

## SECTION 09 93 00 - STAINING AND TRANSPARENT FINISHING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
  - 1. *Uniform General Conditions for Construction Contracts, State of Texas, 2010 (UGC).*
  - 2. *The University of Houston's Supplemental General Conditions and Special Conditions for Construction.*

#### 1.2 SUMMARY

- A. Section includes surface preparation and application of wood finishes[.]
  - 1. Exterior Substrates:
    - a. Exposed wood panel products.
  - 2. Interior Substrates:
    - a. Dressed lumber (finish carpentry).
    - b. Exposed wood panel products.
- B. Related Requirements:
  - 1. Section 09 91 13 "Exterior Painting" for standard paint systems on exterior substrates.
  - 2. Section 09 91 23 "Interior Painting" for stains and transparent finishes on concrete floors.
  - 3. Section 09 96 00 "High-Performance Coatings" for transparent high-performance coatings on concrete floors and clay masonry.

#### 1.3 DEFINITIONS

- A. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- C. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.
- B. LEED Submittals (Projects authorized for LEED certification only):
  - 1. Product Data for Credit EQ 4.2: For interior stains and coatings, documentation including printed statement of VOC content.
  - 2. Laboratory Test Reports for Credit EQ 4: For interior stains and coatings, documentation indicating that products comply with the testing and product requirements of the California Department of Health Services "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Samples for Initial Selection: For each type of product indicated.
- D. Samples for Verification: For each type of finish system and in each color and gloss of finish indicated.
  - 1. Submit Samples on representative samples of actual wood substrates, 8 inches square .
  - 2. Label each Sample for location and application area.
- E. Product List: For each product indicated, include the following:
  - 1. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 2. Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the product proposed for use highlighted.
  - 3. VOC content.

#### 1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. of each material and color applied.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
  - 1. Maintain containers in clean condition, free of foreign materials and residue.
  - 2. Remove rags and waste from storage areas daily.

## 1.7 FIELD CONDITIONS

- A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply finishes when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
- C. Do not apply exterior finishes in snow, rain, fog, or mist.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by the following :
  - 1. **Pratt & Lambert.**
  - 2. **Substitutions:** see section 01 25 00 – Substitution Procedures.
- B. **Products:** Subject to compliance with requirements, provide product listed in other Part 2 articles for the category indicated.

### 2.2 MATERIALS, GENERAL

- A. **MPI Standards:** Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List."
- B. **Material Compatibility:**
  - 1. Provide materials for use within each finish system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2. For each coat in a finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.
- C. **VOC Content:** Products shall comply with VOC limits of authorities having jurisdiction and, for interior stains and finishes applied at project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
  - 1. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
  - 2. Shellacs, Clear: VOC not more than 730 g/L.
  - 3. Stains: VOC not more than 250 g/L.
  - 4. Primers, Sealers, and Undercoaters: 200 g/L.
- D. **Low-Emitting Materials:** Interior stains and finishes shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the

Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

- E. Stain Colors: As selected by Architect from manufacturer's full range .

## 2.3 WOOD FILLERS

- A. Wood Filler Paste: MPI #91.

## 2.4 PRIMERS AND SEALERS

- A. Provide all primer, sealants, and coating products used in any individual system from the same manufacturer, no exceptions.
- B. Primer, Latex for Exterior Wood: MPI #6.

## 2.5 STAINS

- A. Provide all stain and varnish products used in any individual system from the same manufacturer, no exceptions.
- B. Stain, Exterior, Water Based, Solid Hide: MPI #16.
- C. Stain, for Exterior Wood Decks: MPI #33.
- D. Stain, Semi-Transparent, for Interior Wood: MPI #90.

## 2.6 WATER-BASED VARNISHES

- A. Varnish, Water Based, Clear, Satin (Gloss Level 4): MPI #128.
- B. Varnish, Water Based, Clear, Semi-Gloss (Gloss Level 5): MPI #129.
- C. Varnish, Water Based, Clear, Gloss (Gloss Level 6): MPI #130.

## 2.7 POLYURETHANE VARNISHES

- A. Varnish, Polyurethane, Moisture-Cured, Gloss (Gloss Level 6): MPI #31.
- B. Varnish, Aliphatic Polyurethane, Two-Component (Gloss Level 6 or 7): MPI #78.

## 2.8 OIL FINISH

- A. Danish Oil: MPI #92.

## 2.9 SOURCE QUALITY CONTROL

- A. Testing of Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample wood finishing materials. Contractor will be notified in advance and may be present when samples are taken. If materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
  2. Testing agency will perform tests for compliance with product requirements.
  3. Owner may direct Contractor to stop applying wood finishes if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces before refinishing with complying materials if the two finishes are incompatible or produce results that, in the opinion of the Architect, are aesthetically unacceptable.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Exterior Wood Substrates: 15 percent, when measured with an electronic moisture meter.
- C. Maximum Moisture Content of Interior Wood Substrates: 15 percent, when measured with an electronic moisture meter.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with finish application only after unsatisfactory conditions have been corrected.
1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.

1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.
1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
  2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.
- D. Exterior Wood Substrates:
1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  2. Prime edges, ends, faces, undersides, and backsides of wood.
    - a. For solid hide stained wood, stain edges and ends after priming.
    - b. For varnish coated stained wood, stain edges and ends and prime with varnish. Prime undersides and backsides with varnish.
  3. Countersink steel nails, if used, and fill with putty or plastic wood filler tinted to final color. Sand smooth when dried.
- E. Interior Wood Substrates:
1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
  2. Apply wood filler paste to open-grain woods, as defined in "MPI Architectural Painting Specification Manual," to produce smooth, glasslike finish.
  3. Sand surfaces that will be exposed to view and dust off.
  4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

### 3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual."
1. Use applicators and techniques suited for finish and substrate indicated.
  2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
  3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

### 3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

### 3.5 EXTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood substrates, nontraffic surfaces, including wood trim architectural woodwork doors wood-based panel products glued-laminated construction exposed joists exposed beams .
  - 1. Solid Hide, Water-Based Stain System:
    - a. Prime Coat: Primer, oil for exterior wood, MPI #7.
    - b. Topcoat: Stain, exterior, water based, solid hide, MPI #16.
  - 2. Solid Hide, Water-Based Stain System:
    - a. Prime Coat: Primer, latex for exterior wood, MPI #6.
    - b. Prime Coat: Primer, alkyd for exterior wood[, MPI #5].
    - c. Prime Coat: Primer, oil for exterior wood[, MPI #7].
    - d. Intermediate Coat: Stain, exterior, water based, solid hide, matching topcoat.
    - e. Topcoat: Stain, exterior, water based, solid hide, MPI #16.
  - 3. Semitransparent Stain System:
    - a. Prime Coat: Stain, exterior, solvent based, semi-transparent, matching topcoat.
    - b. Topcoat: Stain, exterior, solvent based, semi-transparent, MPI #13.
  - 4. Varnish over Semitransparent Stain System:
    - a. Stain Coat: Stain, exterior, solvent based, semi-transparent, MPI #13.
    - b. First Intermediate Coat: Varnish matching topcoat.
    - c. Second Intermediate Coat: Varnish matching topcoat.
    - d. Topcoat: Varnish, with UV Inhibitor, Exterior, Semi-Gloss (Gloss Level 5), MPI #30.
  - 5. Varnish System:
    - a. Prime Coat: Varnish matching topcoat.
    - b. First Intermediate Coat: Varnish matching topcoat.

- c. Second Intermediate Coat: Varnish matching topcoat.
    - d. Topcoat: Varnish, with UV Inhibitor, Exterior, Semi-Gloss (Gloss Level 5), MPI #30.
  - 6. Clear, Two-Component Polyurethane Varnish over Stain System:
    - a. Stain Coat: Stain, exterior, solvent based, semi-transparent, MPI #13.
    - b. First Intermediate Coat: Varnish, aliphatic polyurethane, two-component, matching topcoat.
    - c. Second Intermediate Coat: Varnish, aliphatic polyurethane, two-component, matching topcoat.
    - d. Topcoat: Varnish, aliphatic polyurethane, two-component (Gloss Level 6 or 7), MPI #78.
  - 7. Clear, Two-Component Polyurethane Varnish System:
    - a. Prime Coat: Varnish, aliphatic polyurethane, two-component, matching topcoat.
    - b. Intermediate Coat: Varnish, aliphatic polyurethane, two-component, matching topcoat.
    - c. Topcoat: Varnish, aliphatic polyurethane, two-component (Gloss Level 6 or 7), MPI #78.
- B. Wood substrates, traffic surfaces, including wood decks and stairs.
  - 1. Deck Stain over Wood Preservative System:
    - a. Preservative Coat: Preservative, for exterior wood, MPI #37.
    - b. Intermediate Coat: Stain, for exterior wood decks, matching topcoat.
    - c. Top coat: Stain, for exterior wood decks, MPI #33.
  - 2. Deck Stain System:
    - a. Prime Coat: Stain, for exterior wood decks, matching topcoat.
    - b. Top coat: Stain, for exterior wood decks, MPI #33.

### 3.6 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood substrates, nontraffic surfaces, including wood trim architectural woodwork doors windows wood-based panel products glued-laminated construction exposed joists exposed beams .
  - 1. Solid-Color Latex Stain System:
    - a. Prime Coat: Primer, latex for exterior wood, MPI #6.
    - b. Intermediate Coat: Stain, exterior, water based, solid hide, matching topcoat.
    - c. Topcoat: Stain, exterior, water based, solid hide, MPI #16.



2. Solid-Color Latex Stain System:
  - a. Prime Coat: Primer, alkyd for exterior wood, MPI #5.
  - b. Prime Coat: Primer, oil for exterior wood, MPI #7.
  - c. Intermediate Coat: Stain, exterior, water based, solid hide, matching topcoat.
  - d. Topcoat: Stain, exterior, water based, solid hide, MPI #16.
3. Semitransparent Stain System:
  - a. Prime Coat: Stain, semi-transparent, matching topcoat.
  - b. Topcoat: Stain, semi-transparent, for interior wood, MPI #90.
4. Semitransparent Stain System:
  - a. Prime Coat: Stain, exterior, solvent based, semi-transparent, matching topcoat.
  - b. Topcoat: Stain, exterior, solvent based, semi-transparent, MPI #13.
5. Water-Based Varnish over Stain System:
  - a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.
  - b. First Intermediate Coat: Water-based varnish matching topcoat.
  - c. Second Intermediate Coat: Water-based varnish matching topcoat.
  - d. Topcoat: Varnish, water based, clear, satin (Gloss Level 4), MPI #128.
6. Water-Based Varnish System:
  - a. Prime Coat: Water-based varnish matching topcoat.
  - b. Intermediate Coat: Water-based varnish matching topcoat.
  - c. Topcoat: Varnish, water based, clear, satin (Gloss Level 4), MPI #128.
7. Polyurethane Varnish over Stain System:
  - a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.
  - b. First Intermediate Coat: Polyurethane varnish matching topcoat.
  - c. Second Intermediate Coat: Polyurethane varnish matching topcoat.
  - d. Topcoat: Varnish, interior, polyurethane, oil-modified, satin (Gloss Level 4), MPI #57.
8. Polyurethane Varnish System:
  - a. Prime Coat: Polyurethane varnish matching topcoat.
  - b. Intermediate Coat: Polyurethane varnish matching topcoat.
  - c. Topcoat: Varnish, interior, polyurethane, oil-modified, satin (Gloss Level 4), MPI #57.
9. Moisture-Cured Clear Polyurethane over Stain System:
  - a. Stain Coat: Stain, semi-transparent, for interior wood, MPI #90.
  - b. First Intermediate Coat: Moisture-cured polyurethane matching topcoat.

- c. Second Intermediate Coat: Moisture-cured polyurethane matching topcoat.
  - d. Topcoat: Varnish, polyurethane, moisture-cured, gloss (Gloss Level 6), MPI #31.
- 10. Moisture-Cured Clear Polyurethane System:
  - a. Prime Coat: Moisture-cured polyurethane matching topcoat.
  - b. Intermediate Coat: Moisture-cured polyurethane matching topcoat.
  - c. Topcoat: Varnish, polyurethane, moisture-cured, gloss (Gloss Level 6), MPI #31.
- 11. Clear, Two-Component Polyurethane System:
  - a. Prime Coat: Two-component polyurethane matching topcoat.
  - b. Intermediate Coat: Two-component polyurethane matching topcoat.
  - c. Topcoat: Varnish, aliphatic polyurethane, two-component (Gloss Level 6 or Gloss Level 7), MPI #78.
- 12. Danish Oil System:
  - a. Prime Coat: Danish oil, MPI #92.
  - b. Topcoat: Danish oil, MPI #92.

END OF SECTION 09 93 00