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**BAMBOO STRIP FLOORING
EDGE GRAIN, FLAT GRAIN,
PRODUCT SPECIFICATION
IN CSI 3-PART FORMAT**



The mark of responsible forestry
SW-COC-003124
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Cert.# SCS-FS-02130
As Certified by

GENERAL NOTES TO SPECIFIER:

PLEASE GO TO WWW.PLYBOO.COM AND CHECK IN THE SPECIFICATIONS SECTION TO VERIFY THIS IS THE MOST CURRENT VERSION.

THIS SPECIFICATION SECTION HAS BEEN PREPARED TO ASSIST DESIGN PROFESSIONALS IN THE PREPARATION OF PROJECT OR OFFICE MASTER SPECIFICATIONS. IT FOLLOWS GUIDELINES ESTABLISHED BY THE CONSTRUCTION SPECIFICATIONS INSTITUTE, AND THEREFORE MAY BE USED WITH MOST MASTER SPECIFICATION SYSTEMS WITH MINOR EDITING.

SAMPLE LANGUAGE IS PROVIDED FOR APPLICABLE ARTICLES IN PART 1–GENERAL, PART 2–PRODUCTS AND PART 3–EXECUTION FOLLOWING THE CONSTRUCTION SPECIFICATION INSTITUTE’S *SECTIONFORMAT*. BECAUSE OF THE VARIATION IN SPECIFICATION SYSTEMS CURRENTLY IN USE, ARTICLE AND PARAGRAPH NUMBERS AND TITLES MAY DIFFER SOMEWHAT THAN PRESENTED HEREIN. THE SAMPLE LANGUAGE SHOULD BE EDITED ACCORDINGLY TO FIT EACH FIRM’S SPECIFICATIONS.

ARTICLES AND PARAGRAPHS OF THIS PRODUCT SPECIFICATION ASSUME THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 1 DOCUMENTS INCLUDING 01 25 13–PRODUCT SUBSTITUTION PROCEDURES, SECTIONS 01 33 00–SUBMITTAL PROCEDURES, 01 62 00–PRODUCT OPTIONS, 01 66 00–PRODUCT STORAGE AND HANDLING REQUIREMENTS, 01 74 00–CLEANING AND WASTE MANAGEMENT, 01 77 00–CLOSEOUT PROCEDURES, AND 01 78 00–CLOSEOUT SUBMITTALS. CLOSE COORDINATION WITH DIVISION 1 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION MAY BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

NOTES TO THE SPECIFIER ARE IN ALL UPPER CASE TEXT AND ARE CONTAINED WITHIN ROWS OF ASTERISKS.

GREY HIGHLIGHTED GREEN TEXT AND NOTES RELATE TO LEED® PROJECTS.

OPTIONAL ITEMS REQUIRING SELECTION BY THE SPECIFIER ARE ENCLOSED WITHIN BRACKETS, E.G. [35] [40] [45]. MAKE APPROPRIATE SELECTIONS AND DELETE OTHERS.

OPTIONAL PARAGRAPHS AND FEATURES THAT MAY BE SELECTED OR DELETED AS DESIRED ARE SHOWN IN BOLD FACE TYPE. DELETE BOLD FACE TYPE WHEN NOT INCLUDING THESE PARAGRAPHS OR FEATURES.

SECTION 09 62 23
Bamboo Flooring

PART 1 – GENERAL

1.01 SUMMARY

A. Standard no-added formaldehyde bamboo strip flooring installed by the [nail or staple method.] [adhesive method.]

B. RELATED SECTIONS

IN THE "RELATED SECTIONS" PARAGRAPH INCLUDE ALL DIVISION 01 SECTIONS CONTAINING LEED® REQUIREMENTS.

ADD TO, OR DELETE FROM LIST BELOW TO CREATE AN ACCURATE LIST OF ALL APPROPRIATE SECTIONS FOR MATERIAL INSTALLED IN CONTACT WITH THE BAMBOO STRIP FLOORING.

ADD TO LIST BELOW SECTIONS FOR FINISHED TRIM NOT INCLUDED IN THIS SPECIFICATION.

1. Section 03 30 00 - Cast-In-Place Concrete
2. Section 06 16 23 – Subflooring
3. Section 06 16 26 – Underlayment
4. Section 06 16 29 – Acoustical Underlayment
5. Section 06 46 19 – Wood Base and Shoe Moldings
6. Section 23 83 00 – Radiant Heating Units

1.02 REFERENCED STANDARDS

- A. ASTM – American Society for Testing and Materials
1. ASTM E648: Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source
 2. ASTM D1037: Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
 3. ASTM D3501: Standard Test Methods for Wood-Based Structural Panels in Compression
 4. ASTM D3359: Standard Test Method for Measuring Adhesion by Tape Test
 5. ASTM D4060: Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
 6. ASTM D4442: Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials
 7. ASTM D5116-06: Standard Guide for Small-Scale Environment Chamber Determinations of Organic Emissions from Indoor Materials/Products

[Guidelines also set by the California Department of Health Services (CDHS) *Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environment Chambers* (CA/DHS/EHLB/R-174, 2004; also known as, chamber testing portion of CA Section 01350)]

- B. NWFA – National Wood Flooring Association: Technical Reference Manual
- C. US Green Building Council's Leadership in Energy and Environmental Design Green Building Rating System® (LEED)

1.03 SYSTEM PERFORMANCE

- A. Compatibility with Radiant Floor Heating Systems: Compatible.

1.04 SUBMITTALS

- A. Reference Section 01 33 00; Submit the following items:
 - 1. Product Data
 - a. Each product specified
 - b. **Installation Adhesive**
 - 2. Quality Assurance/Control Submittals:
 - a. NWFA Technical Reference Manual.
 - b. Proof of bamboo flooring manufacturer's qualifications.
 - c. Test Reports: Reports for specified Physical Property Performance Requirements.
 - 3. Shop Drawings: Show installation details including location, layout, fastening method, and transition of each type of flooring **and accessory**.
 - 4. Samples:
 - a. 6 inch (150 mm) long strip of flooring material
 - b. **Fasteners**
 - c. **One of each specified accessory, minimum 4 inches (100 mm)**

5. LEED® Submittals:

FOR LEED PROJECTS INCLUDE THE FOLLOWING, AS APPLICABLE.

- a. MRc6, Rapidly Renewable Materials: Bamboo flooring [manufacturer's product data for each product used, indicating that product(s) are manufactured from a rapidly renewable resource]
- b. MRc7, Certified Wood: Forest Stewardship Council [chain of custody certification verification from supplier of bamboo product(s)]
- c. IEQc4.3, Low-Emitting Materials – Flooring Systems (no added formaldehyde) [manufacturer's product data / FloorScore® certificate]

FOLLOWING RELATES ONLY TO ADHESIVES AND FINISHES APPLIED TO UNFINISHED PLYBOO PRODUCTS AND SHOULD BE DELETED IF SPECIFYING PRE-FINISHED PRODUCTS. REFERENCES TO DATA SHOULD BE SUPPLIED BY THE ADHESIVE, SEALANT, OR FINISH MANUFACTURER.

- d. IEQc4.1, Low-Emitting Materials: Adhesives and/or sealants [manufacturer's product data]
- e. IEQc4.2, Low-Emitting Materials: Paints and/or coatings [manufacturer's product data for field finished floor coatings]

1.05 QUALITY ASSURANCE

A. Qualifications

1. Manufacturer:
 - a. Minimum 10 years experience in manufacturing and distributing bamboo flooring products.
 - b. Member: National Wood Flooring Association, American Bamboo Society, U.S. Green Building Council.
2. Installer: Minimum 5 years experience in hardwood flooring installation.

B. Reference Section 01 31 19.33; Pre-Installation Meeting:

1. **Convene meeting at project site within one week of scheduled start of installation with representatives of the following in attendance: Owner, Architect, General Contractor, Sub-Contractor.**
2. **Review substrate conditions, requirements of related work, requirements for operation of HVAC system, installation instructions, storage and handling procedures, and protection measures.**
3. **Keep minutes of meeting including responsibilities of various parties and deviations from specifications and installation instructions.**
4. **Distribute minutes to attendees within 48 hours.**

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver flooring materials in original unopened cartons.

B. Reference Section 01 66 00: Product Handling and Storage Requirements.

1. Deliver flooring after completion of all wet work and after all moisture has dissipated from this work. Wet work includes, but is not limited to, concrete, plaster, tile, drywall, grouting, and painting.
2. Store flooring in a warm, dry, well-ventilated, and weather-tight location.
3. Open the boxes, acclimate, and confirm moisture content compatibility. Flooring should acclimate for a minimum of 72 hours.
4. Do not store directly on concrete or near outside walls.

1.07 PROJECT CONDITIONS

A. The temperature and relative humidity (RH) of the installation area should be stabilized with normal year-round conditions a minimum of one week before installation. For optimum performance manufacturer's recommended temperature range of 50-72°F and an RH of 30-50% should be maintained year-round.

B. Radiant Heat: Comply with Manufacturer Installation Instructions

1.08 SCHEDULING

These items must be completed before delivery and installation of flooring.

- A. Building must be water-tight with all windows and doors installed.
- B. Completion of all wet work and after all moisture has dissipated from this work. Wet work includes but is not limited to: concrete, plaster, tile, drywall, grouting, and painting.
- C. Environmental and humidity control system is operating for 14 days in installation and storage areas at the temperature and humidity of the occupied building.

1.09 WARRANTY

- A. Warranty for Smith & Fong Flooring referenced at www.plyboo.com

1.10 MAINTENANCE AND PROTECTION

- A. Maintain and protect installed work at all times per the manufacturer's instructions.
- B. Do not protect the flooring with plastic sheeting or moisture retardant membranes.
- C. Use hard surface protection such as hardboard over kraft paper. Tape kraft paper and hardboard to prevent grit infiltration.

PART 2 – PRODUCTS

2.01 MANUFACTURER

- A. Smith & Fong Company, San Francisco, CA 94103
 - 1. Tel: (866) 835-9859
 - 2. E-mail: sales@plyboo.com
 - 3. Website: www.plyboo.com

2.02 MATERIALS

- A. Bamboo Strip Flooring
 - 1. Species: Moso (Phyllostachys Pubescens)
 - 2. Manufactured without added urea-formaldehyde
 - 3. FSC certified
 - 4. FloorScore certified
 - 5. Edge Configuration: Tongue and groove, 4 sides
 - 6. Type:
 - a. [Prefinished: 3-5/8 inches wide by 5/8 inches thick by 72 inches in length]
[Unfinished: 3-5/8 inches wide by 5/8 inches thick by 72 inches in length]
 - i. [Natural] [Amber]
 - ii. [Flat Grain] [Edge Grain]
 - iii. [FSC certified] [Non-FSC certified]

- b. Prefinished: 3-5/8 inches wide by 5/8 inches thick by 72 inches in length
 - i. [Foundation Brown] [Mountain White] [Luminous Grey]
 - ii. [FSC Certified] [Non-FSC Certified]
- 6. Physical/Mechanical Properties
 - a. ASTM E648: Critical Radiant Flux
 - i. Flat Grain prefinished: Class 1
 - ii. Edge Grain prefinished: Class 1
 - b. ASTM D1037:
 - i. Dimensional Stability, 50% to 20% RH
 - Linear Expansion:
 - Flat Grain: Parallel -0.04%, Perpendicular -0.13%
 - Edge Grain: Parallel -0.02%, Perpendicular -0.07%
 - Thickness Swell:
 - Flat Grain: -0.17%
 - Edge Grain: -0.34%
 - ii. Hardness (Janka Ball Test)
 - Flat Grain Natural: 1,900 lbf (avg)
 - Edge Grain Natural: 1,700 lbf (avg)
 - Flat Grain Amber: 1,400 lbf (avg)
 - Edge Grain Amber: 1,300 lbf (avg)
 - d. ASTM D3501: Compressive Strength
 - i. Compressive Strength / Max Load
 - Flat Grain: 7,249 lbs / 13,522 lbs.
 - Edge Grain: 6,160 lbs / 12,201 lbf (avg)
 - e. ASTM D3359: Adhesion by Tape Test
 - i. Flat Grain: Class 4B
 - ii. Edge Grain: Class 4B
 - f. ASTM D4060: Taber Abrasion
 - i. Avg. Wear-through / Wear Rate
 - Flat Grain Natural: 24,500 cycles / 5,444 cycles per 0.001 inch
 - Flat Grain Amber: 22,500 cycles / 5,500 cycles per 0.001 inch
 - Edge Grain Natural: 28,000 cycles / 10,370 cycles per 0.001 inch
 - Edge Grain Amber: 20,000 cycles / 6,897 cycles per 0.001 inch
 - g. ASTM D4442: Moisture Content
 - i. Flat and Edge Grain: 6% – 9% (average range)
 - h. ASTM D5116-06: Organic Emissions [CA Section 01350; Indoor Air Quality]
 - i. Office scenario / Classroom scenario:
 - Flat and Edge Grain: Pass / Pass

B. Installation Adhesive:

1. **The following are recommended for Smith & Fong Plyboo® Flooring Products.**
 - a. **Bostik's Best or Bostik's TKO**
 - b. **Mapei 980 or 990**
 - c. **DriTac 7500 Eco-Urethane**

d. **W.F. Taylor's MS Plus**

C. Fasteners:

- 1. Comply with both the Manufacturer Installation Instructions and the NWFA's Technical Reference Manual.**

2.03 ACCESSORIES

Flat and edge grain accessories referenced at
http://plyboo.com/images/plyboo/downloads/sf_plyboo_accessories.pdf.

- A. Base Shoe: Prefinished, 1/2" thick by 3/4" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- B. Baseboard: Prefinished, 5/8" thick by 3" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- C. Reducer: Prefinished, 5/8" thick by 2" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- D. Stair Nosing: Prefinished, 5/8" thick by 3-5/8" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- E. Stair Steps: Prefinished, 1" thick by 12" wide by 48" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- F. Standard Threshold: Prefinished, 9/16" thick by 3-5/8" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- G. Overlap Threshold: Prefinished, 5/8" thick by 2" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]
- H. T-Molding: Prefinished, 5/8" thick by 2" wide by 72" long
 - 1. [Amber Edge] [Natural Edge] [Amber Flat] [Natural Flat]

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances, and other conditions affecting performance of flooring.
- B. Verify substrate is dry, clean and free of loose material, grease, and other contaminants **which may interfere with bonding of adhesive.**

Specifier Note: Delete paragraph below and two subparagraphs (section C and subsections 1 and 2) if substrate is not concrete.

- C. Substrate Moisture Testing: Use Calcium Chloride Test. Do not install bamboo flooring if vapor pressure exceeds 3 lbs per 1,000 ft² (15 g/m²) in 24 hours.
 - 1. In multiple story buildings, test each floor level scheduled to receive bamboo flooring.
 - 2. Mark test location(s) on As-Built Drawings.

Specifier Note: Delete paragraph below (section D) if substrate is not wood.

- D. Do not install bamboo flooring if wood substrate exceeds 12% moisture.

- E. Do not install bamboo flooring if moisture variation between substrate and bamboo exceeds 3%.
- F. Verify HVAC System is operating and maintaining temperature and humidity conditions in compliance with Manufacturer's Installation Instructions.
- G. Coordinate with responsible entity to correct unsatisfactory conditions.
- H. Commencement of work by installer is acceptance of substrate conditions.

3.02 PREPARATION

- A. Humidity: maintain indoor air humidity levels between 30% and 50% for two weeks before installation and continually thereafter.
- B. Temperature: maintain temperature of materials and installation area between 62 degrees and 68 degrees during installation.
- C. Acclimatization: Open flooring boxes and remove packing minimum 3 days prior to start of installation.
- D. Grind and fill subfloor using methods and materials appropriate to the subfloor construction to eliminate high spots and depressions exceeding 3/16 inch (5 mm) in 10 feet (3048 mm).

3.03 INSTALLATION OF SMITH & FONG PLYBOO FLOORING

- A. Flooring: Comply with manufacturer's installation instructions.
Available for download at:
http://plyboo.com/images/plyboo/downloads/plyboo_flooring_install_instructions.pdf
- B. Adhesive: Comply with adhesive manufacturer's instructions.**

3.04 CLEANING: Reference Section 01 74 00: Cleaning and Waste Management

- A. Repair or replace damaged installed products.
- B. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.

3.05 PROTECTION

- A. If glue-down method is used, do not allow foot traffic or heavy furniture on floor for 24 hours or as adhesive manufacturer requires.
- B. Protect installed product from damage during construction by covering with heavy kraft-paper or other suitable covering. Do not use non-breathable sheet or film that could cause condensation to form or inhibit proper curing of adhesive. Maintain covering throughout remainder of construction period.

END OF PRODUCT SPECIFICATION