

## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 This section of work shall include all labour, materials, tools, and other equipment, services and supervision required to repair existing historic wood elements or finishes including:
  - .1 2 Dormers
  - .2 Soffits
  - .3 Roof Fascia
  - .4 Front Entry Door (restored doors by owner)

### **1.2 RELATED REQUIREMENTS**

- .1 Section 01 14 00 – Work Restrictions
- .2 Section 01 32 33 - Photographic Documentation
- .3 Section 01 51 00 – Temporary Facilities
- .4 Section 02 41 00 – Selective Demolition
- .5 Section 09 90 00 – Painting And Coating

### **1.3 REFERENCES**

- .1 ASTM International (ASTM)
  - .1 ASTM F1667-17, Standard Specification for Driven Fasteners: Nails, Spikes and Staples
- .2 Canada's Historic Places
  - .1 Standards and Guidelines for the Conservation of Historic Places in Canada
- .3 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
  - .1 Architectural Woodwork Quality Standards Illustrated
- .4 CSA Group
  - .1 CSA O141-05(R2014), Softwood Lumber
  - .2 CSA B111-1974(R2003), Wire Nails, Spikes and Staples

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- .1 Review methods and materials related to the designated conservation treatment finish carpentry work including, but not limited to, the following:
  - .1 Verify project requirements, including mock-up requirements
  - .2 Verify substrate conditions.
  - .3 Review proposed repair and replacement methods and materials.
  - .4 Co-ordinate products, installation methods and techniques.
  - .5 Review temporary protection requirements.
  - .6 Existing conditions that may require notification of Departmental Representative before proceeding.
- .2 Preinstallation Meeting: Conduct meeting at Project site.
- .3 Coordination: Undertake each step of finish carpentry restoration and repair including tagging, disassembly, surface preparation, repair, painting and installation under review

of Departmental Representative.

- .4 Sequencing: Do not start repair and replacement work before having a photographic record of interior and exterior surfaces of finish carpentry.

## **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Action Submittals:
  - .1 Preconstruction Submittals:
    - .1 Submit a description of methods and materials of work to be employed repair and restoration of finish carpentry.
    - .2 Provide photographic documentation of finish carpentry before, during and after the works in accordance with Section 01 32 33 – Photographic Documentation.
    - .3 Report on existing and substrate conditions & anomalies.
    - .4 Obtain written approval of products, materials, operations, schedules and methods from Departmental Representative before starting with work of this Section.
  - .2 Product Data: Submit product data sheets and MSDS information for each product or material used in the execution of the work of this Section.
  - .3 Shop Drawings: Indicate plans and elevations of units; materials, surface grain directions, details at 1:2 scale for items of finish carpentry. Show profiles of components, joint details, and anchorage details.
  - .4 Samples: Submit 300 mm long of each new fabricated replacement part.
- .3 Informational Submittals:
  - .1 Qualification Statement: Restorer qualifications, including previous projects.

## **1.6 QUALITY ASSURANCE**

- .1 Restorer Qualifications:
  - .1 Company specializing in performing the work of this section.
  - .2 Successful completion of at least three projects of similar scope and complexity.

## **1.7 MOCK-UPS**

- .1 Construct Mock-Ups in accordance with Section 01 45 00 - Quality Control.
- .2 Construct Mock-Ups under supervision of Departmental Representative, to demonstrate a full understanding of specified procedures, techniques and formulations.
- .3 Include the following:
  - 1. Dutchman repair of a soffit plank, fascia board, cladding member, finished ceiling plank, floor or roof sheathing.
  - 2. Replacement of an individual soffit plank, fascia board, cladding member, ceiling plank, floor or roof sheathing panel, rail, newel or spindle post, or decorative wood moulding.
- .3 Repair of wood checking, moderate weathering, and severe weathering
- .4 Each profile of finish carpentry for repair
- .4 Allow 96 hours for review of mock-up by Departmental Representative.

- .5 Repeat mock-up until satisfactory results are obtained to approval of Departmental Representative.
- .6 When accepted by Departmental Representative in writing, mock-up will demonstrate minimum standard for this work. Accepted Mock-up may remain as part of finished

## **1.8 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 – Construction Waste Management and Disposal.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Dutchman repair.
  - 1. Use Douglas Fir; grain orientation to match existing parent wood component.
  - 2. Grade: equivalent to “C” select, quarter-sawn, free of holes, insect damage and defects.
  - 3. Moisture content: maximum 10%.
- .2 Replacement of individual component, such as casings or stiles and rails.
  - 1. Use Douglas fir; quarter cut with edge grain to the weather.
  - 2. Grade: “C” select, quarter-sawn, free of holes, insect damage and defects.
  - 3. Moisture content: maximum 10%.
- .3 Wood Preservative:
  - .1 Organic purified raw and boiled linseed oil.
  - .2 Turpentine.
- .4 Finishing Nails: to CSA B111 or ASTM F1667, No. 304 stainless steel finishing nails.
- .5 Nails: to CSA B111 or ASTM F1667, stainless steel, size and type to suit application.
- .6 Screws: for Dutchmen type repairs, brass or stainless steel sized to fit.
- .7 Wood Repair Materials:
  - .1 Liquid Wood Consolidant: Two-component compound forming a slow-curing, low- viscosity liquid epoxy consolidant designed for saturating and encapsulating wood decay, or priming damaged areas. Specifically used for consolidating and stabilizing pockets of wood decay, checks, fissures and other surface imperfections due to weather exposure or insect infestation. Applications include porous end grain, window sills, sash, jambs and trims.
    - .1 Basis-of-Design Products: RotFix Epoxy Wood Sealer and Consolidant manufactured by System Three Resins (Industrial Formulators); LiquidWood manufactured by Abatron; ConServ 100 Flexible Epoxy Consolidant manufactured by ConServ; Rhino Wood Repair System manufactured by Stell-Chem.
  - .2 Wood Epoxy Filler: Two-component, shrink-free adhesive compound for filling cavities, voids and surface imperfections in wood. Flexible to withstand expansion and contraction of wood, firm enough to replace damaged portions of wood. Easily tooled, carved, planed, drilled or sanded. Capable of accepting nails and screws. Able to be painted or stained solid.

- .1 Basis-of-Design Products: Sculpwood Putty or Paste Epoxy Repair Compounds manufactured by System Three Resins (Industrial Formulators); WoodEpoxy manufactured by Abatron; ConServ Flexible Epoxy Patch 200 series manufactured by ConServ; Rhino Wood Repair System manufactured by Stell-Chem.
- .3 Adhesive: Weather-resistant multi-purpose structural epoxy adhesive, medium viscosity, 2:1 mix ratio, room temperature or heat cure. Room temperature working time of 60-90 minutes, complete cure in 24 hours at 22 deg C. Capable of producing specific bond-line thickness, and prevent joint starvation from over-clamping. Can be machined, sanded, drilled, tapped, and painted. Solvent-free with 100% reactive components.
- .1 Basis-of-Design Products: Cold Cure General Purpose Epoxy Resin System, G2 Epoxy Glue manufactured by System Three Resins (Industrial Formulators), or product acceptable to Departmental Representative manufactured by West System Epoxies.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Examine areas and conditions under which work is to be performed and notify Departmental Representative in writing of conditions detrimental to the proper and timely completion of the work.
- .2 Notify Departmental Representative of conditions relevant to the Work, but not described in Drawings, including evidence of deficiencies, fungal or insect attack which may affect the scope of work and durability of the finished product.
- .3 Verify adequacy of backing and support.

#### **3.2 PROTECTION**

- .1 Protect adjacent surfaces during repair of finish carpentry to prevent damage.
- .2 Use ground protection under work areas to collect debris and waste.

#### **3.3 PREPARATION**

- .1 Follow designated substances guidelines for lead abatement for paint removal.
- .2 Carefully clean, scrape and wash finish carpentry items as required to assess condition, and to determine extent of repairs required.
- .3 Verify condition and extent of repair work with Departmental Representative. Submit report documenting existing conditions and agreed to extent of repair work to Departmental Representative before starting repair work.

#### **3.4 WOOD REPAIR AND REPLACEMENT**

##### **.1 Severe Deterioration:**

- .1 Replace deteriorated finish carpentry components with new wood as specified in this Section.
- .2 For items being disassembled, photograph in accordance with Section 01 32 33 - Photographic Documentation, and submit to Departmental Representative for review before proceeding with work.
- .3 Before disassembling, label components using indelible black marker on painter's tape.
  - .1 Use two labels per component. Ensure labels show clearly in photographs.

- .2 Include compass orientation, and any other information required on labels to ensure that component is reinstalled in its original location.
- .4 Immediately following disassembly of each component, label components using indelible black marker on gasket paper, securely fasten to back of component with staple gun.
  - .1 Use two labels per component and record same information as labels on front of components.
  - .2 Store original elements. Turn over to Parks Canada as directed.
- .5 Tools:
  - .1 Use fine pry bars, such as Richardson bars, designed for this type of work, not pry bars intended for nail pulling, etc.
  - .2 Use fine sharp tool to cut paint films in construction joints before attempting to disassemble.
  - .3 Take care with tools to avoid marring, crushing or splitting components.
- .6 Upon removal of components, snap iron nails off flush with backside. For wire nails pull nails through from backside. Do not drive nails back through finished surfaces.
- .7 Cut back damaged or decayed wood to a point 10 mm beyond the last evidence of decay or as indicated on Drawings.
- .8 Use Dutchmen type repairs, including wood splicing or inserts and weather-resistant glue, where wood is broken or missing. Fit to hairline joint, glue and nail. Stapling not permitted.
  - .1 Match replacement components to size, profile and grain of existing finish carpentry.
  - .2 Scarf in replacement components.
  - .3 Make joints tight so that after finishing they are visible only upon close inspection.
  - .4 Attach replacement materials to the parent piece, not adjacent components.
- .9 Trial fit joints before fastening in place. Adjust as necessary to ensure close accurate fit with adjacent surfaces.
- .10 Use thinned linseed oil-based glazing compound on otherwise untreated areas to fill checks and open joints. Allow time to dry before sanding and painting.

**.2 Moderate Deterioration:**

- .1 Clean and dry surfaces before applying liquid wood consolidant and epoxy filler. Apply products in accordance with manufacturers' instructions.
- .2 Consolidate soft wood with liquid wood consolidant.
- .3 Repair cracks and holes in wood with wood epoxy filler. Tool cured patch to match adjacent area.
- .4 Use thinned linseed oil-based glazing compound on otherwise untreated areas to fill checks and open joints. Allow time to dry before sanding and painting.
- .5 Allow proper curing of consolidant and filler before painting.

**.3 Minor Deterioration:**

- .1 Once wood is prepared, apply linseed oil turpentine mix 50/50 to renew wood.
- .2 Use thinned linseed oil-based glazing compound to fill checks and open joints. Allow time to dry before sanding and painting.
- .3 Consolidate soft wood with liquid wood consolidant. Clean and dry surfaces before applying liquid wood consolidant. Apply consolidant in accordance with manufacturer's instructions.

**.4 Missing Elements:**

- .1 Replace missing finish carpentry items with new wood as specified in this Section.
- .2 Use Dutchmen type repairs, including wood splicing or inserts and weather-resistant glue. Fit to hairline joint, glue and nail. Stapling not permitted.
  - .1 Match replacement components to size, profile and grain of existing finish carpentry.
  - .2 Scarf in replacement components.
  - .3 Make joints tight so that after finishing they are visible only upon close inspection.
  - .4 Attach replacement materials to the parent piece, not adjacent components.
- .3 Trial fit joints before fastening in place. Adjust as necessary to ensure close accurate fit with adjacent surfaces.

**.5 Raised Knots:**

- .1 Remove loose paint.
- .2 Level surface by planing and sanding.
- .3 Apply wood epoxy filler to voids in and around knot.

**3.5 SCHEDULE OF CONSERVATION TREATMENT**

	<i>Element</i>	<i>Level of Deterioration</i>
.1	a. 2 Dormers- exterior	Severe
	b. 2 Dormers- interior	Minor
.2	Soffits (linear vent installation + porticos only)	Moderate
.3	Roof Fascia (at gutters only)	Moderate
.4	Front Entry Door (frame & trims)	Moderate

**END OF  
SECTION**