved standards, the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in the administrative provisions of the Uniform Construction Code (N.J.A.C. 5:23)*".[lii] Furthermore N.J.A.C 5:23-3.7 states: "*Municipal approvals of alternative materials, equipment, or methods of construction*."

1.8.1 **Approvals**: Alternative materials, equipment, or methods of construction shall be approved by the appropriate subcode official provided the proposed design is satisfactory and that the materials, equipment, or methods of construction are suitable for the intended use and are at least the equivalent in quality, strength, effectiveness, fire resistance, durability, and safety of those conforming with the requirements of the regulations.

1.8.1.1 A field evaluation label and report or letter issued by a nationally recognized testing laboratory verifying that the specific material, equipment, or method of construction meets the identified standards or has been tested and found to be suitable for the intended use, shall be accepted by the appropriate subcode official as meeting the requirements of the above.

1.8.1.2 Reports of engineering findings issued by nationally recognized evaluation service programs such as but not limited to, the Building Officials and Code Administrators (BOCA), the International Conference of Building Officials (ICBO), the Southern Building Code Congress International (SBCCI), the International Code Council (ICC), and the National Evaluation Service, Inc., shall be accepted by the appropriate subcode official as meeting the requirements of the above.

1.8.2 The New Jersey Department of Community Affairs has confirmed that technical evaluation reports, from any accredited entity listed by ANAB, meets the requirements of item the previous paragraph, given that the listed entities are no longer in existence and/or do not provide "*reports of engineering findings*."

1.9 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards**: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[liii] and Part 3280,[liv] the Department encourages innovation and the use of new technology in manufactured homes. The design and construction of a manufactured home shall conform to the provisions of Part 3282 and Part 3280 where key approval provisions in mandatory language follow:

1.9.1 "*All construction methods shall be in conformance with accepted engineering practices*."

1.9.2 "*The strength and rigidity of the component parts and/or the integrated structure shall be determined by engineering analysis or by suitable load tests to simulate the actual loads and conditions of application that occur*."

1.9.3 "*The design stresses of all materials shall conform to accepted engineering practice*."

1.10 **Approval by US, Local and State Jurisdictions in General**: In all other local and state jurisdictions, the adopted building code legislation states in pertinent part that:

1.10.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.[lv]

1.10.2 For innovative alternatives and/or methods of construction, the building official shall accept Duly Authenticated Reports from approved agencies with respect to the quality and manner of use of new materials or assemblies.[lvi]

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

1.10.2.2 An approved source is "approved" when an RDP is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[lvii]

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.[lviii]

1.11 **Approval by International Jurisdictions**: The USMCA and GATT agreements provide for approval of innovative materials, designs, services, and/or methods of construction through the Agreement on Technical Barriers to Trade and the IAF Multilateral Recognition Arrangement (MLA), where these agreements:

1.11.1 State that conformity assessment procedures (i.e., ISO/IEC 17020, 17025, 17065, etc.) are prepared, adopted, and applied so as to grant access for suppliers of like products originating in the territories of other Members under conditions no less favourable than those accorded to suppliers of like products of national origin or originating in any other country, in a comparable situation.

1.11.2 **Approved**: The purpose of the MLA is to ensure mutual recognition of accredited certification and validation/verification statements between signatories to the MLA and subsequently, acceptance of accredited certification and validation/verification statements in many markets based on one accreditation for the timely approval of innovative materials, designs, services, and/or methods of construction.

1.11.3 ANAB is an IAF-MLA signatory where recognition of certificates, validation, and verification statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA, with the appropriate scope, shall be approved.[lix]

1.11.4 Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.[lx]

1.12 Approval equity is a fundamental commercial and legal principle.[lxi]

Notes

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

[ii] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1702

[iii] 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/colorado/ibc-2021/chapter/1/scope-and-administration#104.11

[iv] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests%20as

[v] 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/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706:~:text=shall%20conform%20to%20the%20specifications%20and%20methods%20of%20design%20of%20accepted%20engineering%20practice

[vi] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies

[vii] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1703.4.2

[viii] https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_agency

[ix] https://up.codes/viewer/wyoming/ibc-2021/chapter/2/definitions#approved_source

[x] 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.

[xi] 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/

[xii] https://www.cbitest.com/accreditation/

[xiii] https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104:~:text=to%20enforce%20the%20provisions%20of%20this%20code

[xiv] https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#104.11:~:text=Where%20the%20alternative%20material%2C%20design%20or%20method%20of%20construction%20is%20not%20approved%2C%20the%20building%20official%20shall%20respond%20in%20writing%2C%20stating%20the%20reasons%20why%20the%20alternative%20was%20not%20approved AND https://up.codes/viewer/colorado/ibc-2021/chapter/1/scope-and-administration#105.3.1:~:text=If%20the%20application%20or%20the%20construction%20documents%20do%20not%20conform%20to%20the%20requirements%20of%20pertinent%20laws%2C%20the%20building%20official%20shall%20reject%20such%20application%20in%20writing%2C%20stating%20the%20reasons%20therefore

[xv] https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1707.1:~:text=the%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%20104.11

[xvi] https://iaf.nu/en/about-iaf-mla/#:~:text=it%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

[xvii] True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

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

[xix] 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.

[xx] Formerly SBCA/FS 100

[xxi] https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#listed AND https://up.codes/viewer/colorado/ibc-2021/chapter/2/definitions#labeled

[xxii] 2015 IBC Section 1404.2

[xxiii] 2018 IECC Section C402.5.1.2.1

[xxiv] 2018 IECC Section C402.5.1.2.2

[xxv] https://up.codes/viewer/colorado/ibc-2021/chapter/17/special-inspections-and-tests#1703.4

[xxvi] 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

[xxvii] 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

[xxviii] 2015 IBC Section 1404.2

[xxix] 2018 IECC Section C402.5.1.2.1

[xxx] 2018 IECC Section C402.5.1.2.2

[xxxi] 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.

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

[xxxiii] 2015 IBC Section 1404.2

[xxxiv] 2018 IECC Section C402.5.1.2.1

[xxxv] 2018 IECC Section C402.5.1.2.2

[xxxvi] 2018 IFC Section 104.9

[xxxvii] 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.

[xxxviii] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1707.1

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

[xl] http://www.drjengineering.org/AppendixC AND https://www.drjcertification.org/cornell-2016-protection-trade-secrets

[xli] https://www.law.cornell.edu/uscode/text/18/1832#:~:text=imprisoned%20not%20more%20than%2010%20years

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

[xliii] https://up.codes/viewer/wyoming/ibc-2021/chapter/17/special-inspections-and-tests#1706.2

[xliv] IBC 2021, Section 1706.1 Conformance to Standards

[xlv] IBC 2021, Section 1707 Alternative Test Procedure, 1707.1 General

[xlvi] See Section 11 for the distilled building code definition of **Approved**

[xlvii] Los Angeles Municipal Code, SEC. 98.0503. TESTING AGENCIES

[xlviii] https://up.codes/viewer/california/ca-building-code-2022/chapter/17/special-inspections-and-tests#1707.1

[xlix] New York City, The Rules of the City of New York, § 101-07 Approved Agencies

[l] New York City, The Rules of the City of New York, § 101-07 Approved Agencies

[li] https://up.codes/viewer/new_jersey/ibc-2018/chapter/17/special-inspections-and-tests#1707.1

[lii] https://www.nj.gov/dca/divisions/codes/codreg/ucc.html

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

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

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

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

[lvii] 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/

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

[lix] https://iaf.nu/en/about-iaf-mla/#:~:text=it%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

[lx] True for all ANAB accredited product evaluation agencies and all International Trade Agreements.

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