



FINE BAMBOO FLOORING, PANELS & WORKTOPS

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**PREFINISHED STRAND SOLID-STRIP  
BAMBOO FLOORING  
Teragren® Synergy™ (12mm)  
with Xcora™ Technology in Multiple Precise Lengths**



**MF '04 SECTION 096400**  
DOC:MPLS 04.23.12

LEED MR6, IEQ 4.3, IEQ 4.4

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NOTES TO SPECIFIER:

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.

EDIT CAREFULLY TO SUIT PROJECT REQUIREMENTS. MODIFY AS NECESSARY AND DELETE ITEMS THAT ARE NOT APPLICABLE. VERIFY THAT REFERENCED SECTION NUMBERS AND TITLES ARE CORRECT. (NUMBERS AND TITLES REFERENCED ARE BASED ON *MASTER FORMAT*, 2004 EDITION)

THIS SECTION ASSUMES THE PROJECT MANUAL WILL CONTAIN COMPLETE DIVISION 1 DOCUMENTS INCLUDING SECTIONS 013300 –SUBMITTAL PROCEDURES, 016000 –PRODUCT REQUIREMENTS, 017700 –CLOSEOUT PROCEDURES. CLOSE COORDINATION WITH DIVISION 1 SECTIONS IS REQUIRED. IF THE PROJECT MANUAL DOES NOT CONTAIN THESE SECTIONS, ADDITIONAL INFORMATION SHOULD BE INCLUDED UNDER THE APPROPRIATE ARTICLES.

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PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes: Prefinished solid strand bamboo flooring and matching accessories installed by the [nail down method.] [glue down method.] [nail and glue-down method.]

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INCLUDE SECTION NUMBER AND TITLE BELOW FOR OTHER TYPES OF FLOORING MATERIALS-BORDERING THE BAMBOO FLOORING, AND FINISHED TRIM SUCH AS BASEBOARDS IF NOT INCLUDED IN THIS SECTION.

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- B. Work in other sections:
  - 1. For project sustainability requirements, See 018113 “Sustainable Design Requirements”

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## 1.02 SUBMITTALS

### A. Submit the following items:

1. Product Data:
  - a. Flooring Specification Sheet.
  - b. Finish data: finish type, composition and manufacturer (See summary in section 2.02).
  - c. Proof of supplier's legal right to provide product
  - d. Material Safety Data Sheet (MSDS) (keep in only if required for LEED submittal)
  - e. [FloorScore®](#) certification #SCS-FS-01878: Air quality certification from Resilient Floor Covering Institute - [www.rfci.com](http://www.rfci.com)
  - f. Certified Hardness Tests, Janka results (See summary in section 2.02).
  - g. Manufacturer's installation guidelines and installation requirements.
  - h. ISO-9001 and 14001 factory certifications.
2. Accessory profiles (See specification in section 2.03).
3. Installation adhesive.

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**NOTE:** IF INSTALLATION IS "GLUE DOWN" REQUEST A SUBMITTAL ON THE INSTALLATION ADHESIVE.  
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4. Warranty for Architect's review.
5. Shop Drawings: Include direction of flooring, fastening method to be used, patterns and transition accessories. Include large scale details of accessories and details of all transitions. Make shop drawings in module required by Architect or electronically using Architects' format.
6. Samples:
  - a. 4 or 12 inch (100 or 300 mm) long strip of flooring plank, with manufacturer identified. Submit enough samples to show full range of color and grain variation.
  - b. Fasteners.
  - c. One of each specified accessory, minimum 4 inches (100 mm) long.
7. Quality Assurance/Control Submittals:
  - a. Test Report: Electronic copy of lab reports including name and contact information of certified lab.
  - b. Manufacturer's Installation Guidelines

### B. Closeout Submittals, submit following items:

1. Maintenance instructions
2. Special Warranties for use in Owner's manual.

## 1.03 QUALITY ASSURANCE

### A. Qualifications:

1. Manufacturer Qualifications:
  - a. Minimum 20 years' experience in manufacturing and distributing bamboo flooring.
2. Installer Qualifications:
  - a. Minimum three years experience in bamboo / hardwood flooring installation.
  - b. Minimum three years experience in installation of bamboo / hardwood flooring over radiant heating systems. (use only if necessary)

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

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Deliver flooring to project site in original boxes not less than 5 days prior to start of installation. Allow sufficient time for flooring to acclimate to site conditions.
- B. Store flooring materials in conditioned space at all times, and do not allow to freeze or get wet.

1.05 PROJECT/SITE CONDITIONS

\*\*\*\*\*  
**RADIANT HEAT NOTE:** SELECT "5 DAYS" IN FOLLOWING PARAGRAPH IF FLOORING IS TO BE INSTALLED OVER A RADIANT HEAT SYSTEM; OTHERWISE, SELECT "72 HOURS."  
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- A. Environmental Requirements: All installation spaces, flooring and adhesive must be maintained at normal occupancy temperature and humidity levels for a minimum of [72 hours] [5 days] prior to and continuously following installation. HVAC systems must be operational and controlling site temperature and humidity.

1.06 WARRANTY

- A. Warranty for Prefinished Teragren® *Synergy*™ Bamboo Flooring:
  1. Teragren® Structural Warranty: Lifetime against de-lamination, separation, buckling or cupping as a result of a manufacturing defect. Please see [www.teragren.com](http://www.teragren.com) for current product warranty.
  2. Teragren® Commercial Finish Warranty: 10 year heavy-use commercial warranty against wear through or separation from the flooring as a result of a manufacturing defect. Please see [www.teragren.com](http://www.teragren.com) for current product warranty.

\*\*\*\*\*  
 USE ABOVE FINISH WARRANTY FOR COMMERCIAL PROJECTS. USE FOLLOWING FINISH WARRANTY FOR RESIDENTIAL PROJECTS.  
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- 3. Teragren® Residential Finish Warranty: 25 years against wear through or separation from the flooring as a result of a manufacturing defect. Please see [www.teragren.com](http://www.teragren.com) for current product warranty.

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PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Teragren LLC  
12715 Miller Road NE, Suite 301  
Bainbridge Island, WA 98110

Tel: (800) 929-6333  
Fax: (206) 842-9456  
e-mail: info@teragren.com  
Website: <http://www.teragren.com>

\*\*\*\*\*  
INSERT NAME, ADDRESS AND PHONE NUMBERS OF LOCAL DISTRIBUTOR/DEALER BELOW.  
\*\*\*\*\*

1. Distributor/Dealer:

B. Bamboo Flooring Strand Type:

1. Bamboo strand composite in a pressure treated adhesive base to form a high density homogenous bamboo plank using Xcora™ technology
  - a. Color: [Wheat] [Chestnut] [Java] [Brindle].

C. Substitutions: None Permitted.

2.02 MATERIALS

A. Strand Bamboo Flooring:

1. Species: Moso Bamboo (*Phyllostachys Pubescens*).
2. Manufactured using Xcora™ Technology
3. Two Stage Moisture Balancing Process: Raw materials and finished product are moisture balanced to equilibrium at 45-50% Relative Humidity
4. Size: 3-3/4 inches (96 mm) wide by 1/2 inch (12 mm) thick by 24, 36, 48 and 72 inch (610mm, 915 mm, 1220mm, & 1830 mm) lengths. Planks are listed as multiple precise lengths (MPL) and packaged for random site installation to help randomize seam alignment (Note: applies to Teragren ® SKU “-MPL”).
5. Milling: Tongue and groove with a 1.5mm nail pocket and a micro-bevel edge; a backside nail relief measuring 12mm x 1mm +/- .5mm wide, and set back from the mating surface by 3mm +/- .5mm.
6. Back: Channeled and sealed with factory-finish seal coat.
7. Finish: Seven coat, 100 percent solids, non off-gassing, water-based system with aluminum oxide including two top coats of scratch-resistant polyurethane.

B. Physical Property Performance Requirements:

1. Hardness: ASTM D 1037, Janka Ball: Minimum Wheat 3,438; Chestnut 3,428; Java 3,489; Brindle 2,731.
2. Dimensional Stability: ASTM D 1037: Dimensional change coefficient: Parallel: :0.0008 / Perpendicular: .008 / Thickness: N/A
3. Slip Resistance: Coefficient of Friction: ASTM D2394; Static 0.592 Sliding 0.62
4. Flammability:
  - a. GB/T 8624-1997: Class B1
  - b. ASTM E 648: Class I Interior Floor Finish rating per NFPA 101.
5. Smoke Density: ASTM E 622: Maximum 341 in flaming mode; 189 in non-flaming mode.

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6. Abrasion Resistance: ASTM D 4060, CS-17 Taber abrasive wheels: Final wear- through: Minimum 27,500 cycles.
  7. Moisture Content: ASTM D 4442, Oven Dry Method: 6-8 percent, average.
  8. Formaldehyde Emissions: ASTM E 1333: 0.01 ppm.
  9. Thermal Resistance: ASTM C 518-04: R value of 0.53.
- C. Installation Adhesive: One-part water-free premium wood floor adhesive or as approved by flooring manufacturer.
- D. Nails or Staples:

**Teragren strongly recommends the use of a stapler instead of a nailer for installation of this product**

Teragren has enlisted the assistance of several nail/staple gun manufacturers to test out their nailer / stapler products on Synergy™ and the manufacturers’ recommendations are listed below:

1. **PowerNail**

- **Model 50P** (pneumatic)
- 1-1/2 inch long, 18 gauge cleat with a standard adapter pad and no shims
- Manufacturer suggested psi setting of 70\*
- **Model 50M** (manual)
- 1-1/4 inch long, 18 gauge with a standard adapter pad and no shims

POWERNAIL	Pneumatic Model 50P	1-1/2" long 18 gauge cleat - .200 Adapter with 1 shim	Synergy	12 mm	90 psi
	Manual Model 50M	1-1/4" long 18 gauge cleat - .200 Adapter with 1 shim	Synergy	12 mm	NA
	Pneumatic Model Flex	1-1/2" long 18 gauge cleat	Synergy	12 mm	90 psi
<a href="http://www.powernail.com">http://www.powernail.com</a>					
Primatech	Pneumatic Nailer Q550	1-1/2" 18 gauge L-type nails	Synergy	12 mm	90-95 psi
<a href="http://www.primatech.ca">http://www.primatech.ca</a>					

\*It is the responsibility of the installer to find the correct level of psi per installation conditions, the numbers listed are manufacturer recommendations provided to Teragren.

- E. Subfloors

**Teragren strongly recommends the use of a moisture barrier underneath this product unless the subfloor can be guaranteed, in perpetuity, to not emit moisture vapor in excess of 3 lbs per 1,000sq. ft. (15g per m2) within a 24 hour period.**

1. Concrete subfloor
  - a. Concrete shall be checked for flatness prior to installation, low spots and voids shall be filled to a minimum of 3/16" in a 10 ft. radius or 1/8" in a 6 foot radius.
  - b. Surface should be smooth, clean and free of contaminants or protruding fasteners.

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- 2. Wood subfloor
  - a. 3/4 inch CDX plywood for 24 inch on center floors
  - b. 5/8 inch CDX plywood for 12 inch on center and 16 inch on center floors

2.03 ACCESSORIES

- A. Stair Treads: 11-1/2 inches (292.1 mm) wide by 1-1/16 inches (26.98 mm) thick in 72 inch (1828.8 mm) lengths only [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish.
- B. Stair Riser: 7-1/2 inches (190.5 mm) wide by 5/8 inch (15.87 mm) thick in 72 inch (1828.8 mm) lengths only [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish.
- C. Stair Nosing: [3-1/2 inches (88.9 mm) wide by 1-1/8 inches (28.575 mm) thick] [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish. Note: available only in 72" length.

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 IF TRANSITION STRIPS TO OTHER FLOORING MATERIALS ARE REQUIRED, VERIFY WHICH FLOORING INSTALLER SHOULD PROVIDE THE TRANSITIONS AND INCLUDE BELOW OR IN ANOTHER SECTION AS APPROPRIATE.  
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- D. Clamshell Floor Reducer: [2-3/8 inches (60.325 mm) wide by 1/2 inch (12.7 mm) thick] [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish. Note: available only in 72" length in Wheat & Chestnut colors.
- E. T-Mold: [2 inches (50.8 mm) wide by 7/8 inch (22.22 mm) thick] [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide]. Match flooring grain, color, and finish. Note: available only in 72" length.
- F. Base Shoe: [3/4 inch (19.05 mm) high by 1/2 inch (12.7 mm) thick] [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish. Note: available only in 72" length.
- G. Base Molding: [3-1/2 inches (88.9 mm) high by 1/2 inch (12.7 mm) thick. [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish. Note: available only in 72" length.
- H. Baby Threshold: [2 inches (50.8 mm) wide by 3/4 inch (19.05 mm) thick] [ \_\_\_\_\_ inches ( \_\_\_\_\_ mm) wide by \_\_\_\_\_ inches ( \_\_\_\_\_ mm) thick]. Match flooring grain, color, and finish. Note: available only in 72" length.

\*\*\*\*\*  
 FLOOR VENTS ARE AVAILABLE IN SEVERAL STANDARD SIZES AND CUSTOM SIZES. VERIFY THAT APPROPRIATE VENTS ARE NOTED ON THE DRAWINGS.  
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- J. Floor Vent: Size and type as shown on drawings. Match Flooring color and Finish.

\*\*\*\*\*  
 INCLUDE ADDITIONAL ACCESSORIES SUCH AS METAL OR WOOD FEATURE STRIPS IF USED IN THE PROJECT.  
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## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Examine substrates upon which flooring will be installed.
  - 1. Verify that subfloor is clean, dry, and free of contaminants or protruding fasteners.
  - 2. Test subfloor for moisture vapor emissions using a Calcium Chloride or equivalent test. Do not install flooring if vapor pressure exceeds 3 lbs per 1,000sf (15g per m<sup>2</sup>) within a 24 hour period.
    - a. In multiple story buildings, test each floor level scheduled to receive bamboo flooring.
    - b. Mark test location(s) on Record Drawings.

**Teragren strongly recommends the use of a moisture barrier underneath this product unless the subfloor can be guaranteed, in perpetuity, to not emit moisture vapor in excess of 3 lbs per 1,000sq. ft. (15g per m<sup>2</sup>) within a 24 hour period.**

- B. Verify that HVAC system is operating and maintaining an occupancy level temperature and humidity conditions.
- C. Coordinate with responsible entity to correct unsatisfactory installation conditions.
- D. Commencement of work by installer is considered an acceptance of substrate conditions.
- E. Prior to installation, the installer shall examine all material and determine that it matches the work order.

### 3.02 PREPARATION

- A. Acclimatization: Open flooring boxes, remove shrink wrap and foam packing at a minimum of 3 days prior to start of installation.
- B. Grind and or fill subfloor using methods and materials appropriate to the subfloor construction to eliminate humps and depressions. For best results neither humps nor depressions shall exceed 1/8 of an inch (3 mm) within a 6 foot (1830 mm) radius or 3/16 of an inch (4.7 mm) within a 10ft (3048 mm) radius.
- C. Because bamboo is a natural fiber, variations in color naturally occur. Each box should be inspected for differences in color with color variance staggered throughout the floor.

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### 3.03 INSTALLATION

\*\*\*\*\*  
MANUFACTURER'S INSTALLATION GUIDELINES ARE ADEQUATE FOR NORMAL INSTALLATION CONDITIONS. UNUSUAL  
CONDITIONS MAY REQUIRE ADDITIONAL INFORMATION IN THIS ARTICLE.  
\*\*\*\*\*

- A. Teragren® Synergy™ Strand Bamboo Flooring: Install in accordance with manufacturer's installation guidelines.
- B. Install flooring planks by [gluing to substrate] [nailing and gluing to substrate] [nailing or gluing to substrate at Contractor's option].
- C. Lay flooring perpendicular to the flooring joists or in the direction(s)/pattern(s) as shown on Drawings.
- D. Accessories: Install using methods appropriate to the accessory and flooring system.
- E. Accommodate thermal expansion. Install transitions, trims and base molding, as identified in manufacturer's installation guidelines and as required to accommodate site conditions.

### 3.04 CLEANING

- A. Remove all debris left from flooring installation; vacuum and leave flooring in clean, debris-free condition.

### 3.05 PROTECTION

- A. Cover installed flooring with heavy Kraft-paper or other suitable covering. Do not use a non-breathable sheet or film that could cause condensation to form. Maintain covering throughout remainder of construction period.

END OF SECTION<sup>1</sup>

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<sup>1</sup> This specification was prepared by Teragren LLC. Comments or suggestions for improvement should be addressed to: Teragren, 12715 Miller Road NE, Suite 301, Bainbridge Island, WA 98110, 800-929-6333, [www.teragren.com](http://www.teragren.com) Email: [info@teragren.com](mailto:info@teragren.com)  
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