

SECTION 08 51 03.10**HISTORIC TREATMENT OF WOOD WINDOWS****PART 1 - GENERAL**

1.1 SUMMARY

A. Work of this Section Includes:

1. Wood window repair, rehabilitation and refinishing.
2. Replacement glazing.
3. Window hardware repair, refinishing, and replacement.

1.2 RELATED WORK

- A. Storm windows: Section 08 51 69.11 ALUMINIUM STORM WINDOWS
- B. Replacement Windows: See Section 08 52 00, WOOD WINDOWS.
- C. Paint Finishes: Section 09 91 00, PAINTING.

1.3 DEFINITIONS

- A. General: See Division 01 Section "Historic Treatment Procedures" for other definitions.
- B. Window: Includes window frame, sash, storm window, shutters, and louvered blinds unless otherwise indicated by the context.

1.4 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified historic treatment specialist to perform preconstruction testing on historic wood windows.
 1. Select sizes and configurations of existing work to adequately demonstrate capability of products to comply with requirements.
 2. Test historic treatment methods for effectiveness and compliance with specified requirements.
 3. Notify VA seven days in advance of the dates and times when testing will be performed.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: For repair and replacement of historic wood windows and components. Show location and extent of replacement work, with enlarged details of replacement parts indicating materials, profiles, joinery, reinforcing, and method of splicing into or attaching to existing wood window, accessory items, and finishes.
- C. Samples: For each exposed product and for each color and texture specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified historic treatment specialist.
- B. Preconstruction Test Reports: For historic treatment of wood windows.

1.7 QUALITY ASSURANCE

- A. Historic Treatment Specialist Qualifications: A qualified historic wood window specialist.
- B. Sample Installation: Prepare repair and refinishing sample to demonstrate aesthetic effects and set quality standards for materials and execution and for repair techniques, materials and refinishing. Prepare sample so it is inconspicuous or reversible.
 - 1. Locate window repair sample on the building where directed by VA.
 - 2. Wood Window Repair: Prepare one entire window unit to serve as sample to demonstrate repairs/refinishing and aesthetic effects of wood window members including frame, sash, glazing, and hardware.
 - 3. Include aluminum storm/screen window.
- C. AWI Quality Standard: Comply with applicable requirements in AWI's "Architectural Woodwork Quality Standards" for construction, finishes, grades of wood windows, and other requirements.
- D. WI Quality Standard: Comply with WI's "Manual of Millwork" for construction, finishes, grades of wood windows, and other requirements.
- E. Salvage, survey and inventory windows to identify pieces or sections removed during repair work for reinstallation.
 - 1. Provide window schedule to enter inventory information for each window.
- F. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS**2.1 REPLACEMENT WOOD MATERIALS**

- A. Wood: Clear fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible dutchman joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch (0.8 mm) deep by 2 inches (51 mm) wide.
 - 1. Species: Match wood species of exterior window trim and frame parts.
 - 2. Wood Window Members and Trim: Match profiles and detail of existing window members and trim.

2.2 WOOD REPAIR MATERIALS

- A. Wood Consolidant: Ready-to-use product designed to penetrate, consolidate, and strengthen soft fibers of wood materials that have deteriorated due to weathering and decay and designed specifically to enhance the bond of wood-patching compound to existing wood.
- B. Wood-Patching Compound: Two-part epoxy-resin wood-patching compound; knife-grade formulation as recommended by manufacturer for type of wood repair indicated, tooling time required for the detail of work, and site conditions. Compound shall be designed for filling voids in damaged wood materials that have deteriorated due to weathering and decay. Compound shall be capable of filling deep holes and spreading to feather edge.

2.3 GLAZING MATERIALS

- A. Glass and Glazing Materials: See Division 08 Section "Glazing."
- B. Glazing System: Primer as recommended by glazing material manufacturer, with glazing compound according to Division 08 Section "Glazing."

2.4 WINDOW HARDWARE

- A. General: Provide complete sets of window hardware consisting of sash balances, hinges, pulls, latches, and accessories indicated for each window or required for proper operation. Window hardware shall smoothly operate, tightly close, and securely lock wood windows and be sized to accommodate sash or ventilator weight and dimensions.
- B. Replacement Window Hardware: Replace existing damaged or missing window hardware with new hardware.
- C. Material and Design:
 - 1. Material: Solid bronze.

2. Design: Match existing hardware.
 3. Weight and Pulley Sash-Balance: Concealed weight and pulley balance system including steel or cast iron weights, cast-bronze pulleys, synthetic sash cord or sash chain; size and capacity to hold sash stationary at any open position.
 4. Replacement Window Hardware: Match existing window hardware.
- D. Window Hardware Finishes: Comply with BHMA A156.18 for base material and finish requirements indicated.

2.5 WEATHER STRIPPING

- A. Metal Weather Stripping: Bronze weather stripping as indicated on Drawings; designed either as one piece to seal by sliding into a groove in the sash or as two pieces that interlock with each other; and completely concealed when wood window is closed.
1. Full-perimeter and meeting rail weather stripping for each operable sash.

2.6 MISCELLANEOUS MATERIALS

- A. Borate Preservative Treatment: Inorganic, borate-based solution, with disodium octaborate tetrahydrate as the primary ingredient; manufactured for preserving weathered and decayed wood from further damage by decay fungi and wood-boring insects; complying with AWPA P5; containing no boric acid.
- B. Cleaning Materials:
1. Detergent Solution: Solution prepared by mixing 2 cups (0.5 L) of tetrasodium polyphosphate, 1/2 cup (125 mL) of laundry detergent that contains no ammonia, 5 quarts (5 L) of 5 percent sodium hypochlorite bleach, and 15 quarts (15 L) of warm water for each 5 gal. (20 L) of solution required.
 2. Mildewcide: Provide commercial proprietary mildewcide or a solution prepared by mixing 1/3 cup (80 mL) of household detergent that contains no ammonia, 1 quart (1 L) of 5 percent sodium hypochlorite bleach, and 3 quarts (3 L) of warm water.
- C. Adhesives: Wood adhesives for exterior exposure, with minimum 15- to 45-minute cure at 70 deg F (21 deg C), in gunnable and liquid formulations as recommended by adhesive manufacturer for each type of repair.
- D. Fasteners: Fasteners of same basic metal as fastened metal unless otherwise indicated. Use metals that are noncorrosive and compatible with each material joined.
1. Use stainless steel fasteners unless otherwise indicated.
 2. Use concealed fasteners for interconnecting wood components.
 3. Use concealed fasteners for attaching items to other work unless exposed fasteners are unavoidable.
 4. For exposed fasteners, use Phillips-type machine screws of head profile flush with metal surface unless otherwise indicated.

5. Finish exposed fasteners to match finish of metal fastened unless otherwise indicated.

- E. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories of nonmagnetic stainless steel or hot-dip zinc-coated steel complying with requirements in ASTM B 633 for SC 3 (Severe) service condition.

2.7 WINDOW FINISHES

- A. Unfinished Repaired Windows: Provide exposed exterior and interior wood surfaces of replacement windows unfinished; smooth, filled, and suitably prepared for on-site priming and finishing.
 1. Primer Coat: Manufacturer's standard for application to existing painted and new wood repairs/replacement sections.
 2. Finish Coats: Manufacturer's standard finish products for intermediate coat and topcoat products compatible with primer coat.
 3. Color and Gloss: Match historic colors indicated in the drawings and specification.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect adjacent materials from damage by historic treatment of wood windows.
- B. Clean existing wood window surfaces of mildew, algae, moss, plant material, loose paint, grease, dirt, and other debris by scrubbing with bristle brush or sponge and detergent solution. Scrub mildewed areas with mildewcide. After cleaning, rinse thoroughly with fresh water. Allow to dry before repairing or painting.
- C. Condition replacement wood members and replacement windows to prevailing conditions at installation areas before installing.

3.2 HISTORIC TREATMENT PROCEDURES, GENERAL

- A. General: Have historic treatment of wood windows directed and performed by a qualified historic treatment specialist. Ensure that historic treatment specialist's field supervisors are present when historic treatment of wood windows begins and during its progress. In treating historic items, disturb them as minimally as possible and as follows:
 1. Apply each product according to manufacturer's written instructions unless otherwise indicated.

2. Stabilize and repair wood windows to reestablish structural integrity and weather resistance while maintaining the existing form of each item.
 3. Stop the progress of deterioration by removing coatings and applying borate preservative treatment before repair.
 4. Repair items in place where possible and retain as much original material as possible.
 5. Replace or reproduce historic items where indicated or scheduled.
 6. Make historic treatment of materials reversible whenever possible.
 7. Install temporary protective measures to protect wood window work that is indicated to be completed later.
- B. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use only the gentlest mechanical methods, such as scraping and natural-fiber bristle brushing and sanding that will not abrade wood substrate, reducing clarity of detail. Do not use abrasive methods such as wire brushing, or power tools except as indicated as part of the historic treatment program and as approved by VA.
- C. Repair and Refinish Existing Hardware: Dismantle window hardware; repair and refinish it to match finish samples.
- D. Repair Wood Windows: Match existing materials and features, retaining as much original material as possible to perform repairs.
1. Unless otherwise indicated, repair wood windows by consolidating, patching, splicing, or otherwise reinforcing wood with new wood matching existing wood or with salvaged, sound, original wood.
 2. Where indicated, repair wood windows by limited replacement matching existing material.
 3. Compatible materials and treatments may be used where evaluated and approved by VA.
- E. Protection of Openings: Where sash or windows are indicated for removal, cover resultant openings with temporary enclosures so that openings are weathertight during repair period.
- F. Identify removed windows, sash, and members with numbering system corresponding to window locations to ensure reinstallation in same location. Key windows, sash, and members to Drawings showing location of each removed unit. Permanently stamp units in a location that will be concealed after reinstallation.
- 3.3 GLAZING
- A. Remove cracked and damaged glass and glazing materials from openings and prepare surfaces for reglazing.
- B. Install replacement glass with indicated glazing system and according to Division 08 Section "Glazing."

3.4 WOOD WINDOW PATCH-TYPE REPAIR

- A. General: Patch wood members that are damaged and exhibit depressions, holes, or similar voids, and that have limited rotted or decayed wood.
 - 1. Treat wood members with wood consolidant prior to application of patching compound. Allow treatment to harden before filling void with patching compound.
 - 2. Remove rotted or decayed wood down to sound wood.
- B. Apply borate preservative treatment to accessible surfaces either before applying wood consolidant or after removing rotted or decayed wood.
- C. Apply wood-patching compound to fill depressions, nicks, cracks, and other voids created by removed or missing wood.
 - 1. Apply patching compound in layers as recommended by manufacturer until the void is completely filled.
 - 2. Finish patch surface to match contour of adjacent wood member. Sand patching compound smooth and flush, matching contour of existing wood member.

3.5 WOOD WINDOW MEMBER-REPLACEMENT REPAIR

- A. General: Replace parts of or entire wood window members at locations where damage is too extensive to patch. And as approved by VA.
 - 1. Remove sash from windows before performing member-replacement repairs unless otherwise indicated.
 - 2. Remove broken, rotted, and decayed wood down to sound wood.
 - 3. Custom fabricate new wood to replace missing wood; either replace entire wood member or splice new wood part into existing member. Fabricate replacement members according to AWI Section 1000 requirements for Custom Grade.
 - 4. Secure new wood using finger joints or multiple dowels with adhesive and nailing to ensure maximum structural integrity at each splice. Use only concealed fasteners. Fill nail holes and patch surface to match surrounding wood.
- B. Apply borate preservative treatment to accessible surfaces after replacements are made.
- C. Repair remaining depressions, holes, or similar voids with patch-type repairs.
- D. Mill glazed members to accommodate glass thickness.
- E. Glazing: Provide replacement glazing in units prior to reinstallation.
 - 1. Mill replacement glazed members to accommodate glass thickness.
 - 2. Provide replacement glazing stops coordinated with glazing system indicated.
 - 3. Provide glazing stops to match contour of sash frames.

4. Reglaze with glazing compound after setting stops. Tool glazing putty smooth.

F. Reinstall units removed for repair into original openings.

G. Weather Stripping: Replace nonfunctioning and install missing weather stripping to ensure full-perimeter and meeting rail weather stripping for each operable sash.

3.6 STORM WINDOW INSTALLATION

A. Install aluminum storm/screen windows at each window jamb as indicated.

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