

**SECTION 09 64 13**  
**RECYCLED WOOD FLOORING**  
**Rev. 11/13/2012**

PART 1 - GENERAL

- 1.1 SECTION INCLUDES Recycled Wood Flooring: Post-consumer/pre-consumer wood recycled into wood plank flooring.
1. **Mosaic:** Poplar wood scraps from the Chinese furniture industry recycled into flooring material.
  2. **Mulberry:** Trimmed back branches from mulberry bush in which leaves were used as food for silkworms recycled into flooring material.
- 1.2 RELATED REQUIREMENTS
- A. Section 01 35 63 – Sustainability Certification Project Requirements.
  - B. **[Section 01 61 16 – Volatile Organic Compound (VOC) Content Restrictions.]**
  - C. Section 03 30 00 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.
  - D. Section 06 10 00 - Rough Carpentry: New subfloor or underlayment.
- 1.3 PRICE AND PAYMENT PROCEDURES
- A. See Section 01 21 00 – Allowances: For **[cash] [testing] [quantity]** allowances affecting this section.
  - B. See Section 01 23 00 – Alternates: For product alternates affecting this section.
    1. This section describes a base bid product; refer to Section [\_\_\_\_\_] for an alternative product.
    2. This section describes an alternative product; refer to Section [\_\_\_\_\_] for the base bid product.
- 1.4 SUBMITTALS
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
    1. Preparation instructions and recommendations.
    2. Storage and handling requirements and recommendations.
    3. Installation methods.
    4. Specimen warranty and warranty conditions.
    5. Care and maintenance instructions and recommendations.
  - C. Shop Drawings: Indicate layout and installation details including dimensional plans, wood grain direction, fastening method, and transition accessories and details.
  - D. Samples:
    1. Submit two samples, at least 12 inches long, of wood flooring type indicated with supplier identified on each sample.
  - E. Test Reports: Showing compliance with specified characteristics.
  - F. Sustainability Report: For flooring, submit recycled wood content by weight, VOC and urea-formaldehyde content, and location of harvesting and manufacture; for adhesives, submit VOC content.
  - G. LEED Credit Reports: Submit information as indicated in applicable Division 01 section.
    1. Credit MR 4.1 – Recycled Content – 10%
    2. Credit MR 4.2 – Recycled Content – 20%
    3. Credit MR 6 – Rapidly Renewable Materials.
    4. Credit IEQ 4.1 – Low-Emitting Materials – Adhesives and Sealants.
    5. Credit IEQ 4.4 – Low-Emitting Materials – Composite Wood and Agrifiber Products.

- H. Warranty: Submit manufacturer warranty and ensure that any required forms have been completed in Owner's name and registered with manufacturer.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing and distribution of recycled wood flooring with at least three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of this section with at least three years of documented experience.
- C. Source Limitations: Obtain each type of recycled wood flooring from single source and from single manufacturer.
- D. Mock-ups: Provide a mock-up of a typical flooring area for each type of specified flooring as shown on Drawings for Architect's approval to set installation quality standard. Include finish trim in mock-up.
  - 1. Approved mock-up may **[not]** remain in place as part of the Work after Substantial Completion.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to project site in manufacturer's protective containers.
- B. Store products under cover and elevated above grade in a warm, dry and conditioned space.
- C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

#### 1.7 SITE CONDITIONS

- A. Environmental Requirements: Area to receive recycled wood flooring material **[and adhesive]** shall be maintained at occupancy temperature and humidity levels for at least 4-10 days prior to, during and continuously following installation.
  - 1. Room Temperature: 65 to 75 degrees F.
  - 2. Relative Humidity: 40 to 60 percent.
- B. Acclimatize flooring material for at least 4 days prior to installation, by opening boxes and removing shrink wrap film to allow air to circulate around flooring in installation area.

#### 1.8 WARRANTY

- A. Lifetime Structural Warranty: Manufacturer warranty to supply replacement flooring planks for any boards with defective bonding or separation within laminated boards, at no cost to original end-consumer; actual flooring plank is only item covered under this warranty.
  - 1. Warranty does not cover accidental moisture problems or problems developing from improper humidity levels, maintain relative humidity levels after installation between 40 and 60 percent.
  - 2. Warranty does not cover costs related to removal or installation of warranted product.
- B. Pre-Finish Warranty: Manufacturer warranty on aluminum oxide finish on flooring planks against wearing through, cracking or separation from date of purchase in accordance with provisions of written warranty.
  - 1. Residential Applications: 25 years.
  - 2. Commercial Applications: 5 years.

#### 1.9 MAINTENANCE

- A. Extra Materials: Provide **[5][10]** percent **[or not less than 1 full box]** of additional material for maintenance purposes.

### PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Green Choice® Flooring International, Inc.: [www.greenchoiceflooring.com](http://www.greenchoiceflooring.com).
1. Location: 6227 136<sup>th</sup> Avenue, Holland, Michigan 49424
  2. Phone: (866) 915-1120.
  3. Email: [sales@greenchoiceflooring.com](mailto:sales@greenchoiceflooring.com).

## 2.2 RECYCLED WOOD FLOORING

- A. **Mosaic Wood Flooring:** Recycled poplar wood scraps from Chinese furniture industry that are soaked in binder glue, woven together, compressed under pressure into a log, sliced into flooring planks, and milled into plank flooring with micro beveled edges and factory finished.
1. Material: Poplar.
  2. Style: StrandWoven.
    - a. Color: [**Autumn**].
  3. Thickness: 9/16 inch.
  4. Plank Width: 3 1/2 inches.
  5. Plank Length: 72 1/2 inches.
  6. Plank Edge Style: Click-Lock.
  7. Binding Resin: Phenolic resin.
  8. Finish: Exposed side contains nine to thirteen coats and underside contains one coat of acrylic aluminum oxide, cured with ultraviolet light.
  9. Formaldehyde Emissions: Less than 0.02 part per million, tested in accordance with ASTM E 1333.
  10. Critical Radiant Flux: Average of 1.08 W/sq cm when tested in accordance with ASTM E 648.
  11. Coefficients of Friction: Average of 0.41 for static friction between flooring and prime grade shoe leather sole when tested in accordance with ASTM D 2394.
  12. Compressive Strength: Average of 13,304 psi with Ultimate Load of 22,144 lbf; ASTM D 3501.
  13. Hardness: Average of 4,678 lbf, Janka Ball hardness test; ASTM D 1037.
  14. Dimensional Stability: At 90 percent relative humidity; ASTM D 1037.
    - a. Linear Expansion: 0.07 percent.
    - b. Thickness Swell: 1.45 percent.
- B. **Stained Mosaic Wood Flooring:** Recycled poplar wood scraps from Chinese furniture industry that are soaked in binder glue, woven together, compressed under pressure into a log, sliced into flooring planks, and milled into plank flooring with micro beveled edges and factory finished.
1. Material: Poplar.
  2. Style: StrandWoven - Stained
    - a. Color: [**Galaxy**].
  3. Thickness: 9/16 inch.
  4. Plank Width: 3 1/2 inches.
  5. Plank Length: 72 1/2 inches.
  6. Plank Edge Style: Click-Lock.
  7. Laminating Resin: Phenolic resin, non-toxic and water resistant.
  8. Finish:
    - a. Stain: Dark black stain.
    - b. Exposed side contains nine to eleven coats and underside contains one coat of acrylic aluminum oxide, cured with ultraviolet light.
  9. Formaldehyde Emissions: Less than 0.02 part per million, tested in accordance with ASTM E 1333.
  10. Critical Radiant Flux: Average of 1.08 W/sq cm when tested in accordance with ASTM E 648.
  11. Coefficients of Friction: Average of .41 for static friction between flooring and prime grade shoe leather sole when tested in accordance with ASTM D 2394.
  12. Compressive Strength: Average of 12,718 psi with Ultimate Load of 22,144 lbf; ASTM D 3501.
  13. Hardness: Average of 4,678 lbf, Janka Ball hardness test; ASTM D 1037.
  14. Dimensional Stability: At 90 percent relative humidity; ASTM D 1037.
    - a. Linear Expansion: 0.07 percent.

- b. Thickness Swell: 1.45 percent.
- C. **Mulberry Wood Flooring:** Recycled wood from mulberry branches from silk industry that are soaked in binder glue, woven together, compressed under pressure into a log, sliced into flooring planks, and milled into tongue and groove plank flooring with micro beveled edges and factory finished.
  1. Material: 100 percent mulberry.
  2. Style: StrandWoven, carbonized.
    - a. Color: **Fawn.**
  3. Thickness: 9/16 inch.
  4. Plank Width: 3 1/2 inches
  5. Plank Length: 72 1/2 inches.
  6. Plank Edge Style: Click-Lock.
  7. Laminating Resin: Phenolic resin, non-toxic and water resistant.
  8. Finish: Exposed side contains nine to eleven coats and underside contains one coat of acrylic aluminum oxide, cured with ultraviolet light.
  9. Formaldehyde Emissions: Less than 0.02 part per million, tested in accordance with ASTM E 1333-1996 (2002).
  10. Critical Radiant Flux: Average of 0.50 W/sq cm when tested in accordance with ASTM E 648-2006a.
  11. Coefficients of Friction: Average of .41 for static friction between flooring and prime grade shoe leather sole when tested in accordance with ASTM D 2394. Compressive Strength: Average of 1,674 psi with Ultimate Load of 15,690 lbf; ASTM D 3501.
  12. Hardness: Average of 2,197 lbf, Janka Ball hardness test; ASTM D 1037-2006.
  13. Dimensional Stability: At 90 percent relative humidity; ASTM D 1037-2006.
    - a. Linear Expansion: 2.5 percent.
    - b. Thickness Swell: 2.9 percent.
- D. Accessory Pieces: Matching construction, color, and finish; piece length of at least 72 inches unless noted otherwise.
  1. Baseboards: Radiused top.
    - a. Height: 4 inches.
    - b. Thickness: 7/16 inch.
  2. Quarter round: 3/4 inch radius.
  3. Reducer: 2 inches wide, same thickness as floor.
  4. Transition Strip: T-molding to cover edge of bamboo floor adjacent to other floor of same thickness; 1-1/2 inches wide.
  5. Stair Treads: Radiused nosing.
    - a. Thickness: At least 1 inch.
    - b. Length and Width: As indicated on Drawings.
    - c. **[Provide treads in one piece.]**
    - d. **[Provide treads from glued up tongue and groove bamboo planks, with nosing piece at least 2 1/2 inches wide and planks run full width of stair.]**
  6. Stair Risers: Glued up from matching planks.
    - a. Thickness, Length and Width: As indicated on Drawings.

### 2.3 ACCESSORIES

- A. Adhesives: One-part, trowel applied, moisture-cure, 100 percent urethane adhesive specifically recommended by flooring manufacturer for type of flooring installed.
  1. Acceptable Manufacturers:
    - a. Bostik; Product BEST.
    - b. Bostik; Product TKO.
    - c. Manufacturer approved equivalent.
- B. Subfloor/Underlayment:
  1. At least 5/8 inch CDX plywood with supports at 12 to 16 inches on center.
  2. At least 3/4 inch CDX plywood with support at 24 inches on center.

- C. Leveling Compound/Substrate Filler: Provide filler compatible with adhesive used for wood flooring and as recommended by flooring manufacturer.
- D. **[Vapor Barrier: 6 mil polyethylene film as recommended by flooring manufacturer.]**
- E. Fasteners: Use pneumatic tongue and groove flooring stapler or nailer as recommended by flooring manufacturer with adapter pad as necessary.
  - 1. Power Cleat Staples/Nails: 2 inches long.
  - 2. Pneumatic Cleat Nail: 1 1/2 inches long, 18 gage.
  - 3. Verify air pressure on test piece prior to fastening actual flooring.
- F. **[Field-Applied Top Coating (for High Traffic and Moisture Related Spill Areas): As recommended by certified floor refinisher.]**

### PART 3- EXECUTION

#### 3.1 EXAMINATION

- A. Verify that flooring has been stored unwrapped at ambient temperature and humidity of the space that it is being installed for at least 4 days prior to installation.
- B. Verify that flooring materials are in satisfactory condition for installation. Do not install scratched or otherwise damaged materials.
- C. Verify that substrate is clean, smooth, level, and dry.
  - 1. Remove debris from flooring substrate including wax, oil, or solvents.
  - 2. Ensure flatness to within 3/16 inch over 8 foot radius.
    - a. Provide substrate filler to fill low spots as necessary.
- D. Perform moisture tests:
  - 1. Do not install if moisture content of the subfloor is more than 10 percent.
  - 2. Do not install if difference between subfloor and flooring moisture content exceeds 2 percent.
  - 3. Confirm substrate will remain dry throughout the year.
- E. Concrete Sub-Floor: Fully cured for at least 45 days, and calcium chloride test results showing moisture content less than 3 lbs per 1,000 sq ft in accordance with ASTM F 1869.
  - 1. Verify that concrete sub-floor surfaces are dry enough and ready for flooring installation by testing for alkalinity in accordance with ASTM F 710 and moisture emission rate in accordance with ASTM F 2170.
    - a. Obtain additional instructions if test results are not within limits recommended by flooring manufacturer and adhesive materials manufacturer.
    - b. Confirm type and requirements for vapor barrier as necessary for application indicated and as recommended by installer.
  - 2. For Adhesive Installations:
    - a. Perform a bond test using actual adhesive to be employed.
    - b. Do not install unless satisfactory bond is obtained.
    - c. Verify compatibility of adhesive with other products used in installation.
- F. Nailable Wood Subfloor: Using a moisture meter, check moisture content of wood substrate.
  - 1. Crawl Space: Verify that crawl space under subfloor has at least 24 inches clearance from dirt floor to bottom of floor joists.
    - a. Verify that floor of crawl space has adequate vapor barrier to minimize moisture transfer to sub-flooring.
    - b. Verify that crawl space is adequately ventilated.
  - 2. To minimize potential for floor squeaks, ensure that wood sub-floor is nail or screw attached to joists at 6 inches on center.
- G. .

### 3.2 FLOORING INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.
- B. Obtain manufacturer's instruction sheets and warranty limitations and maintain copies on site during installation.
- C. Install in accordance with manufacturer's instructions and warranty limitations.
- D. Grind down any high spots and fill low spots with leveling compound.
- E. Monitor moisture content of substrate and flooring for acceptable moisture range throughout installation process.
- F. Install vapor retarder where required.
  - 1. Overlap edges a minimum of 4 inches.
  - 2. Continue vapor retarder application at walls, up 2 inches.
- G. Layout flooring prior to installation to make adjustments for aesthetics.
- H. Install flooring panels perpendicular to flooring joists, beginning with grooved edge towards wall.
- I. **[At existing sub-floor condition: Install flooring panels perpendicular to the existing sub-floor.]**
- J. Expansion Gaps:
  - 1. Provide 1/2 inch expansion gap at perimeter edges of floor to allow for expansion and contraction at walls, pipes, and cabinets.
  - 2. For floors wider than 20 feet: Consult National Wood Flooring Association's technical manual for additional spacing and transition piece requirements.
- K. Stagger end joints of boards at least 4 inches from each other.
- L. Glue-Down Installation:
  - 1. Install using adhesive, with planks tightly butted.
  - 2. Spread adhesive in accordance with adhesive manufacturer's written instructions.
  - 3. Fit tongue side into the groove side until they are flush against each other.
  - 4. Tape rows together after they have been laid with wide removeable painter's tape.
  - 5. Weight down areas if boards are slightly bowed or floor is uneven to ensure good contact with adhesive.
  - 6. Verify that good contact is made between flooring and adhesive throughout entire floor.
  - 7. Immediately wipe off any excessive adhesive from flooring as work progresses.
    - a. Use light application of mineral spirits or adhesive remover and rub lightly so as not to damage factory finish on flooring.
- A. Floating (Click-Lock) Installation:
  - 1. Install using the manufacturer's click and lock method, with planks tightly fit together.
  - 2. Click-Lock flooring can be installed with or without using glue.
  - 3. Method A (Angle – In):
    - a. Position panel at a 20-30 degree angle to the panel already installed.
    - b. Move panel gently up and down while exerting forward pressure. Panels will automatically click into place. Insert tongue into groove or groove into tongue.
  - 4. Method B (Flat):
    - a. Using special tapping block sitting flat on floor, tap panels into each other without lifting.
    - b. To avoid damaging panels, tap panels together gradually. Do not use just one tap.
- M. Use pull-straps at 3 foot intervals to ensure boards are held firmly together during installation.
- N. Maintain at least 1/2 inch space between ends of planks and vertical walls; cover with trim fastened to allow expansion of planks.

### 3.3 TRIM INSTALLATION

- A. Remove spacers.

PROJECT NO.:  
DATE:

PROJECT NAME  
PROJECT LOCATION

- B. In doorways where adjacent floor finish is different, terminate flooring under centerline of door; provide divider strip.
- C. At open or exposed edges and where flooring terminates, provide tapered edge strip.
- D. Install wall base covering expansion space; miter inside and outside corners.
- E. Fasten molding and trim accessories to wall surface and not to flooring.

3.4 STAIR TREADS AND RISERS INSTALLATION

- A. Install stair treads and risers as indicated on Drawings.

3.5 **[FIELD-APPLIED TOP COATING APPLICATION**

- A. **Apply top coating according to top coating manufacturer's recommendations and instructions.]**

3.6 CLEANING

- A. Clean flooring [**molding and trim**] [**stair treads and risers**] to like-new condition using methods recommended by manufacturer.

3.7 PROTECTION

- A. Prohibit traffic on floor for at least 48 hours after glue down installation. Floating Installation can allow traffic immediately.
- B. Protect installed products until completion of project.
- C. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

AUTHOR  
FILE NAME

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