

SECTION 08 50 00
RESTORATION OF HISTORIC WOOD DOORS AND WINDOWS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies work to be performed and products to be utilized in the restoration and repair of the existing wood doors and windows.

1.2 SUMMARY

- A. Section includes restoration of existing historic wood windows and doors.
 - 1. Sliding historic doors, to be fixed open on the interior of the structure.
- B. Repair strategies are designed to maximize the retention of historic fabric while making the doors serviceable for cyclical maintenance. The key principle is to minimize the causes of cracking, checking and deterioration of wooden door elements.
- C. Related Sections:
 - 1. Section 07 92 00 - Joint Sealants Perimeter sealant and backup materials.
 - 2. Section 08 71 00 - Door Hardware.
 - 3. Section 09 90 00 - Paints and Coatings: Site finishing wood surfaces.

1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, Shop Drawings, Product Data, and Samples.
- B. Qualifications: Submit documentation which verifies qualifications of subcontractors, their site supervisors and craftsmen per part 1.2 of this section.
- C. Shop Drawings: Submit shop drawings indicating profiles of new components to be fabricated.
- D. Product Data: Submit component dimensions, anchorage and fasteners, and glass, and accessories.

1.4 QUALIFICATIONS

- A. Restoration Subcontractor: Company and designated personnel

specializing in the restoration of historic wood doors, with minimum five years documented experience. Refer to submittal requirements in Article 1.1 above.

1.5 PRE-INSTALLATION MEETING

- A. Division 0 and/or Division 1.
- B. Convene minimum one week before starting Work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01500 - Coordination, Field Engineering and Regulatory Requirements: Product storage and handling requirements, and as detailed in this section.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not install sealants when ambient temperature is less than 40 degrees F.
- B. Maintain this minimum temperature during and after installation of sealants.

PART 2 PRODUCTS

2.1 AS SPECIFIED IN PART 3 SECTIONS

2.2

2.3 GLUE FOR REPAIRS TO DOORS OR MOLDINGS

- A. Franklin International Titebond II, product #5002 - #5008 (crosslink polyvinyl acetate); weatherproof construction adhesive or equal, shall be used for these repairs.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01200 - Coordination, Field Engineering and Regulatory Requirements: Coordination and project conditions.

3.2 DOOR REMOVAL

- A. Remove door slab from the jambs and stamp the unit with a door opening designator. Doors shall be stamped on the edge of the latch-side stile.
- B. If required for construction operations, exterior door openings shall only be filled with solid core flush door, fitted to opening, and shall have temporary hinges, handles, surface applied locks and

compressible weatherstripping to prevent weather infiltration.

1. See door schedule on drawings for hardware organization and reuse.
2. Do not use permanent markers or transparent finish on painted surfaces.
3. Moldings shall be pried loose carefully.
4. All nails shall be removed by pulling them through the back of the moldings only. Representative nails will be tagged and archived.
5. Any breakage of wooden elements shall be repaired immediately, small pieces are difficult to store and are often lost on site.

3.3 PAINT REMOVAL

- A. Doors may contain lead-based paint and as a result OSHA (Occupational Safety and Health Administration), EPA (Environmental Protection Agency), and other federal, state, and local standards shall be complied with.
- B. Remove all paint from the door so that new finish can be successfully applied at the end of this project. A steam stripper and heat guns (or other approved methods) shall be carefully used to remove the paint while limiting damage to the wood substrate.
- C. Prepare substrates for repairs by hand sanding with 100 grit paper.
- D. After substrate is sanded, vacuum all surfaces and wash wood surfaces with a solution of water and tri-sodium phosphate. Rinse surfaces with clean water.

3.4 HARDWARE REMOVAL AND TREATMENT

- A. Remove paint from all door hardware so that screws can be loosened.
- B. Scribe paint around hardware so that removal of hardware does not splinter adjacent wood.
- C. After removing all screws, hardware should be taken from each sash/door.
- D. Tag and retain all hardware and screws separately for each opening.
- E. Allow project Owner and Architect to review all hardware so that a determination can be made as to whether hardware will be re-installed.
- F. Hardware not re-installed shall be tagged and turned over to the

Owner in its existing condition.

- G. Chemically strip remaining paint from all hardware.
- H. Buff or brush clean all metal components with abrasive appropriate to original finish.
- I. Polish all brass and iron components with jewelers' rouge on a cotton buffing wheel.
- J. Clear-coat all interior ferrous hardware with an acrylic lacquer coating and brass or iron hardware with a urethane coating.
- K. Re-install hardware when preserved doors are being re-hung.

3.5 EXECUTING WOOD DUTCHMAN REPAIRS:

- A. See Criteria for Wood Repairs below, which defines when wood repairs will be executed.
- B. Replicate the different component profiles. Sample stock run from the cutter knives shall be submitted to the Architect for approval.
- C. Carefully disassemble door as necessary. Take care to mark components with pencil for re-assembly.
- D. Remove unsound wood and extend at least 1/4" into sound wood. Whenever possible, create voids that will provide mechanical attachments, e.g., dovetails. Retain discarded materials indicated by Owner. Tag and submit to Owner.
- E. Cut Dutchman oversized for repair area. Cut from stock that matches historic profile.
- F. Dry-fit joints to ensure that joints are tight. Clean glue surfaces with acetone or denatured alcohol. Apply water-resistant exterior carpenter's glue and clamp until glue has set.
- G. Fashion Dutchman to replicate historic joinery.
- H. Plane Dutchman repair to match adjoining flat surfaces or feather Dutchman to meet irregular or eroded surfaces.
- I. Back-prime any mortises and tenons that becomes exposed during disassembly.
- J. Reassemble door using historic and new components and draw bore with wood pins.
- K. Dutchman repairs shall be made where structural integrity has suffered from deterioration in lieu of epoxy repairs and fillers.
- L. Slip tenons shall be let into the lower rails where deterioration

necessitates the removal of the original tenon.

- M. For better adhesion, the length of glue joints shall be maximized wherever possible.
- N. Fill all fastener and screw holes solid, such that new fasteners can be reset and achieve full strength equal to that of fasteners set in solid wood.

3.6 EXECUTING COMPONENT REPLACEMENT:

- A. See Criteria for Wood Repairs below, which defines when wood repairs shall be executed.
- B. Replicate the different component profiles. Sample stock run from the cutter knives will be submitted to the Architect for approval.
- C. Carefully disassemble door as necessary. Take care to mark components with pencil for re-assembly.
- D. Remove unsound component. Retain discarded material meeting Owner's criteria for material to be archived, tag, and submit to Owner.
- E. Run new component from stock that matches historic profile.
- F. Fashion replacement component to replicate historic joinery.
- G. Back-prime any joints that become exposed during disassembly.
- H. Reassemble sash/door using historic and new components and draw bore with wood pins.

3.7 EXECUTING EPOXY REPAIRS:

- A. Remove any deteriorated wood regardless of shape of void.
- B. Clean area of void and apply epoxy primers and fillers according to manufacturer's specifications.
- C. Apply epoxy filler to the void and sand flush.
- D. Shape or tool epoxy filler as necessary.
- E. All deterioration will be removed at minimum 1/4" past the apparent area of deterioration to prevent the fungus hyphae from penetrating further into the piece.
- F. Small areas, 4 cubic inches and less, can be primed with thinned epoxy for penetration, and filled with flexible epoxy filler putty (material/products to be determined or approved by submittal).

3.8 APPLYING WATER REPELLANT WOOD PRESERVATIVE, SEALER AND FINISH:

- A. Prepare surfaces or substrates for painting by lightly sanding.
- B. Apply one coat of primer to all surfaces of the sash/door.
- C. Lightly sand the surfaces after the sealer has dried, and clean off

all dust.

- D. Finish exterior surfaces to specified colors. Shop finish interior portions to restore original interior finish.

3.9 RE-INSTALLING DOORS:

- A. Remove temporary doors.
- B. Re-install existing doors on the interior, to the right of the opening. Secure them in place, as indicated on drawings
- C. Re-install hardware.

3.10 TYPICAL WOOD REPAIRS

- A. Wood repairs shall not be made for aesthetic purposes.
- B. Wood repairs shall be made if *any* of the following three conditions exist:
 - 1. If the joinery of the door is compromised,
 - 2. If the exterior door cannot be made to resist weather, or
 - 3. If defects left in place would reduce the serviceability of the door.
- C. When wood repairs are necessary, the amount of wood removed should be minimized but the amount removed should allow for (a) the removal of all damaged wood, (b) the provision of ample glue surface, and (c) the reconstruction of historic joinery and the structural integrity of the historic component.
- D. Dutchman repairs shall be made at the lower joints where structural integrity has suffered from deterioration in lieu of epoxy repairs and fillers.
- E. All deteriorated wood fibers shall be removed. Small areas, less than 4 cubic inches, can be primed and filled with epoxy (material/products to be determined or approved by submittal), large areas, larger than 4 cubic inches, will be repaired with Dutchmen.
- F. All deterioration shall be removed at minimum 1/4" past the apparent area of deterioration to prevent the fungus hyphae from penetrating further into the piece.
- G. Slip tenons shall be let into the lower rails where deterioration necessitates the removal of the original tenon.
- H. For better adhesion, the length of glue joints shall be maximized wherever possible.

- I. Repair of Deteriorated or Damaged Material: Remove deteriorated wood and square void to a simple shape that provides a mechanical bond if possible. Fabricate slightly oversized Dutchman and glue into void. Ensure that joints are tight. Shave Dutchman to match contiguous surfaces.
- J. Joint Repair: Disassemble door as necessary. Remove deteriorated end of stile or rail. Form new joint that allows for maximum glue surface and possible mechanical bond. Fabricate slightly oversized Dutchman and glue to component. Shave Dutchman to match contiguous surfaces. Fashion Dutchman to accommodate historic joint.
- K. Repair of Tenon: Disassemble sash as necessary. Cut off broken or deteriorated tenon. Mortise component approximately 3" deep to receive new tenon. Fabricate new slip tenon and glue into place. Shave exposed tenon end to fit existing mortise.
- L. Check Repairs: Kerf through-checks with saw blade or dado set so as to capture the check. Fabricate wood Dutchman and glue in place. Shave Dutchman to match contiguous surfaces.

3.11 ERECTION TOLERANCES

- A. Per Division 0 and/or Division 1.

3.12 ADJUSTING

- A. Per Division 0 and/or Division 1.
- B. Adjust hardware for smooth operation and secure weather tight closure.

3.13 CLEANING

- A. Section 01730 - Substantial Completion: Final cleaning.
- B. Remove protective material from sharp finished surfaces.

END OF SECTION

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and Grist Mill - Bldg. 504

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