Listing

A Duly Authenticated Report from an Approved Agency

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Performance Characteristics of Millboard® Composite Deck Boards

Trade Secret Report Holder:

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CSI Designations:

DIVISION: 06 00 00 - WOOD, PLASTICS AND COMPOSITES Section: 06 73 00 - Composite Decking Section: 06 73 13 - Composite Structural Decking

1 Innovative Products Evaluated[1]

1.1 Millboard Composite Decking Products:

1.1.1 Weathered Oak

1.1.2 Enhanced Grain

2 Product Description and Materials

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

Figure 1. Weathered Oak Decking

Figure 2. Enhanced Grain and Enhanced Grain SB Decking

Table 1. Product Information

Product	Description	Material	Coating	Standard Length	Nominal Width	Nominal Thickness	Colors[1]
Weathered Oak	Products are designed for exterior balconies, porches, decks, stair treads, and other exterior walking surfaces	Polyurethane resin and mineral composite core reinforced with glass-fibers. It contains no wood fiber.	A proprietary rubberized coating, Lastane®, is melded to the core and coated with a 2K UV stabilizer.	141 3/4" (3,600 mm)	7 7/8" (200 mm)	1 1/4" (32 mm)	Driftwood, Embered, and Vintage
Enhanced Grain					7" (176 mm)		Antique Oak, Ashwood, Brushed Basalt, Burnt Cedar, Coppered Oak, Ebony Grey, Golden Oak, Jarrah, Limed Oak, and Smoked Oak
Enhanced Grain SB					5" (126 mm)		
Bullnose Board[2]					6" (150 mm)		Antique Oak, Ashwood, Brushed Basalt, Burnt Cedar, Coppered Oak, Driftwood, Embered, Ebony Grey, Golden Oak, Jarrah, Limed Oak, Smoked Oak, and Vintage

1. See **Figure 3** and **Figure 4** for additional details.
2. The Bullnose Board profile is specifically designed for use as edging. The available colors for both Weathered Oak and Enhanced Grain are also available for the Bullnose Board profile.

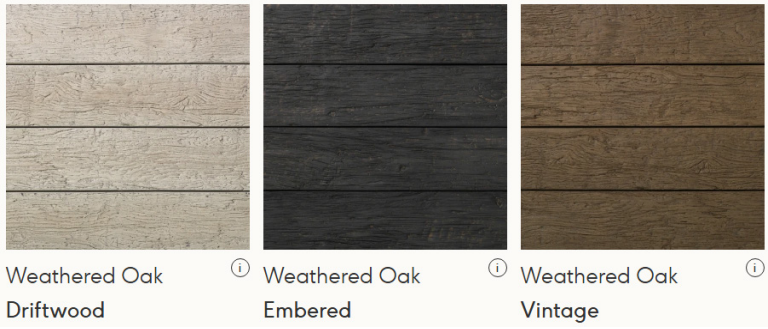

Figure 3. Weathered Oak - Available Colors

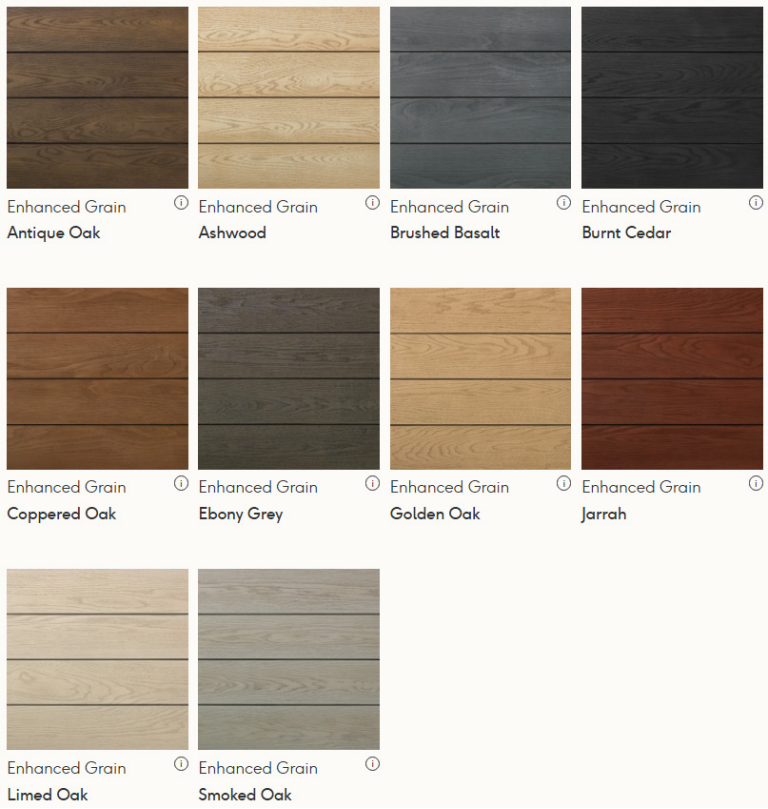

Figure 4. Enhanced Grain - Available Colors

2.2 As needed, review material properties for design in **Section 6**.

3 Definitions

3.1 New Materials[2] 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.[3] The design strengths and permissible stresses shall be established by tests[4] and/or engineering analysis.[5]

3.2 Duly Authenticated Reports[6] and Research Reports[7] are test reports and related engineering evaluations, which are written by an approved agency[8] and/or an approved source.[9]

3.2.1 These reports contain intellectual property and/or trade secrets, which are protected by the Defend Trade Secrets Act (DTSA).[10]

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.[11]

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

3.6 The regulatory authority shall enforce[13] 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[14] 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.[15]

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.[16] Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.[17]

3.9 Approval equity is a fundamental commercial and legal principle.[18]

4 Applicable Standards for the Listing; Regulations for the Regulatory Evaluation[19]

4.1 *Standards*

4.1.1 *ASTM D2394: Standard Test Methods for Simulated Service Testing of Wood and Wood-Based Finish Flooring*

4.1.2 *ASTM D4442: Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials*

4.1.3 *ASTM D6109: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products*

4.1.4 *ASTM D7032: Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails*

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

4.1.6 *ASTM G154: Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Materials*

4.1.7 *BS EN 317 Particleboards and Fibreboards. Determination of Swelling in Thickness after Immersion in Water*

4.1.8 *BS EN 322 Wood-Based Panels – Determination of Moisture Content*

4.1.9 *BS 7976-2:2002+A1 Pendulum Testers – Method of Operation*

5 Listed[20]

5.1 Equipment, materials, products or services included in a List published by a nationally recognized testing laboratory (i.e., CBI), approved agency (i.e., CBI and DrJ), and/or approved source (i.e., DrJ) or other organization concerned with product evaluation (i.e., DrJ) that maintains periodic inspection (i.e., CBI) of production of listed equipment or materials, and whose listing states either that the equipment or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 *Structural Applications*

6.1.1 Millboard Composite Decking Products were evaluated in accordance with ASTM D7032.

6.1.2 Span ratings for the evaluated products are presented in **Table 2**.

6.1.2.1 The effects of temperature (-20° F – 125° F), moisture, UV exposure, and freeze-thaw cycles on Millboard Composite Decking Products were evaluated.

6.1.2.2 Allowable loads in **Table 2** have been adjusted for the lower of temperature or moisture effect, UV exposure, and freeze-thaw effects, in accordance with Section 5.1.1 of ASTM D7032.

Table 2. Span Ratings for Millboard Composite Decking Products[1,2]

Product	Maximum Deck Board Span (in)	Allowable Load Capacity (psf)
Weathered Oak	16	100
Enhanced Grain	16	100
Enhanced Grain SB	16	100
SI 1 in = 25.4 mm, 1 psf = 47.9 Pa		

6.1.3 *Creep Resistance:*

6.1.3.1 Millboard Composite Decking Products were evaluated for creep-recovery in accordance with Section 5.4 of ASTM D7032.

6.1.3.2 See **Table 3** for assessment of creep-recovery.

Table 3. Creep Resistance Testing

Product	Span (in)	Avg. Percent Recovery (%)	Pass/Fail[2] Criteria	Avg. Unrecovered Deflection (in)	Pass/Fail[3] Criteria
Weathered Oak	16	>75%	Pass	< $^{1}/_{16}$"	Pass
Enhanced Grain					
Enhanced Grain SB					
SI: 1 in = 25.4 mm					

6.1.4 *Stair Tread Performance:*

6.1.4.1 Minimum of a two span configuration shall be installed when deck boards are used for stair tread applications.

6.1.4.1.1 Stringers shall be reinforced with blocking.

6.1.4.2 Millboard Composite Decking Products were evaluated for their performance as stair treads in accordance with Section 5.3.2 of ASTM D7032.

6.1.4.3 See **Table 4** for assessment of stair tread performance.

Table 4. Stair Tread Performance

Product	Span (in)	Evaluated Width (in)	Deflection[1] (in)	Pass/Fail Criteria[1]	Support[1]
Weathered Oak	8	7.75	<0.125	Pass	Maximum 8" span
Enhanced Grain		6.75			
Enhanced Grain SB		5.00			
Bullnose Board[2]		6.00			

SI: 1 in = 25.4 mm

1. Deflection at 399 lb (300 lb + 33% adjustment).
2. The Bullnose Board profile shall be fully supported by a perimeter joist along the entire length.

6.2 *Mechanical Fasteners*

6.2.1 Head-pull-through resistance of Millboard Composite Decking Products installed with Durafix® 4.5 x 60 mm (#9 x $2^3/_8$") screws were evaluated.

6.2.2 Allowable pull-through values are presented in **Table 5**.

Table 5. Fastener Head Pull Through

Product	Allowable Screw Head Pull Through Load[1] (lbf)
Weathered Oak	50
Enhanced Grain	45

SI: 1 lbf = 4.45 N

1. Results based on a single screw.

6.3 *Surface-Burning Characteristics*

6.3.1 Millboard Composite Decking Products were evaluated to assess flame spread.

6.3.1.1 Flame spread indices are presented in **Table 6**.

Table 6. Flame Spread Index[1]

Product	Flame Spread Index (FSI)	FSI Classification
Weathered Oak	<200	Class C
Enhanced Grain		

1. Tested in accordance with ASTM E84.

6.4 *Protection Against Decay*

6.4.1 Millboard Composite Decking Products contain no wood or cellulosic materials, and meet the requirements of the IBC and IRC where protection against biodegradation and decay is required.

6.5 *Protection Against Termites*

6.5.1 Millboard Composite Decking Products contain no wood or cellulosic materials and meet the requirements of the IBC and IRC where protection against termite attack is required.

6.6 *Moisture Content/Swelling*

6.6.1 Millboard Composite Decking Products were evaluated to assess moisture content and swelling caused by immersion in water. See **Table 7**.

Table 7. Moisture Content and Swelling

Product	Average Moisture Content[1] (%)	Average Swelling[2] (%)
Weathered Oak	0.6	0.1
Enhanced Grain		

1. Tested in accordance with BS EN 322 (equivalent to ASTM 4442).
2. Tested in accordance with BS EN 317 with an immersion time of 24 hours.

6.7 *Slip Resistance*

6.7.1 Slip resistance of Millboard Composite Decking Products were evaluated in accordance with BS 7976-2.

6.7.1.1 Per UK Slip Resistance Group Guidelines Issue 5:2016, a Pendulum Test Value (PTV) between, greater than, or equal to 36 denotes *"low slip potential"* (i.e., most footwear will provide adequate grip).

6.7.2 Results are shown in **Table 8**.

Table 8. Slip Resistance – PTV Values[1,2]

Product	Slider 55 (Barefoot)						Slider 96 (Shod-Foot)					
	Direction of Test						Direction of Test					
	A		B		C		A		B		C	
	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet	Dry	Wet
Weathered Oak	≥ 36		≥ 36		≥ 36		≥ 36		≥ 36		≥ 36	
Enhanced Grain	≥ 36		≥ 36		≥ 36		≥ 36		≥ 36		≥ 36	

1. Direction of tests are as follows:
   a. parallel to the direction of manufacture (along the length)
   b. perpendicular to the ground plane (along the edge)
   c. perpendicular to the direction of manufacture (along the width)
2. Slip potential only considered *"normal walking"* on a level surface in the conditions shown (dry and wet). Other potential risk factors were not considered.

6.8 *Wildland-Urban Interface (WUI)*

6.8.1 Millboard Composite Decking Products were evaluated for WUI regions under California Building Code, CBC Section 709A.3.

6.8.1.1 Performance of Millboard Composite Decking Products, when exposed to direct flames and brands, were evaluated in accordance with California Referenced Standards Code Title 24, Part 12 Section 12-7A-4A and California Referenced Standards Code Title 24, Part 12 Section 12-7A-4.8.

Table 9. WUI Fire Performance

Product	Part A, SFM 12-7A-4.7A		Part B, SFM 12-7A-4.8[2]
	Peak Heat Release Rate (kW/ft²)	Pass/Fail[1]	
Weathered Oak	<25	Pass	Pass
Enhanced Grain			
Enhanced Grain SB			

1. Conditions of acceptance is detailed in California Referenced Standards Code Title 24, Part 12 Section 12-7A-4A.7.5.
2. Conditions of acceptance is detailed in California Referenced Standards Code Title 24, Part 12 Section 12-7A-4.8.5.

6.9 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[21]

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.[22]

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.[23]

8 Installation

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

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

8.3 *General*

8.3.1 Several installation videos detailing the process can be found on the Millboard Company Ltd website located at, www.millboard.com/en-us/installation-guides.

8.3.2 Boards may be trimmed to size using standard cutting tools that would be used on wooden boards (i.e., handsaw, miter saw, jigsaw, etc.).

8.4 *Installation Procedure*

8.4.1 Millboard Composite Decking Products are installed perpendicular to the supporting joists using Durafix 4.5 x 60 mm fasteners.

8.4.1.1 Installation of fasteners does not require pilot holes or countersink.

8.4.1.2 Fasteners shall be driven 5 mm ($^{3}/_{16}$") below the Lastane coating using the supplied driver bit and a standard power drill driver. Do NOT use an impact driver.

8.4.2 Two fasteners shall be used per board at the spot where the board meets a joist, and three shall be used at the end of the boards. The fasteners shall be spaced at least $^{13}/_{16}$" from the edges and ends of the boards.

8.4.3 There shall be at least a $^{5}/_{32}$" space between the sides of boards and a $^{1}/_{32}$" space between the ends of the boards.

8.4.4 A joist spacing of 15.75" (400 mm) is recommended for normal residential use, a spacing of 11.80" (300 mm) is recommended for bridges, doorways, steeps, moorings, and commercial use.

8.4.4.1 A maximum spacing of 16" shall be used for the joists.

9 Substantiating Data

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

9.1.1 Flexural testing in accordance with ASTM D6109 per ASTM D7032 with additional conditioning requirements specified in Section 4.5 through Section 4.7 of ASTM D7032.

9.1.1.1 Conditioning requirements to assess the effects of the following on the flexural properties of Millboard Composite Decking Products:

9.1.1.1.1 Temperature

9.1.1.1.2 Moisture

9.1.1.1.3 UV exposure

9.1.1.1.4 Freeze/thaw cycles

9.1.2 Creep-recovery in accordance with ASTM D7032.

9.1.3 Fastener head pull-through in accordance with ASTM D1761.

9.1.4 Stair tread performance in accordance with ASTM D7032.

9.1.5 Surface burning characteristics in accordance with ASTM E84.

9.1.6 Slip resistance in accordance with BS 7976-2.

9.1.7 Moisture content in accordance with BS EN 322.

9.1.8 Swelling due to water submersion in accordance with BS EN 317.

9.1.9 Fire performance in accordance with California Referenced Standards Code Title 24, Part 12: SFM 12-7A-4A, and SFM-12-7A-4.8 Part B.

9.2 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.

9.3 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.

9.4 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.

9.5 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.[24]

9.6 Where additional condition of use and/or regulatory compliance information is required, please search for Millboard Composite Decking Products on the DrJ Certification website.

10 Findings

10.1 As outlined in **Section 6**, Millboard Composite Decking Products have performance characteristics that were tested and/or meet applicable regulations and are suitable for use pursuant to its specified purpose.

10.2 When used and installed in accordance with this Duly Authenticated Report and the manufacturer installation instructions, Millboard Composite Decking Products shall be approved for the following applications:

10.2.1 Use as decking material for balconies, porches, decks, stair treads, and other exterior walking surfaces in accordance with the IBC and IRC.

10.2.2 Use as decking material for balconies, porches, decks, stair treads, and other exterior walking surfaces for WUI regions under the CBC.

10.3 Unless exempt by state statute, when Millboard Composite Decking 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.

10.4 Any application specific issues not addressed herein can be engineered by an RDP. Assistance with engineering is available from Millboard Company Ltd.

10.5 IBC Section 104.11 (IRC Section R104.11 and IFC Section 104.10[25] 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.

10.6 **Approved**:[26] Building regulations require that the building official shall accept Duly Authenticated Reports.[27]

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

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

10.6.3 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.

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

10.8 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.[28]

11 Conditions of Use

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

11.2 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.

11.3 Millboard Composite Decking Products shall be limited to use as decking for balconies, porches, decks, stair treads, and other walking surfaces in accordance with the IBC provisions for Type V-B construction and the IRC.

11.4 Millboard Bullnose Board profile shall be fully supported by a perimeter joist for all situations.

11.4.1 All mitered corners shall be glued together with polyurethane wood adhesive.

11.4.2 Fastener spacing shall be every 12" into the perimeter joist, and every 12" or 16" into the deck joist.

11.5 Millboard Composite Decking Products shall bear a label on their packaging that indicates compliance with ASTM D7032, except slip resistance, which was evaluated in accordance with BS 7976, and include the allowable load and maximum allowable span in accordance with ASTM 7032 and IBC Section 2612.2.

11.6 Use of Millboard Composite Decking Products as a component of a fire resistance rated assembly is outside the scope of this report.

11.7 Compatibility of the specified fasteners in **Section 6.2** and **Section 8.4.1**, with other hardware components used in the construction of the deck, and the supporting structure are outside the scope of this report.

11.8 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:

11.8.1 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.

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

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

11.8.4 At a minimum, these innovative products shall be installed per **Section 8** of this report.

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

11.8.6 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.

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

11.9 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, "*the building official shall 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.

11.10 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).

11.11 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.

12 Identification

12.1 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.

12.2 Additional technical information can be found at www.millboard.com.

13 Review Schedule

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

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

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

14.1.1 Millboard Composite Decking Products (Weathered Oak and Enhanced Grain) 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),[29] where providing test reports, engineering analysis and/or other related IP/TS is subject to prison of not more than ten years[30] and/or a $5,000,000 fine or 3 times the value of[31] 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[32] 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.[33]

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.[34]

1.3 **Approved**[35] **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.[36] 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.[37]

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[38] 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[39] (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.

1.7 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:

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

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

1.7.3 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,

1.7.4 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

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

1.8 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).

1.9 **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.

1.10 **Approved by New Jersey**: Pursuant to the 2018 Building Code of New Jersey in IBC Section 1707.1 General,[40] 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)*".[41] Furthermore N.J.A.C 5:23-3.7 states: "*Municipal approvals of alternative materials, equipment, or methods of construction.*"

1.10.1 **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.

1.10.1.1 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.

1.10.1.2 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.

1.10.2 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*".

1.11 **Approved by the Code of Federal Regulations Manufactured Home Construction and Safety Standards**: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[42] and Part 3280,[43] 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:

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

1.11.2 "*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.*"

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

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

1.12.1 For new materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests.[44]

1.12.2 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.[45]

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

1.12.2.2 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.[46]

1.12.3 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.[47]

1.13 **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:

1.13.1 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.

1.13.2 **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.

1.13.3 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.[48]

1.13.4 Therefore, all ANAB ISO/IEC 17065 Duly Authenticated Reports are approval equivalent.[49]

1.14 Approval equity is a fundamental commercial and legal principle.[50]

Notes

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

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

3 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

4 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

5 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

6 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

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

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

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

10 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.

11 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/

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

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

14 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

15 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

16 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

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

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

19 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.

20 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

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

22 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

23 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

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

25 2018 IFC Section 104.9

26 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.

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

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

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

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

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

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

[33] IBC 2021, Section 1706.1 Conformance to Standards

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

[35] See Section 10 for the distilled building code definition of **Approved**

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

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

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

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

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

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

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

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

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

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

[46] 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/

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

[48] 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

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

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