# Listing and Technical Evaluation Report™

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

**Report No: 2304-117**

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## Performance Characteristics of Millboard® Composite Siding

**Trade Secret Report Holder:**


**Millboard® Company, Ltd**

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**CSI Designations:**

**DIVISION: 07 00 00 - THERMAL AND MOISTURE PROTECTION** Section: 07 46 33 - Plastic Siding

## 1 Innovative Products Evaluated[1]

1.1 Millboard Composite Sidings:

1.1.1 Shadow Line+

1.1.2 Board & Batten+

## 2 Product Description and Materials

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

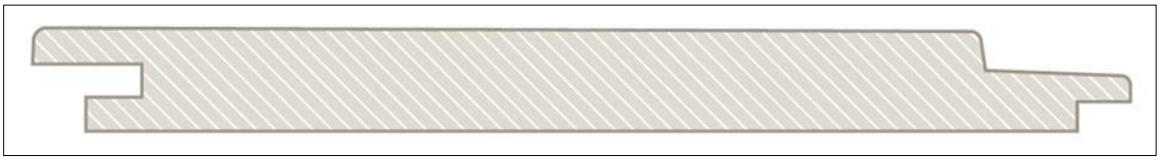


**Figure 1**. Shadow Line+ Siding

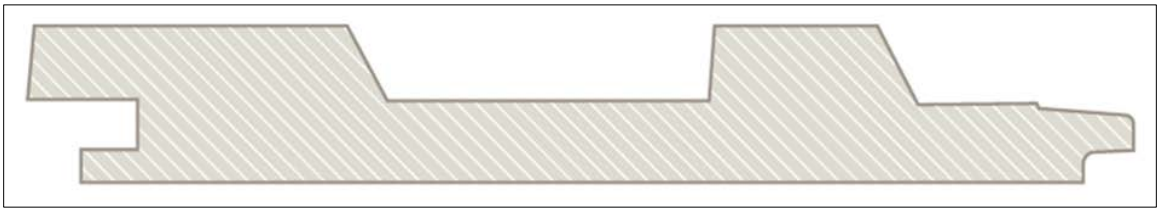


**Figure 2**. Board & Batten+ Siding



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**Table 1**. Millboard Composite Siding Specifications

| Parameter | Product | |
|---|---|---|
| | Shadow Line+ | Board & Batten+ |
| Standard Length | 141 3/4" (3,600 mm) | |
| Nominal Width | Width: 7 7/8" (200 mm) Installed Width: 7 1/8" (181 mm) | Width: 7 7/8" (200 mm) Installed Width: 7 1/8" (181 mm) |
| Nominal Thickness | 11/16" (18 mm) | 1" (9/16" Board + 7/16" Batten); 26 mm (14 mm Board + 12 mm Batten) |
| Available Colors[1] | Anthracite, Antique Oak, Burnt Cedar, Coppered Oak, Golden Oak, Limed Oak, Sage Green, Salt Blue, Smoked Oak | Anthracite, Antique Oak, Burnt Cedar, Coppered Oak, Golden Oak, Limed Oak, Jarrah, Smoked Oak |

1. See Figure 3 and Figure 4 for available color details.




**Figure 3**. Shadow Line+ Profile Available Colors




**Figure 4**. Board & Batten+ Profile Available Colors

2.2 Millboard Composite Sidings are wood-free siding products comprised of a proprietary fire-retardant rubberized coating, melded to a fiberglass reinforced resin-mineral composite core with a UV stabilized 2K coating.

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


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## 3 Definitions[2]

3.1 New Materials[3] are defined as building materials, equipment, appliances, systems, or methods of construction, not provided for by prescriptive and/or legislatively adopted regulations, known as alternative materials.[4] The design strength and permissible stresses shall be established by tests[5] and/or engineering analysis.[6]

3.2 Duly authenticated reports[7] and research reports[8] are test reports and related engineering evaluations that are written by an approved agency[9] and/or an approved source.[10]

3.2.1 This report utilizes intellectual property and/or trade secrets to create public domain material properties for commercial end-use.

3.2.1.1 This report protects confidential Intellectual Property and trade secrets under the regulation, 18.US.Code.90, also known as Defend Trade Secrets Act of 2016 (DTSA).[11]

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

3.4 An approved source is *"approved"* when a professional engineer (i.e., Registered Design Professional, hereinafter RDP) is properly licensed to transact engineering commerce. The regulatory authority governing approved sources is the state legislature via its professional engineering regulations.[12]

3.5 Testing and/or inspections conducted for this duly authenticated report were performed by an ISO/IEC 17025 accredited testing laboratory, an ISO/IEC 17020 accredited inspection body, and/or a licensed RDP.

3.5.1 The Center for Building Innovation (CBI) is ANAB[13] ISO/IEC 17025 and ISO/IEC 17020 accredited.

3.6 The regulatory authority shall enforce[14] the specific provisions of each legislatively adopted regulation. If there is a non-conformance, the specific regulatory section and language of the non-conformance shall be provided in writing[15] stating the nonconformance and the path to its cure.

3.7 The regulatory authority shall accept duly authenticated reports from an approved agency and/or an approved source with respect to the quality and manner of use of new materials or assemblies as provided for in regulations regarding the use of alternative materials, designs, or methods of construction.[16]

3.8 ANAB is an International Accreditation Forum (IAF) Multilateral Recognition Arrangement (MLA) signatory. Therefore, recognition of certificates and validation statements issued by conformity assessment bodies accredited by all other signatories of the IAF MLA with the appropriate scope shall be approved.[17] Thus, all ANAB ISO/IEC 17065 duly authenticated reports are approval equivalent,[18] and can be used in any country that is an MLA signatory found at this link: https://iaf.nu/en/recognised-abs/

3.9 Approval equity is a fundamental commercial and legal principle.[19]

## 4 Applicable Local, State, and Federal Approvals; Standards; Regulations[20]

4.1 *Local, State, and Federal*

4.1.1 Approved in all local jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured local jurisdictions: Austin, Baltimore, Broward County, Chicago, Clark County, Dade County, Dallas, Detroit, Denver, DuPage County, Fort Worth, Houston, Kansas City, King County, Knoxville, Las Vegas, Los Angeles City, Los Angeles County, Miami, Nashville, New York City, Omaha, Philadelphia, Phoenix, Portland, San Antonio, San Diego, San Jose, San Francisco, Seattle, Sioux Falls, South Holland, St. Louis County, Texas Department of Insurance, and Wichita.[21]

4.1.2 Approved in all state jurisdictions pursuant to ISO/IEC 17065 duly authenticated report use, which includes, but is not limited to, the following featured states: California, Florida, New Jersey, Oregon, New York, Texas, Washington, and Wisconsin.[22]


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4.1.3 Approved by the Code of Federal Regulations Manufactured Home Construction: Pursuant to Title 24, Subtitle B, Chapter XX, Part 3282.14[23] and Part 3280[24] pursuant to the use of ISO/IEC 17065 duly authenticated reports.

4.1.4 Approved means complying with the requirements of local, state, or federal legislation.

4.2 *Regulations*

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

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

4.2.3 *FBC-B—20, 23: Florida Building Code[25] – Building (FL 47417)*

4.2.4 *FBC-R—20, 23: Florida Building Code[25] – Residential (FL 47417)*

4.2.5 *CBC – 19, 22, 25: California Building Code[26] (Title 24, Part 2)*

4.2.6 *CRC – 19, 22, 25: California Residential Code[26] (Title 24, Part 2.5)*

4.2.7 *CWUIC- 25: California Wildland-Urban Interface Code (Title 24, Part 7)*

4.3 *Standards*

4.3.1 *ASCE 7: Minimum Design Loads and Associated Criteria for Buildings and Other Structures*

4.3.2 *ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials*

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

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

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

4.3.6 *BS EN 317: Particleboards and Fibreboards – Determination of Swelling in Thickness After Immersion in Water*

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

4.3.8 *BS EN 438-2: High-Pressure Decorative Laminates (HPL) – Sheets Based on Thermosetting Resins (Usually call Laminates) – Part 2: Determination of Properties, Section 26 Resistance to Staining*

4.3.9 *BS EN 13245-1: Plastics – Unplasticized Poly (Vinyl Chloride) (PVC-U) Profiles for Building Applications Part 1: Designation of PVC-U Profiles, Annex B Determination of the Impact Resistance*

4.3.10 *EN ISO 7784-2: Paints and Varnishes – Determination of Resistance to Abrasion – Part 2: Method with Abrasive Rubber Wheels and Rotating Test Specimen*

4.3.11 *MOAT 27: General Directive for the Assessment of Roof Waterproofing Systems*

4.3.12 *MOAT 43: UEAtc Directive for Impact Testing Opaque Vertical Building Components*

4.3.13 *NFPA 268: Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source*

4.3.14 *SFM 12-7A-1: Materials and Construction Methods for Exterior Wildfire Exposure*

4.3.15 *TAS 202: Criteria for Testing Impact and Nonimpact Resistant Building Envelope Components Using Uniform Static Air Pressure*

4.3.16 *TAS 203: Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

4.3.17 *Technical Bulletin LL-9025: Outdoor Weathering: Basic Exposure Procedures*

4.4 Installation of Millboard Composite Sidings over foam plastic sheathing is outside the scope of this report.


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## 5 Listed[27]

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

## 6 Tabulated Properties Generated from Nationally Recognized Standards

6.1 Millboard Composite Sidings are used as exterior wall coverings in accordance with the applicable sections of IBC Chapter 14 and IRC Section R703, and are installed over walls capable of supporting the imposed loads in accordance to IBC Section 1609 and IRC Section R301.2.1.

6.2 *High Velocity Hurricane Zone (HVHZ)*

6.2.1 Millboard Composite Sidings were evaluated for use in High Velocity Hurricane Zones, or HVHZ.

6.2.1.1 Millboard Composite Siding used as an exterior wall covering[28] was evaluated in accordance with TAS 202 and TAS 203, as specified in FBC-B Section 1405.1, for use on buildings or structures constructed in HVHZ.

6.2.1.2 When installed in accordance with **Section 9**, Millboard Composite Siding cladded wall assemblies achieved design wind pressures listed in **Table 2**.

6.2.1.2.1 Millboard Composite Siding cladded wall assemblies met the uniform static air pressure criteria (TAS 202) and cyclic wind pressure criteria (TAS 203) for use in HVHZ per FBC-B Section 1620 and FBC-B Section 1625.

6.2.1.3 Allowable wind speeds using the listed design wind pressures are also provided in **Table 2**.

**Table 2**. HVHZ Design Wind Pressures and Wind Speeds[1,2]

| Product | Siding Orientation | Substrate | Fastener | Fastener Spacing[3] (in. o.c.) | Allowable Wind Pressure (psf) | Maximum Wind Speed, $V_{ult}$ (mph) | | | Allowable Wind Speed, $V_{asd}$ (mph) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | B | C | D | B | C | D |
| Millboard Composite Siding | Horizontal | 5/8" Plywood[4] | 0.120" x 1 1/2" Galvanized Ring Shank Nail | 7 | 50 | 190 | 155 | 145 | 147 | 120 | 112 |
| | Vertical | | | | | | | | | | |
| | Horizontal | 5/8" Plywood[4] | #8 x 1 5/8" Flat Head Wood Screw | 16 | 65 | 200 | 180 | 165 | 155 | 139 | 128 |
| | Vertical | | | | | | | | | | |
| | Horizontal | 1 x 3 Furring[5] | | 16 | 80 | 200 | 200 | 180 | 155 | 155 | 139 |
| | Vertical | | | | | | | | | | |

SI: 1 in = 25.4 mm, 1-lbf = 4.448 N, 1-psf = 47.88 Pa, 1 mph = 0.447 m/s

1. Based on:
   a. A building height of 30-feet, $GC_p$= -1.4 for Zone 5 and an Effective Wind Area of 10 ft², 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 Siding*".
   b. $V_{ult}$ is limited to 200 mph: $V_{asd} = V_{ult}\sqrt{0.6}$. $V_{asd}$ is limited to 155 mph ($200\sqrt{0.6}$).
2. See Section 9 for installation details. Studs shall be minimum 2 x 6 No. 2 SPF or 18-gauge CFS framing members with a flange width of 2". Minimum ultimate tensile strength, $F_{ult}$, of the CFS framing shall be 45-ksi.
3. Fastener spacing refers to the direction along the length Millboard Composite Siding products.
4. Millboard Composite Sidings shall be fastened directly onto the Water-Resistive Barrier (WRB) overlaid 5/8" thick plywood using the specified fastener and the specified fastener spacing along the board. See Figure 5 as an example (wood studs shown).

*Continued on next page . . .*


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**Table 2**. HVHZ Design Wind Pressures and Wind Speeds[1,2]

| Product | Siding Orientation | Substrate | Fastener | Fastener Spacing[3] (in. o.c.) | Allowable Wind Pressure (psf) | Maximum Wind Speed, $V_{ult}$ (mph) | | | Allowable Wind Speed, $V_{asd}$ (mph) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | B | C | D | B | C | D |
| 5. Millboard Composite Sidings shall be fastened directly onto furring using the specified fastener. Furring strips shall be minimum No. 2 SPF 1 x 3 and shall be fastened into the studs.<br>a. For horizontal siding orientation, furring strips shall be fastened with minimum #8 x $1^5/_8$" screws vertically along the studs.<br>b. For vertical siding orientation, the first layer of furring strips shall be with minimum #8 x $1^5/_8$" screws vertically along the studs. Horizontal furring strips shall be spaced 16" o.c. maximum across the vertical furring and secured with minimum #8 x $1^5/_8$" screws at each intersection.<br>c. See Figure 6 as an example (wood studs shown). | | | | | | | | | | | |

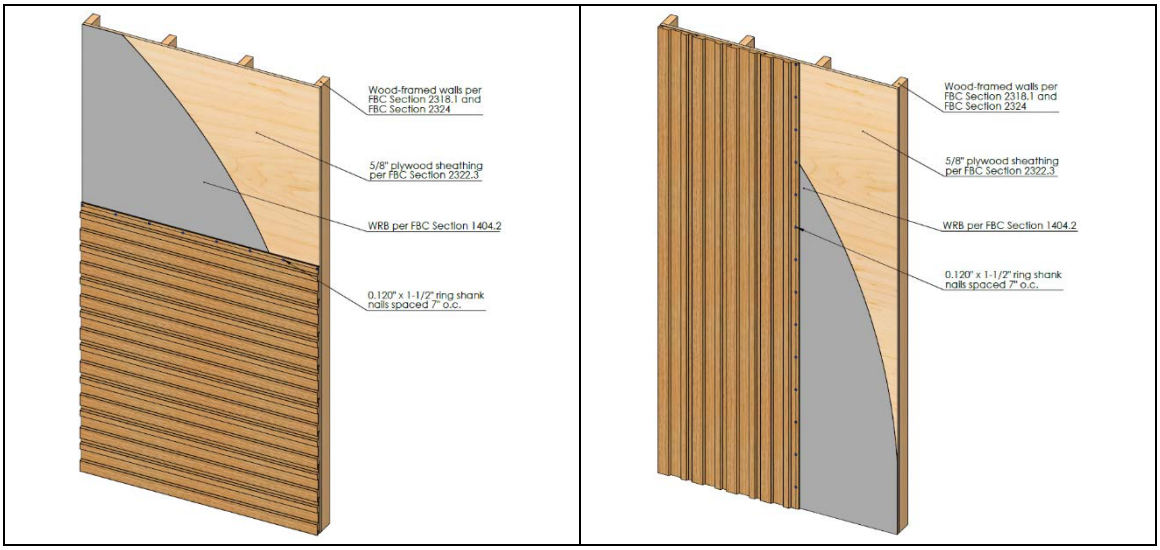



**Figure 5**. Millboard Composite Siding – Direct Connection

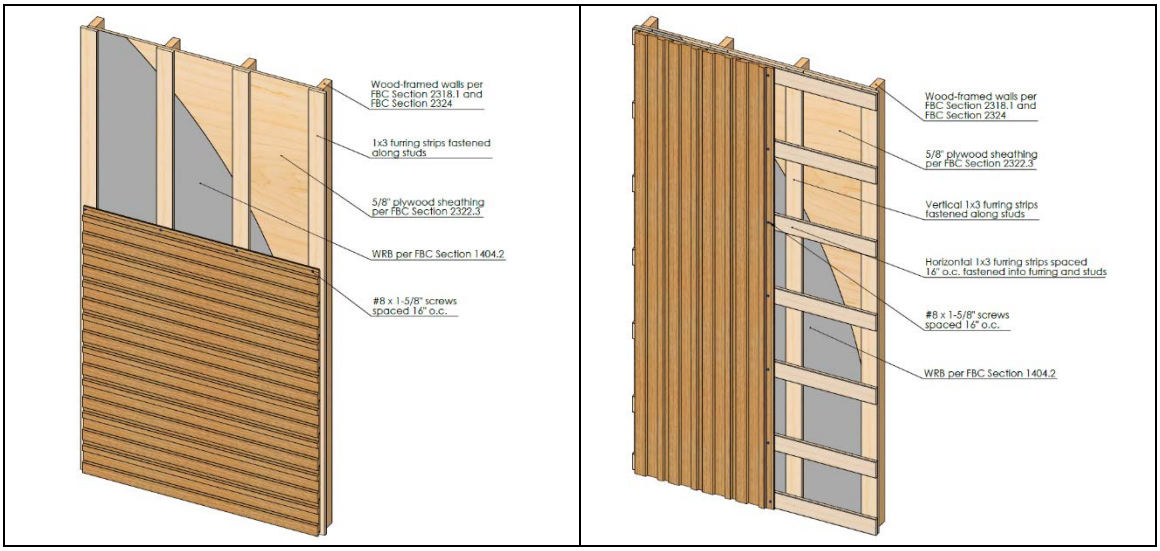



**Figure 6**. Millboard Composite Siding – Furred Connection


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6.2.2 Millboard Composite Siding cladded wall assemblies detailed in this section, and in **Section 9**, are exempt from TAS 201 evaluation, as specified in FBC-B Section 1626, because Millboard Composite Siding is not used as the main protection for wind-borne debris.

6.2.2.1 As specified in FBC-B Section 2322.3, exterior stud walls shall be sheathed to resist the racking load of wind as set forth in FBC-B Section 1620, and the concentrated loads that result from hurricane generated wind-borne debris as set forth in FBC-B Section 1626.

6.2.2.1.1 Regulations dictate that the minimum is as follows (FBC-B Section 2322.3, Item 2), wall sheathing shall be plywood rated Exposure 1 with a minimum thickness of $^{19}/_{32}$" (15 mm) and shall be applied to studs spaced not more than 16" (406 mm) on center. Wall sheathing shall be continuous over three or more supports and shall be nailed to such supports with 8d common nails. Nail spacing shall not exceed 6" (152 mm) on center at panel edges and all intermediate supports. Nail spacing shall be 4" (102 mm) on center at corner studs, in all cases.

6.2.2.1.1.1 Studs with a minimum published specific gravity of 0.42 (Spruce-Pine-Fir) per FBC-B Section 2317.1.2, shall not be less than 2 x 6 for exterior walls per FBC-B Section 2318.1.1, and shall not be spaced more than 16" o.c. per FBC-B Section 2318.1.2, unless designed by an RDP.

6.2.2.2 For CFS stud walls per FBC-B Section 2222.2, wall bracing shall comply with the prescriptive design method for one and two-family dwellings detailed in AISI S230, Section E11 and AISI S230, Section E13, or engineer-designed in accordance with AISI S240, Section B5.

6.2.3 Furthermore, per Miami-Dade County Checklist #285, Note 3, panels and siding installed in front of CBS[29] construction (ASTM C90) or $^{5}/_{8}$" (5-ply) plywood supported by 2x studs or 2 x 6 18-gauge metal studs, each at 16" o.c., are exempt from impact and positive pressure tests.

6.3 *Transverse Wind Load (Outside HVHZ Areas)*

6.3.1 Assemblies and allowable wind load resistance capacity for locations outside of HVHZ areas are detailed in **Table 3** and **Table 4**.

**Table 3**. Allowable Positive and Negative Wind Loads Per Fastening Configuration (Outside HVHZ Areas)

| Product | Substrate | Fastener[1] | Fastener Spacing[2] (in. o.c.) | Allowable Capacity[3] (lb/fastener) | Allowable Wind Pressure (psf) |
|---|---|---|---|---|---|
| Shadow Line+ | $^{7}/_{16}$" OSB | #8 x 2" Flat Head Wood Screw | 16 | 65 | 80 |
| | | | 24 | | 55 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 25 | 30 |
| | | | 24 | | 20 |
| | 2 x 4 SPF Sawn Lumber | #8 x 2" Flat Head Wood Screw | 16 | 100 | 125 |
| | | | 24 | | 85 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 40 | 50 |
| | | | 24 | | 35 |
| | 20-gauge CFS | #8 x 1$^{1}/_{2}$" Flat Head Sheet Metal Screw | 16 | 70 | 90 |
| | | | 24 | | 60 |

SI: 1 in = 25.4 mm, 1 lb = 4.448 N, 1-psf = 47.88 Pa

1. Fastener shall be installed through the tongue of the product into the substrate.
2. Fastener spacing refers to the direction along the length Millboard Composite Siding products.
3. Allowable capacity is based on the lower of withdrawal strength or head pull-through strength of the fasteners used for installation.


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**Table 4**. Allowable Positive and Negative Wind Loads per Fastening Configuration (Outside HVHZ Areas)

| Product | Substrate | Fastener[1] | Fastener Spacing[2] (in. o.c.) | Allowable Capacity[3] (lb/fastener) | Allowable Wind Pressure (psf) |
|---|---|---|---|---|---|
| Board & Batten+ | 7/16" OSB | #8 x 2" Flat Head Wood Screw | 16 | 65 | 80 |
| | | | 24 | | 55 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 25 | 30 |
| | | | 24 | | 20 |
| | 2 x 4 SPF Sawn Lumber | #8 x 2" Flat Head Wood Screw | 16 | 70 | 90 |
| | | | 24 | | 60 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 25 | 50 |
| | | | 24 | | 35 |
| | 20-gauge CFS | #8 x 1 1/2" Flat Head Sheet Metal Screw | 16 | 65 | 95 |
| | | | 24 | | 65 |

SI: 1 in = 25.4 mm, 1 lb = 4.448 N, 1-psf = 47.88 Pa

1. Fastener shall be installed through the tongue of the product into the substrate at each stud location.
2. Fastener spacing refers to the direction along the length Millboard Composite Siding products.
3. Allowable capacity is based on the lower of withdrawal strength or head pull-through strength of the fasteners used for installation.

## 6.4 *Wind Speed (Outside HVHZ Areas)*

6.4.1 Basic and allowable wind speeds for locations outside HVHZ areas are shown in **Table 5** and **Table 6**.

**Table 5**. Maximum Basic Wind Speeds[1] (Outside HVHZ Areas)

| Product | Substrate | Fastener | Fastener Spacing, (in. o.c.) | Maximum Wind Speed, $V_{ult}$ (mph) | | | Allowable Wind Speed, $V_{asd}$ (mph) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | B | C | D | B | C | D |
| Shadow Line+ | 7/16" OSB | #8 x 2" Flat Head Wood Screw | 16 | 200 | 200 | 185 | 155 | 155 | 145 |
| | | | 24 | 195 | 165 | 150 | 150 | 130 | 115 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 145 | 120 | 110 | 110 | 95 | 85 |
| | | | 24 | 120 | 100 | 90 | 95 | 75 | 70 |
| | 2 x 4 SPF Sawn Lumber | #8 x 2" Flat Head Wood Screw | 16 | 200 | 200 | 200 | 155 | 155 | 155 |
| | | | 24 | 200 | 200 | 190 | 155 | 155 | 145 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 185 | 155 | 145 | 145 | 120 | 110 |
| | | | 24 | 155 | 130 | 120 | 120 | 100 | 95 |
| | 20-gauge CFS | #8 x 1 1/2" Flat Head Sheet Metal Screw | 16 | 200 | 200 | 195 | 155 | 155 | 150 |
| | | | 24 | 200 | 170 | 160 | 155 | 130 | 125 |

SI: 1 in = 25.4 mm, 1-lbf = 4.448 N, 1-psf = 47.88 Pa, 1 mph = 0.447 m/s

1. Based on:
   a. A building height of 30-feet, $GC_p$= -1.4 for Zone 5 and an Effective Wind Area of 10 ft², 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 Siding"*.
   b. $V_{ult}$ is limited to 200 mph: $V_{asd} = V_{ult}\sqrt{0.6}$. $V_{asd}$ is limited to 155 mph $(200\sqrt{0.6})$.


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**Table 6**. Maximum Basic Wind Speeds[1] (Outside HVHZ Areas)

| Product | Substrate | Fastener | Fastener Spacing, (in. o.c.) | Maximum Wind Speed, $V_{ult}$ (mph) | | | Allowable Wind Speed, $V_{asd}$ (mph) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | B | C | D | B | C | D |
| Board & Batten+ | $^7/_{16}$" OSB | #8 x 2" Flat Head Wood Screw | 16 | 200 | 200 | 185 | 155 | 155 | 145 |
| | | | 24 | 195 | 165 | 150 | 150 | 130 | 115 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 145 | 120 | 110 | 110 | 95 | 85 |
| | | | 24 | 120 | 100 | 90 | 95 | 75 | 70 |
| | 2 x 4 SPF Sawn Lumber | #8 x 2" Flat Head Wood Screw | 16 | 200 | 200 | 195 | 155 | 155 | 150 |
| | | | 24 | 200 | 170 | 160 | 155 | 130 | 125 |
| | | 0.092" x 2" Galvanized Ring Shank Nail | 16 | 185 | 155 | 145 | 145 | 120 | 110 |
| | | | 24 | 155 | 130 | 120 | 120 | 100 | 95 |
| | 20-gauge CFS | #8 x $1^1/_2$" Flat Head Sheet Metal Screw | 16 | 200 | 200 | 200 | 155 | 155 | 155 |
| | | | 24 | 200 | 180 | 165 | 155 | 140 | 130 |

SI: 1 in = 25.4 mm, 1-lbf = 4.448 N, 1-psf = 47.88 Pa, 1 mph = 0.447 m/s

1. Based on:
   a. A building height of 30-feet, $GC_p$= -1.4 for Zone 5 and an Effective Wind Area of 10 ft², 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 Siding"*
   b. $V_{ult}$ is limited to 200 mph: $V_{asd} = V_{ult}\sqrt{0.6}$. $V_{asd}$ is limited to 155 mph $(200\sqrt{0.6})$.

## 6.5 *Soffit Application*

6.5.1 Millboard Composite Sidings are permitted for use as exterior soffits at roof overhangs.

6.5.1.1 Assemblies using Millboard Composite Sidings as soffits have been evaluated for out-of-plane wind pressures as required per IBC Section 1402.3 and IRC Section R703.1.2.

6.5.1.2 See **Table 7** and **Table 8** for the allowable wind pressures of Millboard Composite Siding when installed as soffits into wood and steel (CFS) substrates.


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**Table 7**. Millboard Composite Siding as Soffit Panels Wind Resistance – Wood Substrate[1,2]

| Product[5] | Support | Fasteners for Attachment to Framing Members | Unsupported Span (in) | Allowable Wind Pressure (psf) |
|---|---|---|---|---|
| Shadow Line+ | Wood Nailer / Sub-fascia (Minimum SG = 0.42) | #8 x 1½" Flat Head Wood Screw | 12 | ±110 |
| | | | 16 | ±85 |
| | | | 24 | ±55 |
| | | 0.120" x 1½" Galvanized Ring Shank Nail | 12 | ±45 |
| | | | 16 | ±35 |
| | | | 24 | ±20 |
| Board & Batten+ | Wood Nailer / Sub-fascia (Minimum SG = 0.42) | #8 x 1½" Flat Head Wood Screw | 12 | ±85 |
| | | | 16 | ±65 |
| | | | 24 | ±40 |
| | | 0.120" x 1½" Galvanized Ring Shank Nai | 12 | ±40 |
| | | | 16 | ±30 |
| | | | 24 | ±20 |

SI: 1 in = 25.4 mm, 1-psf = 0.0479 kPa

1. Millboard Composite Sidings are installed perpendicular to supports with one concealed tongue fastener at each support.
2. Supporting framing, nailers, sub-fascia, sheathing, and their connections shall be designed for the imposed reactions by an RDP.

**Table 8**. Millboard Composite Siding as Soffit Panels Wind Resistance – CFS Substrate[1,2]

| Product[5] | Support | Fasteners for Attachment to Framing Members[1] | Unsupported Span (in) | Allowable Wind Pressure (psf) |
|---|---|---|---|---|
| Shadow Line+ | Minimum 20-gauge CFS support | #8 x 1½" Flat Head Sheet Metal Screw | 12 | ±110 |
| | | | 16 | ±85 |
| | | | 24 | ±55 |
| Board & Batten+ | | | 12 | ±85 |
| | | | 16 | ±65 |
| | | | 24 | ±40 |

SI: 1 in = 25.4 mm, 1-psf = 0.0479 kPa

1. Millboard Composite Sidings are installed perpendicular to supports with one concealed tongue fastener at each support.
2. Supporting framing and their connections shall be designed for the imposed reactions by an RDP. CFS thickness, strength, and screw engagement shall provide pull-out and pull-over capacities not less than those required for the tabulated pressure.


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6.5.2 For concrete and masonry walls, minimum 2 x 2 wood nailer/batten with published minimum specific gravity of 0.42 shall be anchored to concrete or CMU.

6.5.2.1 Nailer/batten attachment to concrete/CMU walls shall be designed by an RDP.

6.5.2.2 Millboard Composite Sidings shall be fastened to the wood nailer using the fasteners presented in **Table 7**.

6.5.2.2.1 The other end shall be either of wood sub-fascia, as stated in **Table 7** (e.g., wood-framed trusses), or other structural support capable of receiving the outer board reaction.

6.6 *Surface Burning Characteristics*

6.6.1 Flame spread testing was conducted in accordance with ASTM E84 and test results are shown in **Table 9**.

**Table 9**. Surface Burning Characteristics

| Product | Flame Spread Index | Flame Spread Classification |
|---|---|---|
| Shadow Line+ | < 25 | Class A |
| Board & Batten+ | < 25 | Class A |

6.7 *Ignition*

6.7.1 The Millboard Composite Siding exterior has been evaluated to assess the ignition resistant performance in accordance with NFPA 268, at an incident radiant heat flux of 12.5 kW/m$^2$, as specified in IBC Section 1405.1.1.1.

6.7.1.1 The evaluated assemblies included:

6.7.1.1.1 Millboard Shadow Line+, and Benjamin Obdyke HydroGap® Drainable Housewrap installed over a wood-framed wall sheathed with $^7/_{16}$" OSB.

6.7.1.1.2 Millboard Board & Batten+, and Benjamin Obdyke HydroGap® Drainable Housewrap installed over a wood-framed wall sheathed with $^7/_{16}$" OSB.

6.7.2 Millboard Composite Siding products may be used on exterior walls with any fire separation distance in accordance with IBC Section 1405.1.1.1.1 and IBC Section 1405.1.1.1.2.

6.7.2.1 The construction must still follow any other site-specific requirements of IBC Section 1405.1.

6.7.2.1.1 For buildings of Types I, II, III, and IV-HT construction under the IBC, combustible exterior wall coverings are limited by IBC Section 1405.1.1, including the applicable exterior-wall area and height limitations.

6.8 *One-Hour Fire-Rated Assembly*

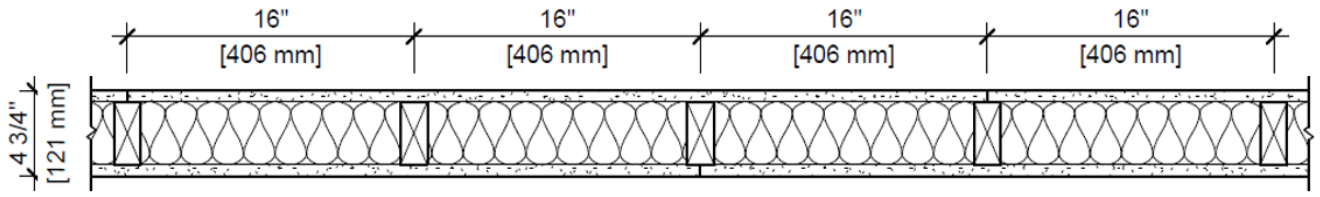
6.8.1 Millboard Composite Sidings are approved for use on the one-hour rated load-bearing UL U305 wall assembly as described in **Table 10** and in accordance with IBC Table 601, IBC Table 705.5,[30] CBC Table 705.5, CRC Section R302.2, and IRC Section R302.2.

6.8.1.1 Millboard Composite Sidings shall be applied per **Section 9**.

6.8.1.2 If used as an exterior wall assembly, USGX-type gypsum shall be used as the exterior gypsum panel layer.


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**Table 10**. One-Hour Fire Rating from Interior or Exterior – UL Design No. U305




Interior to Exterior:

1. Gypsum Board:
   a. *Type:* SCX Gypsum Wall Board (GWB), 5/8" (15.9 mm) thick
   b. *Oriented:* Vertically or horizontally
   c. *Joints:* Centered over studs and staggered one (1) stud cavity on opposite side of stud
   d. *Fastener:* GWB to studs using 1 7/8" (48 mm) 6d nails or #6 Type W screws
   e. *Fastener Spacing:* 7" (178 mm) o.c. at perimeter edges and field
2. Wood Studs – nominal 2 x 4, maximum spacing 24" o.c. (610 mm), effectively fire-stopped
3. Cavity Insulation:
   a. *Type:* Glass fiber or mineral wool
   b. *R-Value:* R-13
   c. *Minimum Thickness:* 3 1/2" (89 mm)
4. Exterior Gypsum Sheathing:
   a. *Type:* USGX GWB 5/8" (15.9 mm) thick
   b. *Oriented:* Vertically or horizontally
   c. *Joints:* Centered over studs and staggered one (1) stud cavity on opposite side of stud
   d. *Fastener:* GWB to studs using 1 7/8" (48 mm) 6d nails or #6 Type W screws
   e. *Fastener Spacing:* 8" (178 mm) o.c. on perimeter edges and field
5. Exterior Cladding – installed in accordance with the manufacturer installation instructions and UL U305
   a. Millboard Shadow Line+
   b. Millboard Board & Batten+


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6.9 *Exterior Wildfire Exposure*

6.9.1 Exterior wildfire exposure testing was completed in accordance with SFM 12-7A-1 for various assemblies as found in **Table 11**.

**Table 11**. Assembly Testing for Exposure to Exterior Wildfires

| Assembly Designation | Exterior Wall Covering Assembly Components (Listed Exterior to Interior) | Test Result |
|---|---|---|
| Millboard Composite Siding | Shadow Line+ Siding | Pass |
| | Hydrowrap Hydrogap Drainable Housewrap | |
| | 5/8" Type X Gypsum Wallboard | |
| | 7/16" Oriented Strand Board (OSB) | |
| | 2 x 4 Studs | |
| | Shadow Line+ Siding | Pass |
| | Slicker Classic Rainscreen | |
| | Flatwrap Housewrap | |
| | 5/8" Type X Gypsum Wallboard | |
| | 7/16" OSB | |
| | 2 x 4 Studs | |
| | Shadow Line+ Siding | Pass |
| | Flatwrap Housewrap | |
| | 5/8" Type X Gypsum Wallboard | |
| | 7/16" OSB | |
| | 2 x 4 Studs | |
| | Board & Batten+ | Pass |
| | Hydrowrap Hydrogap Drainable Housewrap | |
| | 5/8" Type X Gypsum Wallboard | |
| | 7/16" OSB | |
| | 2 x 4 Studs | |

6.10 *Hard Body Impact*

6.10.1 Hard body impact was conducted in accordance with MOAT 43 on Millboard Composite Siding.

6.10.2 At an impact energy of 10 N·m (Joule) using 1 kg steel ball with a diameter of 63.5 mm, no visible damage was observed.


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6.11 *Impact Resistance*

6.11.1 Impact testing was conducted in accordance with BS EN 13245-1 using a 4.4 lb (2 kg), smooth hemispherical surface of 1" (25 mm) radius and a fall height of $39^{3}/_{8}$" (1,000 mm) at a support span of 4" (100 mm) on aged Millboard Composite Siding.

6.11.1.1 Accelerated weathering consisted of 140° F (60° C) and UV-A exposure for five (5) hours, followed by one-hour spray cycles for a total of 5,000 hours.

6.11.1.2 No cracking or damage to the topcoat with any impact.

6.11.1.3 Slight indentation to the surface (visible with aid of surface illumination, but difficult to see under normal lighting conditions).

6.12 *Static Indentation*

6.12.1 Static indentation was conducted in accordance with MOAT 27 on Millboard Composite Sidings.

6.12.2 Millboard Composite Sidings were subjected to a 10 kg load via a 10 mm diameter surface for 41 days. The results are shown in **Table 12**.

**Table 12**. Static Indentation

| Product | Indentation, in (mm) |
|---|---|
| Millboard Composite Siding | 0.004 (0.1) |

6.13 *Abrasion Resistance*

6.13.1 Millboard Composite Sidings were evaluated to assess abrasion resistance in accordance with EN ISO 7784-2 utilizing the Taber Abrader test machine fitted with CS-17 wheels, with an applied load of 1 kg and a total duration of 1,000 cycles. The results are shown in **Table 13**.

**Table 13**. Abrasion Resistance

| Product | Average Weight Loss After 500 Cycles (mg) | Average Weight Loss After 1,000 Cycles (mg) |
|---|---|---|
| Millboard Composite Siding | 152 | 261 |
| 1. Tested in accordance with BS EN 322 (equivalent to ASTM 4442).<br>2. Tested in accordance with BS EN 317 with an immersion time of 24 hours. | | |

6.14 *Protection Against Decay*

6.14.1 Millboard Composite Sidings contain no wood or cellulosic materials and meet the requirements of IBC Section 2304.12, CRC Section R317, and IRC Section R304,[31] where protection against biodegradation and decay is required.

6.15 *Protection Against Termites*

6.15.1 Millboard Composite Sidings contain no wood or cellulosic materials and meet the requirements of IBC Section 2304.12, CRC Section R318, and IRC Section R305,[32] where protection against termite attack is required.

6.16 *Moisture Content and Thickness Swell*

6.16.1 Millboard Composite Sidings were evaluated to assess swelling and moisture content after immersion in water in accordance with BS EN 317 and BS EN 322. Findings can be found in **Table 14**.


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**Table 14**. Moisture Content and Thickness Swell[1,2]

| Product | Average Moisture Content[1] (%) | Average Swelling[2] (%) |
|---|---|---|
| Millboard Composite Siding | 0.6 | 0.10 |

1. Tested in accordance with BS EN 322 (equivalent to ASTM D4442).
2. Tested in accordance with BS EN 317 with an immersion time of 24 hours.

6.17 *Fade Resistance*

6.17.1 Millboard Composite Sidings were evaluated to assess fade resistance by subjecting the product to outdoor exposure for 24 months.

6.17.1.1 Testing was conducted in accordance with Q-Lab Technical Bulletin LL-9025.

6.17.1.2 Test location was Florida with an exposure angle of 5° south.

6.17.1.3 The results are outlined in **Table 15**.

6.17.1.4 *Lightness Factor (L):*

6.17.1.4.1 The measured object lightness or darkness is quantified by the *"L"* number on a scale of zero to 100, where 0 = black, 50 = grey, and 100 = white.

6.17.1.5 *Red/Green Factor (a):*

6.17.1.5.1 The object redness or greenness is quantified by the *"a"* number. When the *"a"* value is a positive number, the measured object is a red color. The higher the number, the more red the object is. When an *"a"* is a negative number, the measured object is a green color. The lower the number, the greener the color. A value of zero for *"a"* would be exactly intermediate between red and green.

6.17.1.6 *Blue/Yellow Factor (b):*

6.17.1.6.1 The object yellowness or blueness is quantified by the *"b"* number. When the *"b"* is a positive number, the object is yellow. The larger the number, the more yellow the object. When the *"b"* value is a negative number, a blue colored object is indicated. The lower the number, the more intense the color. A value of zero would be intermediate between yellow and blue.

**Table 15**. Fade Resistance

| Millboard Composite Siding Product Colors | Original | | | Final | | | Difference | | |
|---|---|---|---|---|---|---|---|---|---|
| | L | a | b | L' | a' | b' | L | a | b |
| Limed Oak | 67.5 | 3.0 | 11.5 | 68.7 | 2.8 | 10.8 | 1.1 | -0.2 | -0.7 |
| Smoked Oak | 57.0 | 0.0 | 6.0 | 58.5 | 0.2 | 6.8 | 1.6 | 0.3 | 0.8 |
| Golden Oak | 54.7 | 7.0 | 18.8 | 54.8 | 6.6 | 18.4 | 0.1 | -0.4 | -0.3 |
| Coppered Oak | 38.7 | 8.5 | 17.7 | 43.6 | 7.5 | 18.4 | 5.0 | -0.9 | 0.8 |
| Antique Oak | 34.1 | 5.8 | 12.7 | 37.5 | 4.4 | 10.4 | 3.4 | -1.5 | -2.3 |
| Jarrah | 32.3 | 17.4 | 18.0 | 38.0 | 14.2 | 17.1 | 5.7 | -3.2 | -0.9 |
| Burnt Cedar | 23.6 | 0.3 | -0.8 | 29.7 | -0.1 | 0.4 | 6.2 | -0.4 | 1.1 |


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6.18 *Resistance to Staining*

6.18.1 Millboard Composite Sidings were evaluated to assess resistance to staining and results are shown in **Table 16**.

**Table 16**. Stain Resistance

| Product | Cover[1] | Staining Agent | Rating[2] | Observations |
|---|---|---|---|---|
| Millboard Composite Siding Products | Uncovered | Acetone | 5 | No visible change |
| | | Coffee | 4 | Slight change of color (visible at certain angles) |
| | | Sodium Hydroxide | 5 | No visible change |
| | | Hydrogen Peroxide | 5 | No visible change |
| | | Shoe Polish | 5 | No visible change |
| | Covered | Acetone | 5 | No visible change |
| | | Coffee | 4 | Slight change of color (visible at certain angles) |
| | | Sodium Hydroxide | 5 | No visible change |
| | | Hydrogen Peroxide | 5 | No visible change |
| | | Shoe Polish | 5 | No visible change |

1. Placed over staining agent to restrict evaporation during the allotted exposure time.
2. In accordance with BS EN 438-2, Section 15.6.

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

## 7 Certified Performance[33]

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.[34]

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.[35]


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## 8 Regulatory Evaluation and Accepted Engineering Practice

8.1 Millboard Composite Sidings comply with the following legislatively adopted regulations and/or accepted engineering practice for the following reasons:

8.1.1 For use as an exterior wall covering on new or existing concrete or masonry walls in accordance with IBC Section 1402 and IRC Section R703.

8.1.2 For use as a weather-resistant covering in accordance with IBC Section 1403.2, CBC Section 1403.2, and IRC Section R703.1.1.

8.1.3 To determine the ability of Millboard Composite Sidings to resist wind loads in accordance with IBC Section 1609, CRC Section R703.1.2, and IRC Section R703.1.2.

8.1.4 For use as an exterior soffit at roof overhangs in accordance with IBC Section 1412 and the corresponding adopted code provisions

8.1.5 For ignition resistance of the tested exterior wall covering assemblies in accordance with NFPA 268 and the limitations of IBC Section 1405.1.1

8.1.6 For use in the HVHZ in accordance with TAS 202 and TAS 203 as specified in FBC-B Section 1405.1.

8.1.7 *Construction-Type Application:*

8.1.7.1 *Type V Construction:*

8.1.7.1.1 Use is permitted as combustible exterior materials subject to the applicable code, this report, and the approved construction documents.

8.1.7.2 *Types I, II, III, and IV-HT Construction:*

8.1.7.2.1 Use is limited to conditions permitted by IBC Section 1405.1.1, including the applicable exterior-wall area, height, fire-separation distance, and NFPA 268 requirements.

8.1.7.2.2 Where another code provision requires NFPA 285 for the complete exterior wall assembly, compliance is established separately through a tested assembly, listing, or approved analysis.

8.2 Any building code, regulation and/or accepted engineering evaluations (e.g., research reports, duly authenticated reports, etc.) that are conducted for this Listing were performed by DrJ, which is an ISO/IEC 17065 accredited certification body and a professional engineering company operated by RDP or approved sources. DrJ is qualified[36] to practice product and regulatory compliance services within its scope of accreditation and engineering expertise,[37] respectively.

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

## 9 Installation

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

9.2 In the event of a conflict between the manufacturer installation instructions and this report, contact the manufacturer for counsel on the proper installation method.

9.3 Millboard Composite Sidings can be installed horizontally or vertically. **Table 2** through **Table 6** are applicable to either orientation.

9.3.1 For furred connections, all ends of Millboard Composite Sidings shall be supported.

9.4 Fasteners shall be installed along the tongue of Millboard Composite Siding. See **Figure 7** for an example.

9.5 Fasteners used to install Millboard Composite Sidings are listed in **Table 17**.


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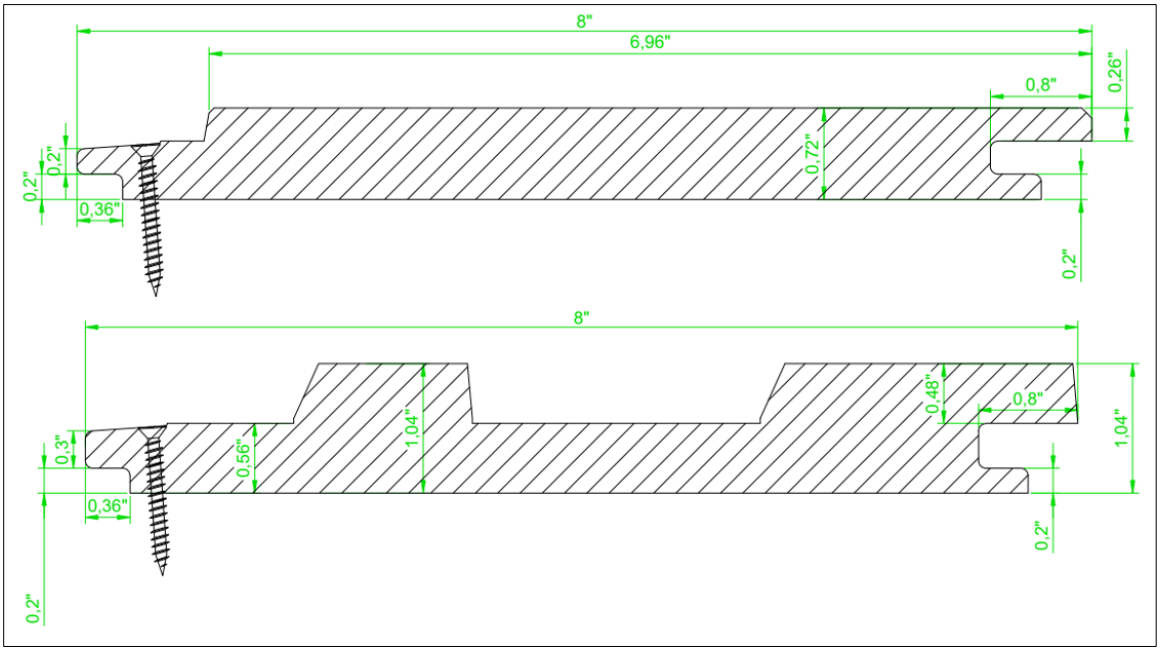



**Figure 7**. Millboard Composite Siding – Fastening Location (Screw Shown)

**Table 17**. Permitted Fasteners for Installation of Millboard Composite Siding

| Fastener Type | Major Diameter (in) | Minor Diameter (in) | Head Diameter (in) |
|---|---|---|---|
| #8 x 2" Flat Head Wood Screw | 0.164 | 0.113 | 0.299 |
| #8 x 1⅝" Flat Head Wood Screw | 0.164 | 0.131 | 0.312 |
| #8 x 1½" Flat Head Sheet Metal Screw | 0.164 | 0.113 | 0.296 |
| 0.120" x 1½" Galvanized Ring Shank Nail | 0.120 | - | 0.438 |
| 0.092" x 2" Galvanized Ring Shank Nail | 0.092 | - | 0.227 |
| SI: 1 in = 25.4 mm | | | |

9.6 *HVHZ Wall Assembly*

9.6.1 Walls shall be sheathed with Exposure 1-rated, ⅝" (15.9 mm) thick plywood that complies with DOC PS-1 or PS 2 and shall be applied to minimum 2 x 6, No. 2 Spruce-Pine-Fir, or 18-gauge 2 x 6 CFS studs spaced not more than 16" (406 mm) on center.

9.6.1.1 At a minimum, wall sheathing shall be continuous over three or more supports and shall be secured to such supports with 8d common nails for wood framed walls, or minimum #8 screws for CFS-framed walls with a sufficient length to penetrate through the sheathing and steel thickness plus three (3) threads minimum. Fastener spacing shall not exceed 6" (152 mm) on center at panel edges and all intermediate supports. Fastener spacing shall be 4" (102 mm) on center at corner studs.

9.6.1.1.1 Fastener type and spacing shall be designed to resist the superimposed wind loads and shall be verified by an RDP.

9.6.1.2 Sheathing shall be covered with a water-resistive barrier complying with IBC Section 1403.2 (FBC-B Section 1404.2) and flashed in accordance with IBC Section 1404.4 (FBC-B Section 1405.4).


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9.6.2 *Direct Installation (HVHZ):*

9.6.2.1 Millboard Composite Sidings can be installed directly onto the wall assembly as constructed in accordance with **Section 9.6.1**, using the appropriate fastener(s) listed in **Table 2**.

9.6.3 *Furred Installation (HVHZ):*

9.6.3.1 Furring strips shall be minimum 1 x 3 SPF.

9.6.3.2 *Horizontal Configuration:*

9.6.3.2.1 Vertical 1 x 3 wood batten furring strips shall be lined up with each stud vertically and fastened to the studs with minimum #8 x $1^{5}/_{8}$" long screws spaced at 16" o.c. maximum.

9.6.3.2.2 Millboard Composite Sidings can be installed onto the furred wall assembly as constructed in accordance with **Section 9.6.1**, using the appropriate fastener(s) listed in **Table 2**.

9.6.3.3 *Vertical Configuration:*

9.6.3.3.1 Vertical 1 x 3 wood batten furring strips shall be lined up with each stud vertically and fastened to the studs with minimum #8 x $1^{5}/_{8}$" long screws spaced at 16" o.c. maximum.

9.6.3.3.2 Horizontal 1 x 3 wood batten furring strips shall be spaced no greater than 16" o.c. vertically. Horizontal batten strips shall be secured to the vertical battens with minimum #8 x $1^{5}/_{8}$" long screws, fastened at each vertical batten intersection.

9.6.3.3.3 Millboard Composite Sidings can be installed onto the furred wall assembly as constructed in accordance with **Section 9.6.1**, using the appropriate fastener(s) listed in **Table 2**.

9.7 *Soffit Assembly*

9.7.1 Millboard Composite Sidings used as a soffit are installed at roof overhangs with the boards perpendicular to the supporting framing, nailers, battens, or sub-fascia.

9.7.2 The maximum clear span between support lines is 24" (610 mm). Support spacing is reduced where required by the approved construction documents.

9.7.3 Each board is fastened through the tongue or guide groove at each support line. Fastener heads are seated flush with the guide groove without overdriving or damaging the tongue.

9.7.4 Openings for ventilation, lighting, sprinklers, mechanical equipment, and other penetrations are framed and detailed so the remaining board and support system are capable of resisting the design loads. Required roof or attic ventilation is maintained.

9.7.5 Millboard Composite Sidings, when used as soffits, shall be installed using direct wood, steel, or masonry backing. Installation of Millboard Composite Sidings as soffits using receiving channels such as J-channels or F-channels is outside of the scope of this report.

9.7.6 *Wood-Framed Walls:*

9.7.6.1 For wood-framed buildings, supporting wood framing, nailers, battens, and sub-fascia have a minimum published specific gravity of 0.42 and are sized and connected to resist the reactions associated with the required design pressure.

9.7.6.1.1 Fasteners and spans to use are listed in **Table 7**.

9.7.7 *Cold-Formed Steel (CFS) Walls:*

9.7.7.1 Cold-formed steel support members are minimum 20-gauge and have minimum tensile strength sufficient to develop the required screw pull-out and pull-over resistance. The supporting CFS framing and its connections are designed in accordance with AISI S230, AISI S240, or other applicable code provisions.

9.7.7.1.1 Use the #8 x $1^{1}/_{2}$" flat-head sheet-metal screw and span listed in **Table 8**. The screw fully engages the steel support and extends not fewer than three threads beyond the connected steel thickness.


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9.7.8 *Concrete/CMU Walls:*

9.7.8.1 A minimum 2 x 2 SPF wood nailer or batten with published specific gravity not less than 0.42 is installed at the wall side of the soffit and independently anchored to the concrete or masonry substrate.

9.7.8.2 The anchor type, substrate strength, embedment, edge distance, spacing, cracked or uncracked concrete condition, masonry unit and grout condition, and allowable tension resistance are specified in the approved construction documents and designed by an RDP.

## 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 Fastener withdrawal, head pull-through, and lateral resistance in accordance with ASTM D1761

10.1.2 Wind pressure calculations in accordance with general engineering principles by DrJ Engineering, LLC

10.1.3 Wind speed calculations in accordance with ASCE 7 Chapter 30 by DrJ Engineering, LLC

10.1.4 Surface burning characteristics in accordance with ASTM E84

10.1.5 Fire testing in accordance with SFM 12-7A-1

10.1.6 Impact testing in accordance with MOAT 43, BS EN 13245-1, and MOAT 27

10.1.7 Abrasion resistance in accordance with EN ISO 7784-2

10.1.8 Moisture content in accordance with BS EN 322

10.1.9 Swelling due to water submersion in accordance with BS EN 317

10.1.10 Fade resistance in accordance with Q-Lab Technical Bulletin LL-9025

10.1.11 Engineering evaluation of equivalent design for one-hour fire rated wall assembly in accordance with ASTM E119 and ASTM E2032

10.1.12 Stain resistance in accordance with BS EN 438-2

10.1.13 Wind testing for use in HVHZ in accordance with TAS 202 and TAS 203

10.2 Information contained herein may include the result of testing and/or data analysis by sources that are approved agencies, approved sources, and/or an RDP. Accuracy of external test data and resulting analysis is relied upon.

10.3 Where applicable, testing and/or engineering analysis are based upon provisions that have been codified into law through state or local adoption of regulations and standards. The developers of these regulations and standards are responsible for the reliability of published content. DrJ's engineering practice may use a regulation-adopted provision as the control. A regulation-endorsed control versus a simulation of the conditions of application to occur establishes a new material as being equivalent to the regulatory provision in terms of quality, strength, effectiveness, fire resistance, durability, and safety.

10.4 The accuracy of the provisions provided herein may be reliant upon the published properties of raw materials, which are defined by the grade mark, grade stamp, mill certificate, or duly authenticated reports from approved agencies and/or approved sources provided by the supplier. These are presumed to be minimum properties and relied upon to be accurate. The reliability of DrJ's engineering practice, as contained in this duly authenticated report, may be dependent upon published design properties by others.


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10.5 *Testing and Engineering Analysis*

10.5.1 The strength, rigidity, and/or general performance of component parts and/or the integrated structure are determined by suitable tests that simulate the actual conditions of application that occur and/or by accepted engineering practice and experience.[38]

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

## 11 Findings

11.1 As outlined in **Section 6**, Millboard Composite Sidings have performance characteristics that were tested and/or meet applicable regulations. In addition, they are suitable for use pursuant to its specified purpose.

11.2 When used and installed in accordance with this duly authenticated report and the manufacturer installation instructions, Millboard Composite Sidings shall be approved for the following applications:

11.2.1 Use as an exterior wall covering to provide a weather-resistive barrier.

11.2.2 Use as external siding on buildings in accordance with IBC Section 1403.8, CBC Section 1403.9, and IRC Section R703.

11.2.3 Millboard Composite Sidings were evaluated for installation as part of a rainscreen system.

11.2.3.1 Millboard Composite Sidings are installed onto furring strips or nailbase with a 1/4" thick rainscreen mesh in between siding and substrate.

11.2.3.2 Fasteners specified in this report are capable of sustaining the dead load of Millboard Composite Sidings.

11.2.4 Furring strips/nailbase in conjunction with a rainscreen mesh provides an air pocket to facilitate drainage behind Millboard Composite Sidings. Limitations are listed in **Section 12**.

11.2.5 Use as an exterior wall covering on buildings or structures located in HVHZ in accordance with FBC-B Section 1405.1.

11.2.6 Exterior soffit attached to wood or cold-formed steel supports, when the required wind pressure remains within the limits for each configuration tabulated, the limits from **Table 7** or **Table 8** shall be used, and the clear span shall be 24" (610 mm), maximum.

11.2.6.1 Exterior soffit adjacent to concrete or masonry walls, where a wood nailer or batten is independently anchored to the substrate and the complete load path is designed in accordance with **Section 9.7.8**.

11.2.7 Combustible exterior wall covering in the construction types and within the height, area, fire-separation distance, and ignition-resistance limitations identified in **Section 8.1.7**.

11.2.8 Exterior wall assemblies referenced in **Section 6.7.1.1** meet the NFPA 268 ignition-resistance criterion at the specified incident radiant heat flux.

11.3 Unless exempt by state statute, when Millboard Composite Sidings 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 Millboard Company, Ltd.

11.5 IBC Section 104.2.3[39] (IRC Section R104.2.2[40] and IFC Section 104.2.3[41] are similar) in pertinent part state:

> 104.2.3 Alternative Materials, Design and Methods of Construction and Equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative is not specifically prohibited by this code and has been approved.


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11.6 **Approved:**[42] Building regulations require that the building official shall accept duly authenticated reports.[43]

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

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

11.6.3 Federal law, Title 18 US Code Section 242, requires that, where the alternative product, material, service, design, assembly, and/or method of construction is not approved, the building official shall respond in writing, stating the reasons why the alternative was not approved. Denial without written reason deprives a protected right to free and fair competition in the marketplace.

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

11.8 Through the IAF Multilateral Arrangement (MLA), this duly authenticated report can be used to obtain product approval in any jurisdiction or country because all ANAB ISO/IEC 17065 duly authenticated reports are equivalent.[44]

## 12 Conditions of Use

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

12.2 Millboard Composite Sidings shall be installed over a structural wall assembly capable of withstanding the imposed positive and negative design loads. Soffit applications are installed over framing, blocking, nailers, battens, or sub-fascia capable of resisting the applicable soffit reactions.

12.2.1 Exterior walls shall be braced or sheathed with approved materials to resist lateral loads.

12.2.2 The exterior sheathing substrate shall be fastened to wall framing members in accordance with the applicable building codes.

12.2.2.1 An approved Water-Resistive Barrier (WRB) shall be secured on top of the exterior sheathing where required by the applicable building codes.

12.2.2.2 In accordance with the applicable code, flashing shall be installed at all openings, penetrations, abutting components, and at terminations of siding and soffit to ensure weather-tightness of the assembly.

12.2.3 Building code provisions for the fasteners used to secure Millboard Composite Sidings to furring or nailbase shall be followed.

12.2.4 Installation of Millboard Composite Siding over foam plastic sheathing is outside the scope of this report.

12.2.5 Connections between furring, nailbase, nailers, battens, fascia, sub-fascia, and the structural building assembly outside of the scope of this report and shall be designed by others.

12.3 When installed as soffits, required roof ventilation shall be provided in accordance with IBC Section 1202.2 and IRC Section R806, as applicable.

12.4 As listed herein, Millboard Composite Sidings shall be subject to the following conditions:

12.4.1 Use as a primary structural wall-bracing, diaphragm, roof-bracing, or soffit-blocking system is outside the scope of this report.

12.4.2 Use as an interior wall or ceiling finish is outside the scope of this report.

12.4.3 Use on buildings of Types I, II, III, and IV-HT construction under the IBC shall be limited to the conditions specified in IBC Section 1405.1.1.

12.4.4 Design wind pressure shall remain within the allowable wind loads as provided in **Table 3** through **Table 6**.

12.4.5 A WRB shall be installed where required by the applicable code.


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12.5 For use in HVHZ, wall configurations shall be described in **Section 9**.

12.5.1 In general, for wood-framed walls, lumber shall comply with FBC-B Section 2317, wall construction shall comply with FBC-B Section 2318, and anchorage shall be in accordance with FBC-B Section 2321.

12.5.2 Cold-formed steel construction shall be in accordance with FBC-B Section 2222. Wall assemblies shall comply with the prescriptive provisions in AISI S230 or designed in accordance with the provisions in AISI S240 per FBC-B Section 2214.

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

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

12.6.5 These innovative products have an internal quality control program and a third party quality assurance program in accordance with IBC Section 104.7.2, IBC Section 110.4, IBC Section 1703, IRC Section R104.7.2, and IRC Section R109.2.

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

12.7 The approval of this report by the AHJ shall comply with IBC Section 1707.1, where legislation states in part, *"the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 104.2.3"*, all of IBC Section 104, and IBC Section 105.3.

12.8 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 Millboard Composite Sidings (Shadow Line+ and Board & Batten+), as listed in **Section 1.1**, are identified by a label on the board or packaging material bearing the manufacturer name, product name, this report number, and other information to confirm code compliance.

13.2 Additional technical information can be found at:

13.2.1 Shadow Line+: www.millboard.com/en-us/shop/composite-siding/shadow-line-antique-oak

13.2.2 Board & Batten+: www.millboard.com/en-us/shop/composite-siding/board-batten-antique-oak

## 14 Review Schedule

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

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


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Issue Date: March 27, 2025
Supplement Revision Date: June 8, 2026
Subject to Renewal: July 1, 2027

# FBC Supplement to Report Number 2304-117

**REPORT HOLDER:** Millboard® Company, Ltd

## 1 Evaluation Subject

1.1 Millboard Composite Sidings:

1.1.1 Shadow Line+

1.1.2 Board & Batten+

## 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show Millboard Composite Sidings, recognized in Report Number 2304-117, have also been evaluated for compliance with the codes listed below as adopted by the Florida Building Commission.

2.2 *Applicable Code Editions*

2.2.1 *FBC-B—20, 23: Florida Building Code – Building (FL 47417)*

2.2.2 *FBC-R—20, 23: Florida Building Code – Residential (FL 47417)*

## 3 Conclusions

3.1 Millboard Composite Sidings, described in Report Number 2304-117, comply with the FBC-B and FBC-R and are subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the FBC-B and FBC-R applicable to this report, they are listed here:

3.2.1 FBC-B Section 104 is reserved.

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

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

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

3.2.5 FBC-B Section 105.3 replaces IBC Section 105.3.

3.2.6 FBC-B Section 105.3.1 replaces IBC Section 105.3.1.

3.2.7 FBC-B Section 110.3 replaces IBC Section 110.3.

3.2.8 FBC-B Section 1403 replaces IBC Section 1402.

3.2.9 FBC-B Section 1403.5 replaces IBC Section 1403.2.

3.2.10 FBC-B Section 1404.9 replaces IBC Section 1403.8.

3.2.11 FBC-B Section 1406.2.1 replaces IBC Section 1405.1.1.

3.2.12 FBC-B Section 1707.1 replaces IBC Section 1707.1.

3.2.13 FBC-B Section 2304.12 replaces IBC Section 2304.12.


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3.2.14 FBC-B Section 2306.1 replaces IBC Section 2306.1.

3.2.15 FBC-B Section 2306.3 replaces IBC Section 2306.3.

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

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

3.2.18 FBC-R Section R317 replaces IRC Section R304.

3.2.19 FBC-R Section R318 replaces IRC Section R305.

3.2.20 FBC-R Section R703.1.1 replaces IRC Section R703.1.1.

3.2.21 FBC-R Section R703.1.2 replaces IRC Section R703.1.2.

## 4 Conditions of Use

4.1 Millboard Composite Sidings, described in Report Number 2304-117, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 2304-117.

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


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Issue Date: September 10, 2025
Supplement Revision Date: June 8, 2026
Subject to Renewal: July 1, 2027

# CBC and CRC Supplement to Report Number 2304-117

**REPORT HOLDER:** Millboard® Company, Ltd

## 1 Evaluation Subject

1.1 Millboard Composite Sidings:

1.1.1 Shadow Line+

1.1.2 Board & Batten+

## 2 Purpose and Scope

2.1 Purpose

2.1.1 The purpose of this Report Supplement is to show Millboard Composite Sidings, recognized in Report Number 2304-117 have also been evaluated for compliance with the codes listed below.

2.2 *Applicable Code Editions*

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

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

2.2.3 *CWUIC — 25: California Wildland-Urban Interface Code (Title 24, Part 7)*

## 3 Conclusions

3.1 Millboard Composite Sidings, described in Report Number 2304-117, comply with the CBC and CRC and are subject to the conditions of use described in this supplement.

3.2 Where there are variations between the IBC and IRC and the CBC and CRC applicable to this report, they are listed here:

3.2.1 CBC Section 104.6 replaces IBC Section 104.4.

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

3.2.3 CBC Table 705.5 replaces IBC Table 705.5.

3.2.4 CBC Chapter 14 replaces IBC Chapter 14.

3.2.5 CBC Section 1403.2 replaces IBC Section 1403.2.

3.2.6 CBC Section 1403.9 replaces IBC Section 1403.8.

3.2.7 CBC Section 1707.1 replaces IBC Section 1707.1.

3.2.8 CBC Section 2306.3 replaces IBC Section 2306.3.

3.2.9 CRC Section R104.6 replaces IBC Section R104.4.

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

3.2.11 CRC Section R302.2 replaces IRC Section R302.2.

3.2.12 CRC Section R317 replaces IRC Section R304.


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3.2.13 CRC Section R318 replaces IRC Section R305.

3.2.14 CRC Section R703.1.1 replaces IRC Section R703.1.1.

3.2.15 CRC Section R703.1.2 replaces IRC Section R703.1.2.

3.2.16 CBC Chapter 7A repealed; replaced by California WUI Code (Title 24, Part 7).

## 4 Conditions of Use

4.1 Millboard Composite Sidings, described in Report Number 2304-117, must comply with all of the following conditions:

4.1.1 All applicable sections in Report Number 2304-117.

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


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# Notes

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

2 Capitalized terms and responsibilities are defined pursuant to the applicable building code, applicable reference standards, the latest edition of TPI 1, the NDS, AISI S202, US professional engineering law, Canadian building code, Canada professional engineering law, Qualtim External Appendix A: Definitions/Commentary, Qualtim External Appendix B: Project/Deliverables, Qualtim External Appendix C: Intellectual Property and Trade Secrets, definitions created within Design Drawings and/or definitions within Reference Sheets. Beyond this, terms not defined shall have ordinarily accepted meanings as the context implies. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

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

4 Alternative Materials, Design and Methods of Construction and Equipment: The provisions of any regulation code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by a regulation. Please review https://www.justice.gov/atr/mission and https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3

5 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.2:~:text=the%20design%20strengths%20and%20permissible%20stresses%20shall%20be%20established%20by%20tests

6 The design strengths and permissible stresses of any structural material shall conform to the specifications and methods of design of accepted engineering practice. https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1706.1:~:text=Conformance%20to%20Standards-,The%20design%20strengths%20and%20permissible%20stresses,-of%20any%20structural

7 https://up.codes/viewer/mississippi/ibc-2024/chapter/17/special-inspections-and-tests#1707.1:~:text=the%20building%20official%20shall%20make%2C%20or%20cause%20to%20be%20made%2C%20the%20necessary%20tests%20and%20investigations%3B%20or%20the%20building%20official%20shall%20accept%20duly%20authenticated%20reports%20from%20approved%20agencies%20in%20respect%20to%20the%20quality%20and%20manner%20of%20use%20of%20new%20materials%20or%20assemblies%20as%20provided%20for%20in%20Section%20104.2.3.

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

9 https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#approved_agency

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

11 https://www.law.cornell.edu/uscode/text/18/1832 (b) Any organization that commits any offense described in subsection (a) shall be fined not more than the greater of $5,000,000 or 3 times the value of the stolen trade secret to the organization, including expenses for research and design and other costs of reproducing the trade secret that the organization has thereby avoided. The federal government and each state have a public records act. To follow DTSA and comply state public records and trade secret legislation requires approval through ANAB ISO/IEC 17065 accredited certification bodies or approved sources. For more information, please review this website: Intellectual Property and Trade Secrets.

12 https://www.nspe.org/resources/issues-and-advocacy/professional-policies-and-position-statements/regulation-professional AND https://apassociation.org/list-of-engineering-boards-in-each-state-archive/

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

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

15 https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#104.2.3 AND https://up.codes/viewer/mississippi/ibc-2024/chapter/1/scope-and-administration#105.3.1

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

17 https://iaf.nu/en/about-iaf-mla/#:~:text=Once%20an%20accreditation%20body%20is%20a%20signatory%20of%20the%20IAF%20MLA%2C%20it%20is%20required%20to%20recognise%20certificates%20and%20validation%20and%20verification%20statements%20issued%20by%20conformity%20assessment%20bodies%20accredited%20by%20all%20other%20signatories%20of%20the%20IAF%20MLA%2C%20with%20the%20appropriate%20scope

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

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

20 Unless otherwise noted, the links referenced herein use un-amended versions of the 2024 International Code Council (ICC) 2024 International Code Council (ICC) model codes as foundation references. Mississippi versions of the IBC 2024 and the IRC 2024 are un-amended. This material, product, design, service and/or method of construction also complies with the 2000-2012 versions of the referenced codes and the standards referenced therein. As pertinent to this technical and code compliance evaluation, CBI and/or DrJ staff have reviewed any state or local regulatory amendments to assure this report is in compliance.

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

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

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

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

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

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

27 https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280#p-3280.2(Listed%20or%20certified); https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#listed AND https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#labeled

28 EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments such as cornices, soffits, fascia, gutters and leaders.

29 Concrete Block Structure

30 2018 IBC Table 602

31 2021 IRC Section R317

32 2021 IRC Section R318


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

[34] 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

[35] 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

[36] 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.

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

[38] See Code of Federal Regulations (CFR) Title 24 Subtitle B Chapter XX Part 3280 for definition: https://www.ecfr.gov/current/title-24/subtitle-B/chapter-XX/part-3280

[39] 2021 IBC Section 104.11

[40] 2021 IRC Section R104.11

[41] 2018: https://up.codes/viewer/wyoming/ifc-2018/chapter/1/scope-and-administration#104.9 AND 2021: https://up.codes/viewer/wyoming/ibc-2021/chapter/1/scope-and-administration#104.11

[42] Approved is an adjective that modifies the noun after it. For example, Approved Agency means that the Agency is accepted officially as being suitable in a particular situation. This example conforms to IBC/IRC/IFC Section 201.4 (https://up.codes/viewer/mississippi/ibc-2024/chapter/2/definitions#201.4) where the building code authorizes sentences to have an ordinarily accepted meaning such as the context implies.

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

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


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