



SECTION 074643 - REAR VENTILATED FAÇADE SYSTEM

This Section specifies “Horizon” and “Symmetry” rainscreen-system-based capped composite cladding boards produced by Fiber Composites, LLC, 181 Random Drive, New London, NC 28127. Tel. No.: 800-573-8841. E-Mail: info@fiberondecking.com. Website: www.fiberondecking.com.

Fiberon “Horizon” and “Symmetry” are distinctly different from commonly used materials for rainscreen applications. Unlike metal panels, lap siding, and brick veneer, Horizon and Symmetry emulate exotic tropical hardwoods while providing long-lasting surface protection with a patented PermaTech process. It is highly resistant to mold, mildew, and rot, and provides long-term color retention.

Standard colors offered are Ipe, Tudor Brown, Rosewood, and Castle Gray for Horizon and Graphite, Burnt Umber, Warm Sienna, and Cinnabar for Symmetry. Cladding boards can be installed horizontally, vertically, and are reversible as design options.

Cladding products have been fully tested for resistance to water penetration, UV degradation, termite infestation and related environmental effects. Structural tests have been performed for hurricane force debris impact resistance, deflection, and mechanical fastener holding power.

Horizon and Symmetry are true to line and will not exhibit a wavy appearance when properly installed. Cladding surfaces are smooth, without the possibility of splintering, and clean easily. These attributes provide distinct advantages over other cladding materials.

Fiberon offers a 25-year performance limited residential warranty; a 20-year finish limited residential warranty (20 years for cracking and delamination and 5 years for fading, defined as a color change greater than 5 delta E); and a 10-year performance and finish limited commercial warranty (10 years for cracking and delamination).

Section Editing: “Editing Notes” will appear in red throughout text to aid in the writing of this Section. Also, bold bracketed text will require a choice to be made.

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Wood plastic composite (WPC) board cladding for use in rainscreen applications to provide a rear-ventilated façade system (RVFS).



1.2 RELATED REQUIREMENTS

Editing Note: Edit the following referenced Sections to suit Project requirements. Requires close coordination with components of the exterior building wall assembly to receive the RVFS.

- A. Section 013000 - Submittals.
- B. Section 054000 - Cold-Formed Metal Framing. For corrosion-resistant metal furring supporting WPC board cladding.

Editing Note: Minimum 1x3 nominal preservative-pressure-treated Southern Yellow Pine, Spruce-Pine-Fur, or other suitable species is required; Construction or No. 2 grade.

- C. Section 061000 - Rough Carpentry. For wood furring to receive WPC cladding.
- D. Section 061600 - Sheathing. For **[Exterior plywood] [glass-mat gypsum]** wall sheathing to receive WPC cladding.
- E. Section 072500 - Weather Barriers. For water-resistant barrier (WRB) materials installed over wall sheathing.
- F. Section 072713 - Modified Bituminous Sheet Air Barriers. For water-resistant barrier (WRB) materials installed over wall sheathing.
- G. Section 072726 - Fluid-Applied Membrane Air Barriers. For water-resistant barrier (WRB) materials installed over wall sheathing.

1.3 REFERENCES

Editing Note: Delete references not applicable to project requirements.

- A. ASTM B117: Standard Practice for Operating Salt Spray (Fog) Apparatus.
- B. ASTM C1002: Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
- C. ASTM D792: Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
- D. ASTM D1413: Standard Test Method for Wood Preservatives by Laboratory Soil-Block Cultures.
- E. ASTM D1761: Standard Test Methods for Mechanical Fasteners in Wood.
- F. ASTM D1929: Standard Test Method for Determining Ignition Temperature of Plastics.



- G. ASTM D2565: Standard Practice for Xenon-Arc Exposure of Plastics Intended for Outdoor Applications.
- H. ASTM D6109: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastic Lumber and Related Products.
- I. ASTM D6341: Standard Test Method for Determination of the Linear Coefficient of Thermal Expansion of Plastic Lumber and Plastic Lumber Shapes Between -30 and 140°F (34.4 and 60°C).
- J. ASTM D7031: Standard Guide for Evaluating Mechanical and Physical Properties of Wood-Plastic Composite Products.
- K. ASTM D7032: Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite Deck Boards and Guardrail Systems (Guards or Handrails).
- L. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
- M. AWPA E1: Laboratory Methods for Evaluating the Termite Resistance of Wood-Based Materials: Choice and No-Choice Tests.
- N. AWPA E10: Laboratory Method for Evaluating the Decay Resistance of Wood-Based Materials Against Pure Basidio Mycote Cultures: Soil/Block Test.
- O. TAS 201: Impact Test Procedures.
- P. TAS 202: Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.
- Q. TAS 203: Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
- R. UL 723: Standard Test Method for Surface Burning Characteristics of Building Materials.

1.4 DEFINITIONS

- A. Rainscreen: An exterior open-joint cladding system incorporating a continuous air cavity created by furring, a water-resistive barrier to manage water intrusion through drainage and ventilation, and a physical air barrier (e.g. sheathing) to prevent air leakage into the building.
- B. RVFS: Rear-ventilated façade system.



Editing Note: A continuous No. 15 asphaltic building felt or other approved materials, such as building wrap, are acceptable pursuant to the International Building Code (Ref.: IBC Chapter 14).

- C. WRB: Water-resistive barrier. A Code-acceptable material behind the WPC cladding that prevents moisture in the air cavity from intrusion into the exterior building wall assembly.
- D. WPC: Wood and plastic composite material.

1.5 SUBMITTALS

- A. General: Comply with Section 013000 - Submittals.
- B. Product Data: For each product specified. Include the following:
 - 1. Technical product data, including component descriptions, details, and performance criteria.
 - 2. Manufacturer's printed surface preparation and installation instructions.
 - 3. Safety Data Sheets (SDS).
- C. Selection Samples: Full range of samples for color selection.
- D. Verification Samples: For selected color(s). Full board width by minimum 12 inch length in size.
- E. Quality Assurance Submittals:
 - 1. Installer qualifications.
 - 2. Certified test reports showing compliance with specified performance criteria.
 - 3. Specimen copy of specified material warranties.
- F. Closeout Submittals:
 - 1. Maintenance data for installed system.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm with a minimum of three years documented experience installing RVFS similar to RVFS required by this Section.
- B. Project-Site Mockups: Erect project-site mockups incorporating materials and workmanship required. After mockups have been reviewed for acceptability, retain on site and suitably protected until the RVFS work has been completed. Accepted mockups will serve as quality control standards for judging acceptability of the installed work. Accepted mockups **[may] [may not]** be incorporated into the work.



1. Provide mockups as **[indicated on Drawings] [directed by Architect]**.

1.7 DELIVERY AND STORAGE

- A. General: Deliver and store materials in manufacturer's original packaging and clearly identified. Protect materials from harmful environmental elements, construction dust and other potentially detrimental conditions in a suitable dry, well-ventilated, weathertight storage location.

1.8 ENVIRONMENTAL CONDITIONS

- A. Do not apply RVFS materials when the air temperature or relative humidity is outside the manufacturer's range limitations.

1.9 WARRANTY

- A. Manufacturer's Performance Warranty: Manufacturer's written materials warranty for long-term performance against manufacturing defects, including checks, splinters, and delamination, or damage from rot and fungal decay.

1. Warranty Period: 10 years from date of Substantial Completion.

- B. Manufacturer's Stain and Fade Warranty: Manufacturer's written materials warranty for long-term performance against staining and color fade.

1. Color Fade: Color change from light and weathering exposure not to exceed 5 Delta E (Hunter) units.
2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CAPPED COMPOSITE CLADDING

- A. Basis of Design: **["Horizon"] ["Symmetry"]**; Fiber Composites, LLC.
- B. Composition: Wood and plastic composite (WPC) core boards with "PermaTech," a patented polyethylene-based capping material for superior stain, fade, and scratch resistance. Manufactured through a continuous co-extrusion process.
- C. Board Thickness: 0.935 inch total thickness; 0.015 inch capping material thickness.
- D. Board Width: 5.4 inches.
- E. Board Length: **[12 feet] [16 feet] [20 feet]**.



- F. Board Edges: 1/8 inch edge radius.
- G. Gapping: The following open joint dimensions for the RVFS are required:
 - 1. Butted Boards: 1/4 inch to 1/32 inch open joints, depending on temperature.
 - 2. Edge-to-Edge Boards: 3/16 inch open joints.
 - 3. Boards Adjacent to Walls or Posts: 1/4 inch open joints.
 - 4. Boards at Roof Interface: 1 inch open joints.

Editing Note: Following color selections for "Horizon" product.

- H. Color: **[Ipe] [Tudor Brown] [Rosewood] [Castle Gray] [Color indicated or scheduled on Drawings] [Color as selected by Architect].**

Editing Note: Following color selections for "Symmetry" product.

- I. Color: **[Graphite] [Burnt Umber] [Warm Sienna] [Cinnabar] [Color indicated or scheduled on Drawings] [Color as selected by Architect].**

2.2 PERFORMANCE CRITERIA

- A. Structural Performance Criteria for WPC Board Cladding Assembly:

- 1. General: Comply with **[International Building Code] [Florida Building Code] [governing building code]** and authorities having jurisdiction for RVFS wind load resistance for the geographical location of the Project.

Editing Note: Structural performance testing for wind-borne debris impact resistance is based on Testing Application Standard (TAS) test protocols developed for the Florida Building Code (FBC). Specific requirements are described in Chapter 16 Structural Design of the FBC.

- 2. Wind-Borne Debris Impact Resistance: Cladding assembly tested according to TAS 201, TAS 202, and TAS 203 for High Velocity Hurricane Zone (HVHZ) applications, by an accredited testing laboratory. Passes the specified TAS Test Protocols for large missile impact.

- B. Performance Criteria for WPC Board Cladding Product: Comply with ASTM D7031 and the following:

- 1. Surface Burning Characteristics: Maximum 200 Flame Spread Index (Class C) and maximum 350 Smoke Development Index; ASTM E84 and UL 723.
- 2. Self-Ignition Temperature: 743 deg F; ASTM D1929.
- 3. Flash-Ignition Temperature: 698 deg F; ASTM D1929.
- 4. Specific Gravity: 1.10; ASTM D792.
- 5. Coefficient of Thermal Expansion: 1.67×10^{-5} in/in/deg F; ASTM D6341.
- 6. Modulus of Elasticity: 456,000 psi; ASTM D6109.
- 7. Modulus of Rupture: 3,500 psi; ASTM D6109.



8. Flexural Rigidity: 971 lbs. ultimate load, 225 lbs. load at L/180 deflection, and EI 116,200 lb-in². Tested according to ASTM D7032 and ASTM D6109.
9. Creep Recovery: 84 percent average recovery with maximum unrecovered deflection not to exceed 1/16 inch for 151 lb. test load; ASTM D7032.
10. Maximum Load Deflection: Less than 0.120 inch; ASTM D7032.
11. UV Resistance: Successfully passed after 2000 hours of Xenon-Arc exposure. Tested according to ASTM D2565 Cycle 1.
12. Fungus Decay Resistance: No significant decay; AWWA E10.
13. Termite Resistance: Passes; AWWA E1.
14. Fastener Performance: Minimum 367 lbs.; ASTM D1761.
15. Delamination - Submersion Test: No delamination after 30 days when tested fully submerged in water at 70 deg F and 150 deg F.
16. Delamination - High Heat and Humidity Test: No delamination after 30 days suspended directly above, but not immersed into, 150 deg F water.
17. Delamination - Soak/Freeze/Thaw Test: No delamination after 50 soak/freeze/thaw cycles. Soak in room temperature water, freeze for a minimum 4 hours, thaw, and repeat.

C. Performance Criteria for Mechanical Fasteners:

1. Pull-Through Resistance: 167 lbs. minimum; ASTM D1761 and ASTM D7032.
2. Withdrawal Capacity: 196 lbs. minimum; ASTM D1761 and ASDTM D7032.

2.3 MISCELLANEOUS MATERIALS

- A. General: Provide miscellaneous materials as recommended by the RVFS manufacturer.
- B. Fasteners: Type **[304]** **[316]** stainless steel or polymer-coated composite decking screw fasteners complying with ASTM C1002. Minimum #8 by 2-1/2 inch length for face fasteners and #8 by 2-3/4 inch length for WPC board ends.
 1. ACQ Rated Fasteners: Provide fasteners acceptable for alkaline copper quaternary (ACQ) pressure preservative treated wood attachment substrates.
 2. Polymer-Coated Screw Fasteners: Comply with ASTM B117 for corrosion-resistance.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive the RVFS work and conditions under which the work will be performed.



B. Verify:

1. Wall sheathing is in place and properly installed.
2. WRB (or air barrier) is in place, continuous, and properly installed.
3. RVFS furring is level, plumb, and true to line, correctly placed, securely attached to building substrates. Maximum furring spacing, whether horizontal or vertical, not to exceed 16 inches on center.
4. Air cavity is continuous with minimum 3/4 inch unobstructed width. Unobstructed air intake (bottom) and exit (top) of at least 3/4 inch.
5. Flashings for penetrations, head of openings, and base of air cavity are properly installed to redirect moisture to the exterior.
6. Wood blocking and insect screens are in place as required to prevent intrusion by pests and not diminish ventilation/drainage performance.

C. Commencement of RVFS work will constitute acceptance of substrates to receive the work.

3.2 PREPARATION

- A. General: Comply with manufacturer's printed installation instructions.
- B. Protect adjacent substrates not to receive the RVFS.

3.3 INSTALLATION

- A. General: Comply with RVFS manufacturer's printed installation instructions and approved shop drawings.
- B. Securely attach WPC boards to furring substrates. Fastener size, number, spacing, and minimum dimensions from board edges and ends according to RVFS manufacturer's current recommendations.
 1. Cut and rout WPC boards using only approved carbide-tipped blades, to preclude frayed edge cuts.
 2. Cut board ends square. 45 degree scarf-running butt joints in the field of cladding courses are acceptable.
 3. Predrill holes located closer than 1-1/2 inches from ends of boards and 1 inch from board edges. Pre-drill holes in cladding boards three inches wide or less.
 4. Install fasteners perpendicular to cladding board substrates and flush with board surface.



C. Horizontal WPC Board Orientation:

1. Determine and begin at lowest point of cladding installation.
2. Butt joints to occur only over vertical furring and centered on furring. As WPC board courses are added, stagger butt joints in a consistent “stair step” manner.
3. Board lengths to span a minimum of three furring members.
4. Gapping: Provide minimum 3/16 inch spacing between board edges. Spacing at end of boards is temperature dependent; refer to RVFS manufacturer’s published technical data for spacing dimensions.

D. Vertical WPC Board Orientation:

1. Prior to installation, verify required horizontal and vertical furring strips are in place to receive vertically-orientated board installation.
2. For walls exceeding available board lengths, separate boards with a non-corrosive metal z-flashing. Allow 1/4 inch clearance between top of lower cladding boards to underside of z-flashing. Maintain 1/2 inch clearance between z-flashing and start of upper cladding boards.
3. Start cladding board installation by first securing the top of the board and then working downward.
4. Using 3/16 inch spacers to maintain gapping, secure the next WPC board course starting from the top and working downward.
5. Where a balanced symmetrical WPC board layout design requires less-than-full-width end boards, maintain a minimum 3 inch width for ripped boards. Increase board-to-board gapping to accommodate; not to exceed 5/16 inch.

3.4 CLEANING AND PROTECTION

- A. Clean WPC boards according to RVFS manufacturer’s printed maintenance instructions. Use only cleaning materials and methods acceptable to RVFS manufacturer.
- B. Repair any damage to adjacent substrates and surfaces due to work of this Section.
- C. Upon completion of RVFS work, protect for remainder of construction period.

END OF SECTION 074643