SECTION 080152.61 - WOOD WINDOW REPAIRS

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Before revising this Section, review the window requirements of AWI/AWMAC/WI's "Architectural Woodwork Standards." This review helps to avoid repeating or conflicting with requirements of that standard if retained in "Quality Standard" paragraph.

1. GENERAL
	* + 1. SUMMARY
				1. Section includes wood window repairs as follows:

Repairing wood windows and trim.

Replacing wood window [**frames**] [**and**] [**sash units**].

Reglazing.

Repairing, refinishing, and replacing hardware.

Repairing [**storm windows**] [**shutters**] [**and**] [**insect screens**].

Replacing [**storm-window**] [**shutter**] [**and**] [**insect-screen**] units.

Providing new [**storm-window**] [**shutter**] [**and**] [**insect-screen**] units.

Refer to sections listed below for cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections. Sections listed below are for spec editor’s and design team coordination and are to remain as Editor’s Notes. Remove referenced specification sections within the body of the specification if not applicable to the project.

Section 085200 "Wood Windows" for replacement wood windows or new replacement sash not included in Section 080152.61.

* + - 1. ALLOWANCES

Retain products and Work included in this Section that are covered by cash or quantity allowance. Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the allowance. Delete this article if all window repairs are done by lump-sum price.

Quantity allowances require a Schedule of Quantity Allowances coordinated with a Unit-Price Schedule. See "Planning the Work" Article in the Evaluations for discussion of the bidding method.

* + - * 1. Allowances for wood window repairs are specified in Section 012100 "Allowances."

If using quantity allowances, retain three subparagraphs below or include similar language in Section 012100 "Allowances" to clarify how work covered by quantity allowances is to be authorized.

Perform wood window repairs under quantity allowances and only as authorized. Authorized work includes [**work required by Drawings and Specifications and**] [**only**] work as directed in writing by Director’s Representative.

Retain first subparagraph below to suit Project.

Notify Director’s Representative [**weekly**] <**Insert time interval**> of extent of work performed that is attributable to quantity allowances.

Perform work that exceeds quantity allowances only as authorized by Change Orders.

Remaining paragraphs below are examples only; revise to suit Project. Insert additional allowances according to retained types of work and allowances established. If there are multiple drawing designations for types of work, establish separate allowances for each drawing designation.

* + - * 1. Provide preconstruction testing as part of testing and inspecting allowance.
				2. Replace wood sash in Window No. 1 as part of <**Insert name of allowance**>.
				3. Replace shutters at 10 windows as part of <**Insert name of allowance**>.
				4. Repair <**Insert item description**> as part of <**Insert name of allowance**>.
			1. UNIT PRICES

Retain this article if Work specified in this Section is measured and paid for under the provisions of unit prices. Do not include amounts. Insert descriptions of items in Part 2 or 3 to provide information affecting the cost of the Work that is not included under the unit price.

Retain this article with "Allowances" Article for unit-price adjustments to quantity allowances.

Retain this article without "Allowances" Article if using a single Unit-Price Schedule with a column of estimated quantities on which bids are priced and evaluated.

* + - * 1. Work of this Section is affected by unit prices specified in Section 012200 "Cost Computations”.

Unit prices apply to authorized work covered by [**quantity allowances**] [**estimated quantities**].

Unit prices apply to authorized additions to and deletions from Work as authorized by Change Orders.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. Design Reference Sample: A sample that represents the Director’s Representative's prebid selection of work to be matched; it may be existing work or work specially produced for the Project.
				2. Glazing: Includes glass, glazing points, glazing tapes, glazing sealants, and glazing compounds.
				3. Replicate: To reproduce in exact detail, materials, and finish unless otherwise indicated.
				4. Window: Includes window frame, sash, hardware, storm window, and exterior and interior shutters unless otherwise indicated by context.
				5. Wood Window Component Terminology: Wood window components for repair work include the following classifications:

Revise list below to suit Project.

Frame Components: Head, jambs, and sill.

Sash Components: Stiles and rails, parting bead, stop, and muntins.

Exterior Trim: Exterior casing, brick mold, and cornice or drip cap.

Interior Trim: Casing, stool, and apron.

In subparagraph below, insert other components that are related items, such as arches and panels.

<**Insert item**>.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.
			1. SEQUENCING AND SCHEDULING

Paragraph below is an example only; revise to suit Project. Insert other sequences for different areas of building or types of work if needed.

* + - * 1. Perform window repairs in the following sequence, which includes work specified in this and other Sections:

Retain subparagraphs below and insert others if required; revise to suit Project. If adjacent materials are to be replaced, consider inserting them in sequence to ensure that existing and new materials are not damaged by the work.

Label each window frame with permanent opening-identification number in inconspicuous location.

Tag existing window sash, storm windows, and shutters with opening-identification numbers and remove for on-site or off-site repair. Indicate on tags the locations on window of each component, such as "top sash," "bottom sash," "left shutter," and "right shutter."

Remove window, dismantle hardware, and tag hardware with opening-identification numbers.

Install temporary protection and security at window openings. Coordinate level of protection with Director’s Representative.

In the shop, label each sash, storm window, and shutter unit with permanent opening-identification number in inconspicuous location and remove site-applied tags.

Sort units by condition, separating those that need extensive repair.

Clean surfaces.

General Wood-Repair Sequence:

Remove paint to bare wood.

Rack frames slightly to inject adhesive into mortise and tenon joints; square frames to proper fit before adhesive sets.

If thicker than original glass is required, rout existing muntins to required rebate size.

Repair wood by consolidation, member replacement, partial member replacement, and patching.

Sand, prime, fill, sand again, and prime surfaces again for refinishing.

Repair, refinish, and replace hardware if required. Reinstall operating hardware.

Install glazing.

Remove temporary protection and security at window openings.

Reinstall units.

Apply finish coats.

Install remaining hardware and weather stripping.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Submittals shall be provided in the order in which they are specified, except as noted below, and tabbed (for combined submittals).

Submit Qualification Data as specified in Quality Control Submittals first.

* + - * 1. Product Data: For each type of product.

Include recommendations for product application and use.

Include manufacturer’s installation instructions.

Include test data substantiating that products comply with requirements.

Generally, retain "Shop Drawings" paragraph below for large projects or revise it to suit Project. Alternatively, delete paragraph and rely on benchmarks alone to show how work fits together.

* + - * 1. Shop Drawings:

Include plans, elevations, and sections showing locations and extent of repair and replacement work, with enlarged details of replacement parts indicating materials, profiles, joinery, reinforcing, method of splicing into or attaching to existing wood window, accessory items, and finishes.

Include field-verified dimensions and provisions for [**sealant joints**] [**flashing**] [**and**] <**Insert item**> as required for location.

Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs below for two-stage Samples.

* + - * 1. Samples for Initial Selection: For each type of exposed wood and finish.

Identify wood species, cut, and other features.

Include Samples of hardware and accessories involving color selection.

* + - * 1. Samples for Verification: For the following products in manufacturer's standard sizes unless otherwise indicated, finished as required for use in the Work:

Retain and revise subparagraphs below and insert others to suit Project.

Replacement Units: 12-inch- long, full-size [**frame**] [**and**] [**sash**] sections with applied finish.

Replacement Members: 12 inches long for each replacement member, including parts of frame, sash, exterior trim, and interior trim.

Repaired Wood Window Members: Prepare Samples using existing wood window members removed from site, repaired, and prepared for refinishing.

Refinished Wood Window Members: Prepare Samples using existing wood window members removed from site, repaired, and refinished.

Hardware: Full-size units with each factory-applied or restored finish.

Weather Stripping: 12-inch- long sections.

Glass: [**Full-size**] <**Insert dimensions**> units of each type and appearance.

* + - * 1. Quality Control Submittals:

Qualification Data: For **[wood-window-repair specialist] [and] [wood-repair-material manufacturer**].

Retain "Preconstruction Test Reports" paragraph below if specifying preconstruction testing in "Preconstruction Testing" Article as Contractor's responsibility.

Preconstruction Test Reports: For wood window repairs.

If required, insert "Extra Materials" Article for extra materials or replacement components that match products applied or installed.

* + - 1. QUALITY ASSURANCE

In "Wood-Window-Repair Specialist Qualifications" paragraph below, insert specific, additional requirements for demonstrating unique skills of firm and personnel to suit Project.

* + - * 1. Wood-Window-Repair Specialist Qualifications: A qualified wood window specialist, experienced in repairing, refinishing, and replacing wood windows in whole and in part. Experience only in fabricating and installing new wood windows is insufficient experience for repairing wood windows.

Retain "Title X Requirement" subparagraph below if Project activities disturb painted surfaces in pre-1978 housing or child-occupied facilities. See "Sustainable Design Considerations" Article in the Evaluations.

Title X Requirement: Each firm conducting activities that disturb painted surfaces shall be a "Lead-Safe Certified Firm" according to 40 CFR 745, Subpart E, and use only workers that are trained in lead-safe work practices.

If retaining "Wood-Repair-Material Manufacturer Qualifications" paragraph below, verify that manufacturers of products listed in this Section comply with requirements.

* + - * 1. Wood-Repair-Material Manufacturer Qualifications: A firm regularly engaged in producing [**wood consolidant**] [**and**] [**wood-patching compound**] that have been used for similar wood-repair applications with successful results, and with Company Service Advisors who are available for consultation and Project-site inspection and on-site assistance.

Retain required benchmarks in "Benchmarks" paragraph below; insert others to suit Project. Test areas that were prepared or are required as part of a separate contract to evaluate and establish window repair materials and processes are not benchmarks.

* + - * 1. Benchmarks: Prepare benchmarks of window-repair processes to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation. Prepare benchmarks so they are as inconspicuous as practicable.

Locate benchmarks [**on existing windows where directed by Director’s Representative**] [**in locations that enable viewing under same conditions as the completed Work**] <**Insert requirement**>.

Benchmark in "Wood Window Repairs" subparagraph below is an example only; revise it to suit Project or insert others if necessary, such as for storm windows, shutters, or screens.

Wood Window Repairs: Prepare one entire window unit to serve as benchmark to demonstrate samples of each type of repair of wood window members including frame, sash, glazing, and hardware.

Approval of benchmarks does not constitute approval of deviations from the Contract Documents contained in benchmarks unless Director’s Representative specifically approves such deviations in writing.

* + - 1. PRECONSTRUCTION TESTING

Retain this article for preconstruction testing. Revise article based on Director’s Representative's knowledge of the building's materials and experience with similar work. Consider deleting article if wood-window-repair methods were prepared as part of a separate contract to evaluate and establish materials and processes to be used; revise to suit Project.

* + - * 1. Preconstruction Testing Service: Engage a qualified wood-window-repair specialist to perform preconstruction testing on wood windows.

Retain first subparagraph below if size and configuration of test locations are not indicated on Drawings.

Provide test specimens representative of proposed materials and existing construction.

Test repair products and methods for effectiveness and compliance with specified requirements.

* + - 1. DELIVERY, STORAGE, AND HANDLING
				1. Pack, deliver, and store products in suitable packs, heavy-duty cartons, or wooden crates; surround with sufficient packing material to ensure that products are not deformed, broken, or otherwise damaged.
				2. Store products inside a well-ventilated area and where environmental conditions comply with manufacturer's requirements; protect from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
			2. FIELD CONDITIONS

Usually retain this article; revise to suit Project.

* + - * 1. Weather Limitations: Proceed with wood window repairs only when existing and forecasted weather conditions are within the environmental limits set by each manufacturer's written instructions and specified requirements.
1. PRODUCTS

Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. WOOD WINDOW REPAIRS, GENERAL

Generally, retain "Quality Standard" paragraph below.

* + - * 1. Quality Standard: Comply with applicable requirements in Section 6, "Interior & Exterior Millwork," in AWI/AWMAC/WI's "Architectural Woodwork Standards" for construction, finishes, grades of wood windows, and other requirements unless otherwise indicated.

Exception: Industry practices cited in Section 6, Article 1.5, Industry Practices, of the Architectural Woodwork Standards do not apply to the work of this Section.

* + - 1. REPLICATED WOOD WINDOW UNITS

Retain this article if custom-fabricated replacement wood window frames and sash made to match existing windows are required. If replacing wood windows or sash with entirely new wood windows, the replacements can be replicas of the existing windows and should be specified as new construction in another Section.

* + - * 1. Replicated Wood Window [**Frames**] [**and**] [**Sash**]: Custom-fabricated replacement wood units and trim, with operating and latching hardware.

Joint Construction: **[Joints matching existing] [Mortise and tenon joints] [Doweled joints] <Insert requirement>**.

Insert required species in "Wood Species" subparagraph below if existing wood species is known to be unavailable or if a species of similar appearance is required or permitted.

Wood Species: [**Match wood species of exterior window trim and sash parts**] <**Insert requirement**>.

Retain "Wood Cut" subparagraph below if cut is important to finished appearance. It is most important on natural- or stained-finish flat panels. Cut has less importance if wood is painted.

Wood Cut: [**Match cut of existing exterior wood window trim and sash parts**] [**Plain sliced/plain sawn**] [**Quarter cut/quarter sawn**] <**Insert requirement**>.

Revise "Wood Window Members and Trim" subparagraph below to suit Project for special profiles and detailing.

Wood Window Members and Trim: Match profiles and detail of existing window members and trim.

Revise "Glazing Stops" subparagraph below if glazing stops are to match original stops. Glazing stops may need to be modified from existing design profile to accommodate insulating glass if insulating glass was not part of original window.

Glazing Stops: Provide replacement glazing stops coordinated with glazing system indicated.

Retain "Integral, (Storm) (and) (Screen) Sash Inserts" subparagraph below for built-in storm and screen inserts offered by some manufacturers as an alternative to separate storm windows or screens. These are generally inconspicuous. Aluminum generally has a smaller profile and is easier to conceal in window sash.

Integral [**Storm**] [**and**] [**Screen**] Sash Inserts: Manufacturer's standard [**aluminum**] [**wood**]-framed sash inserts; with sash-insert frames recessed fully in rebates routed in window frame or sash as required; and secured with turn-button hardware. Provide insect screen [**for each operable exterior sash or ventilator**] [**where indicated on Drawings**] <**Insert requirement**>. Shop finish sash inserts to match window frame.

Revise or delete "Exposed Hardware" subparagraph below to suit Project if existing exposed hardware cannot be reused and matching hardware is unavailable.

Exposed Hardware: [**Reuse**] [**Match**] existing exposed window hardware.

Retain option in "Weather Stripping" subparagraph below for hung windows.

Weather Stripping: Full-perimeter[**and meeting rail**] weather stripping for each operable sash.

* + - 1. STORM WINDOWS

Retain this article if separate, fitted, storm windows are required. It may be appropriate to add new storm windows where none existed previously, to improve energy efficiency and reduce sound transmission, even though they are not part of the original windows. They should be specified as new construction either in this Section or in a separate Section for new storm windows, and details should be included on Drawings.

* + - * 1. General: Custom fabricated, tight fitting,[**replicating appearance of existing storm windows,**] and with operating and latching hardware.

Interior storm windows are more easily removed and reinstalled in multistory buildings than exterior storm windows; exterior storm windows generally reduce the likelihood that vapor will condense within the space between primary window and storm window.

Fabricate storm windows for installation [**on inside of primary window**] [**on outside of primary window**] [**matching design reference sample**] [**matching existing location**] [**where indicated on Drawings**] <**Insert requirement**>.

Fabricate storm window frame and sash so as not to be visible from the [**exterior**] [**interior**].

Generally, retain subparagraph below for exterior wooden storm windows that fit into window frames. This is less common for aluminum storm windows that fit into aluminum frames.

Make storm windows removable for cleaning and storage.

* + - * 1. Wood Storm Windows:

Joint Construction: **[Joints matching existing] [Mortise and tenon joints] [Doweled joints] <Insert requirement>**.

Insert required species in "Wood Species" subparagraph below if existing wood species is known to be unavailable, if a species of similar appearance is required or permitted, or if storm windows are not original to the building.

Wood Species: [**Match wood species of exterior trim and sash parts**] [**Cedar**] <**Insert requirement**>.

Retain "Wood Cut" subparagraph below if cut is important to finished appearance. It is most important on natural- or stained-finish flat panels. Cut has less importance if wood is painted.

Wood Cut: [**Match cut of existing exterior wood window trim and sash parts**] [**Plain sliced/plain sawn**] [**Quarter cut/quarter sawn**] <**Insert requirement**>.

Wood Storm-Window Members: [**Match design reference sample**] [**Match wood profiles of existing storm windows**] [**As indicated on Drawings**] <**Insert requirement**>.

Hardware: [**Reuse existing unless otherwise indicated**] [**Match design reference sample**] [**Match existing hardware**] [**As indicated on Drawings**] [**As required to secure storm window to window frames**] <**Insert requirement**>.

Glazing Material: [**Uncoated clear float glass**] [**Plastic glazing**] <**Insert requirement**>.

"Interior Aluminum Storm Windows" paragraph below describes separate storm windows added on interior to improve energy efficiency and reduce sound transmission; revise to suit Project.

* + - * 1. Interior Aluminum Storm Windows: Fabricated from extruded aluminum to fit inside the wood window frame; finish as indicated; storm window frames concealed from exterior view.

Retain "Aluminum Finish" or "Baked-Enamel or Powder-Coated Finish" subparagraph below. Finish availability varies with manufacturer; verify availability of finish before specifying. If retaining more than one finish, indicate location of each on Drawings or by inserts.

Aluminum Finish: Manufacturer's standard [**clear anodized**] [**light bronze anodized**] [**medium bronze anodized**] [**dark bronze anodized**] [**anodized color matching design reference sample**] [**anodized color matching Director’s Representative's sample**] [**anodized color as selected by Director’s Representative from manufacturer's full range**] <**Insert color>**.

Baked-Enamel or Powder-Coated Finish: [**Color as indicated by manufacturer's designations**] [**Color matching design reference sample**] [**Color matching Director’s Representative's sample**] [**Color as selected by Director’s Representative from manufacturer's full range**] <**Insert color**>.

Third option in "Hardware" subparagraph below is available from Allied and perhaps other manufacturers.

Hardware: [**As indicated on Drawings**] [**As required to secure storm window to window frames**] [**Magnetic mounting**] [**Extruded-aluminum track slides at head and sill**] <**Insert requirement**>**.**

Glazing Material: [**Uncoated clear float glass**] [**Plastic glazing**] <**Insert requirement**>.

* + - 1. SHUTTERS

Retain this article if exterior or interior shutters or both are required. It may be appropriate to add replacement shutters where they no longer exist.

* + - * 1. General: Stile and rail units,[**replicating appearance of existing units,**] with concealed fasteners.

Revise "Exterior Wood Shutters" paragraph below if Drawings do not indicate locations of each shutter leaf. For single windows, shutters are generally placed on both jambs; for paired or other multiple window groupings, shutters may be merely decorative and are often placed only on the outermost jambs.

* + - * 1. Exterior Wood Shutters: Custom fabricated, tight fitting, and with operating and latching hardware.

Operation: [**Fixed to wall**] [**Swinging on vertical stile**] [**Bahama or Bermuda style, out-swinging from top rail**] [**Match design reference sample**] [**Match existing**] <**Insert requirement**>.

Panel Configuration: [**Louvered**] [**Flat**] [**Raised**] [**Match design reference sample**] [**Match existing**] [**As indicated on Drawings**] <**Insert requirement**>.

Joint Construction: [**Mortise and tenon joints**] [**Doweled joints**] [**Joints matching design reference sample**] [**Joints matching existing**] <**Insert requirement**>.

Retain "Louver-Slat Construction" subparagraph below if retaining "Louvered" option in "Panel Configuration" subparagraph.

Louver-Slat Construction: [**Routed slats**] [**Dadoed slats**] [**Pivot pin movable slats with interior control rod**] [**Match design reference sample**] [**Match existing**] [**As indicated on Drawings**] <**Insert requirement**>.

Insert required species in "Wood Species" subparagraph below if existing wood species is known to be unavailable, if a species of similar appearance is required or permitted, or if original species is unknown.

Wood Species: [**Match wood species of exterior trim and sash parts**] [**Cedar**] <**Insert requirement**>.

Retain "Wood Cut" subparagraph below if cut is important to finished appearance. It is most important on natural- or stained-finish flat panels. Cut has less importance if wood is painted.

Wood Cut: [**Match cut of existing exterior wood window trim and sash parts**] [**Plain sliced/plain sawn**] [**Quarter cut/quarter sawn**] <**Insert requirement**>.

Wood Shutter Members: [**Match wood profiles of design reference sample**] [**Match wood profiles of existing shutters**] [**As indicated on Drawings**] <**Insert requirement**>.

Retain "Wood Preservative" subparagraph below to suit Project.

Wood Preservative: Apply borate preservative treatment to accessible surfaces of exterior wood shutters before finishing. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.

Hardware: [**Reuse existing unless otherwise indicated**] [**Match design reference sample**] [**Match existing hardware**] [**As indicated on Drawings**] [**As required to secure shutter to window frames and latch tightly**] [**As required to secure shutter to window frames, with pintle hinges to allow removability, and to latch tightly**] [**As required to secure shutter to wall**] <**Insert requirement**>.

Retain "Drip Cap" subparagraph below only for operable shutters.

Drip Cap: [**Aluminum**] [**Copper**] <**Insert requirement**> drip cap fitted to window head; finished [**to match window trim**] [**white**] <**Insert requirement**>.

Retain "Interior Wood Shutters" paragraph below for interior privacy shutters, also called "louvered blinds." Interior shutters are generally mounted to window jambs.

* + - * 1. Interior Wood Shutters: Custom fabricated; tight fitting and removable and with operating and latching hardware.

Operation: [**Swinging on vertical stile**] [**Bifolding leaves, swinging on vertical stile**] [**Match design reference sample**] [**Match existing**] <**Insert requirement>**.

First option in "Panel Configuration" subparagraph below is most common for interior shutters.

Panel Configuration: [**Louvered**] [**Flat**] [**Raised**] [**Match design reference sample**] [**Match existing**] [**As indicated on Drawings**] <**Insert requirement**>.

Height: [**Full-height, single units**] [**Full-height, double-stacked units**] [**Half-height units**] [**Match design reference sample**] [**Match existing**] [**As indicated on Drawings**] <**Insert requirement**>.

Joint Construction: [**Mortise and tenon joints**] [**Doweled joints**] [**Match design reference sample**] [**Match existing**] <**Insert requirement**>.

Retain "Louver-Slat Construction" subparagraph below if retaining "Louvered" option in "Panel Configuration" subparagraph.

Louver-Slat Construction: [**Routed slats**] [**Dadoed slats**] [**Pivot pin movable slats with interior control rod**] [**Match design reference sample**] [**Match existing**] [**As indicated on Drawings**] <**Insert requirement**>.

Insert required species in "Wood Species" subparagraph below if existing wood species is known to be unavailable, if a species of similar appearance is required or permitted, or if original species is unknown.

Wood Species: [**Match wood species of interior trim and sash parts**] [**White oak**] <**Insert requirement**>.

Retain "Wood Cut" subparagraph below if cut is important to finished appearance. It is most important on natural- or stained-finish flat panels. Cut has less importance if wood is painted.

Wood Cut: [**Match cut of existing exterior wood window trim and sash parts**] [**Plain sliced/plain sawn**] [**Quarter cut/quarter sawn**] <**Insert requirement**>.

Wood Members: [**Match wood profiles of design reference sample**] [**Match wood profiles of existing units**] [**As indicated on Drawings**] <**Insert requirement**>.

Hardware: [**Reuse existing unless otherwise indicated**] [**Match design reference sample**] [**Match existing hardware**] [**As indicated on Drawings**] [**As required to secure shutter to window frames and latch tightly**] <**Insert requirement**>.

* + - 1. INSECT SCREENS

Retain this article if separate, replacement insect screens are required. These insect screens replace screens that are either missing or damaged beyond repair and are generally custom manufactured to match existing screens.

* + - * 1. Wood Insect-Screen Frames: Custom fabricated; tight fitting and removable[**, replicating appearance of existing insect-screen frames,**] and with a minimum of exposed fasteners and latches.

Joint Construction: [**Joints matching existing**] [**Mortise and tenon joints**] [**Doweled joints**] <**Insert requirement**>.

Insert required species in "Wood Species" subparagraph below if existing wood species is known to be unavailable, if a species of similar appearance is required or permitted, or if original species is unknown.

Wood Species: [**Match wood species of window**] [**Cedar**] <**Insert requirement**>.

Retain "Wood Cut" subparagraph below if cut is important to finished appearance. It is most important on natural- or stained-finish flat panels. Cut has less importance if wood is painted.

Wood Cut: [**Match cut of window wood**] [**Plain sliced/plain sawn**] [**Quarter cut/quarter sawn**] <**Insert requirement**>.

Insect-Screen Members: [**Match wood profiles of existing shutters**] [**As indicated on Drawings**] <**Insert requirement**>.

"Aluminum Insect-Screen Frames" paragraph below describes a product by Allied.

* + - * 1. Aluminum Insect-Screen Frames: Extruded aluminum custom fabricated to fit inside interior wood window frame; tight fitting and removable, with a minimum of exposed fasteners and latches; finish as indicated; concealed from exterior view.

Mounting: Manufacturer's standard [**magnetic mounting consisting of extruded-aluminum guide at head with magnetic tape at jambs and weather seal at sill**] [**mounting consisting of extruded-aluminum guide at sill with screw attachment at head and jambs**] <**Insert description**>.

Retain "Aluminum Finish" or "Baked-Enamel or Powder-Coated Finish" subparagraph below. Finish availability varies with manufacturer; verify availability of finish before specifying. If retaining more than one finish, indicate location of each on Drawings or by inserts.

Aluminum Finish: Manufacturer's standard [**clear anodized**] [**light bronze anodized**] [**medium bronze anodized**] [**dark bronze anodized**] [**anodized color matching design reference sample**] [**anodized color matching Director’s Representative's sample**] [**anodized color as selected by Director’s Representative from manufacturer's full range**] <**Insert color**>.

Baked-Enamel or Powder-Coated Finish: [**Color as indicated by manufacturer's designations**] [**Color matching design reference sample**] [**Color matching Director’s Representative's sample**] [**Color as selected by Director’s Representative from manufacturer's full range**] <**Insert color**>.

Retain "Wickets" paragraph below for screened-window units with outward-opening sash or ventilators where framed smaller screen within a larger screen is necessary for sash or ventilator operation.

* + - * 1. Wickets: Provide [**sliding**] [**or**] [**hinged**] wickets matching insect-screen frame material and finish; framed and trimmed for a tight fit and durability during use.

Generally, retain "Copper Wire Fabric," "Bronze Wire Fabric," or "Aluminum Wire Fabric" paragraph below; revise or insert other screening material to suit Project.

* + - * 1. Copper Wire Fabric: 16-by-16 count per sq. in. mesh of 0.011-inch- diameter copper wire.
				2. Bronze Wire Fabric: 18-by-14 count per sq. in. mesh of [**0.009-inch-**] [**0.011-inch-**] diameter bronze wire with a clear varnish finish.
				3. Aluminum Wire Fabric: 18-by-16 count per sq. in. mesh of 0.011-inch-diameter, coated aluminum wire; [**natural bright**] [**charcoal gray**] [**black**] finish.
			1. WOOD-REPLACEMENT MATERIALS

Revise descriptions in this article if not consistent with or suitable for replacement members of wood windows.

* + - * 1. Wood, General: Clear fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks larger than 1/32 inch deep by 2 inches wide.

Species: [**Ponderosa pine**] [**Match species of each existing type of wood component or assembly**] <**Insert species**> unless otherwise indicated.

Retain either "Wood, General" paragraph above or paragraphs below.

* + - * 1. Frame Heads and Jambs[**and Exterior Trim**]: [**Match existing species**] [**Ponderosa pine**] [**Ponderosa pine, eastern white pine, or Idaho white pine**] [**Redwood**] [**Douglas fir**] [**African mahogany**] [**Western red cedar**] <**Insert species**>.

Delete "Exterior Trim" paragraph below if retaining exterior trim option in "Frame Heads and Jambs( and Exterior Trim)" paragraph.

* + - * 1. Exterior Trim: [**Match existing species**] [**All-heart vertical grain redwood**] [**African mahogany**] <**Insert species**>.
				2. Sills: [**Match existing species**] [**White oak**] [**All-heart vertical grain redwood**] [**African mahogany**] [**Western red cedar**] <**Insert species**>.
				3. Sash Components: [**Match existing species**] [**Ponderosa pine**] [**Ponderosa pine, eastern white pine, or Idaho white pine**] [**African mahogany**] [**Douglas fir**] <**Insert species**>.
				4. Interior Trim: [**Match existing species**] [**Ponderosa pine**] [**Ponderosa pine, eastern white pine, or Idaho white pine**] [**African mahogany**] <**Insert species**>.
			1. WOOD-REPAIR MATERIALS
				1. Source Limitations: Obtain wood consolidant and wood-patching compound from single source from single manufacturer.

Manufacturers offer a variety of repair materials including epoxies, urethanes, and polyesters. Not all products listed in this article are equivalent. Review requirements with manufacturer and insert recommended products to suit Project.

* + - * 1. 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.
				2. Wood-Patching Compound: Two-part epoxy-resin wood-patching compound; knife-grade formulation as recommended in writing 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.
			1. GLAZING MATERIALS

Retain one of three "Glass" paragraphs below if required; revise to suit Project. Retain first paragraph if requirements for glass in wood windows are specified entirely in Section 088000 "Glazing." Retain second if type of glass is specified in this Section by referencing glass types in Section 088000 "Glazing" and terms are coordinated.. If more than one type of glass is required, indicate location of each on Drawings or by inserts.

* + - * 1. Glass: See Section 088000 "Glazing."
				2. Glass: [**Uncoated clear float-glass**] [**Clear insulating-glass**] [**Low-E clear insulating-glass**] <**Insert description**> units according to Section 088000 "Glazing."
				3. Glass: <**Insert requirements**>.

Retain "Plastic Glazing" paragraph below if plastic glazing is required.

* + - * 1. Plastic Glazing: [**Uncoated monolithic acrylic**] [**Coated monolithic acrylic**] [**Uncoated monolithic polycarbonate**] [**Abrasion- and UV-resistant monolithic polycarbonate**] [**UV-resistant monolithic polycarbonate**] <**Insert description**> sheet according to Section 088400 "Plastic Glazing."

Retain "Glazing Systems" paragraph below with any glass or glazing paragraph above; revise to suit Project.

* + - * 1. Glazing Systems:

Retain "Traditional Glazing Products," "Polyurethane Glazing Products," or "Silicone Glazing Products" to suit Project. If retaining more than one system, indicate location of each on Drawings or by inserts.

Retain "Traditional Glazing Products" subparagraph below if required for securing glass in frames. GANA's "Glazing Manual" advises that "putty or glazing compound should not be used to glaze laminated or insulating glass." Some manufacturers also limit product use to exclude plastic glazing, stained glass (leaded), and panes measuring over 48 inches.

Traditional Glazing Products: Glazing points and oil-based glazing putty or latex glazing compound. Tint to required color according to manufacturer's written instructions.

Revise "Polyurethane Glazing Products" subparagraph below to suit Project.

Polyurethane Glazing Products: Glazing points and single-component polyurethane glazing compound; ASTM C920, Type S, Grade NS, Class 25, Use G; struck uniformly to match taper of existing glazing system (removed); colored as required to match painted sash.

Insert type of silicone glazing sealant in "Silicone Glazing Products" subparagraph below if multiple types are retained in Section 088000 "Glazing."

Silicone Glazing Products: Glazing securement and silicone glazing sealant according to Section 088000 "Glazing"; struck uniformly to match taper of existing glazing system (removed); colored as required to match painted sash.

Primers and Cleaners for Glazing: As recommended in writing by glazing material manufacturer.

* + - 1. HARDWARE
				1. Window Hardware: Provide complete sets of window hardware consisting of sash balances, hinges, pulls, latches, and accessories indicated for each window or required for proper operation. Sets shall include replacement hardware to complement repaired and refinished, existing hardware. Window hardware shall smoothly operate, tightly close, and securely lock wood windows and be sized to accommodate sash or ventilator weight and dimensions.
				2. Other Hardware: Provide complete sets of hardware for each type of [**storm window**] [**shutter**] [**and**] [**insect screen**] consisting of hinges, pulls, latches, and accessories indicated or required for proper operation. Hardware shall smoothly operate, tightly close, and secure units appropriately for unit weight and dimensions.
				3. Replacement Hardware: Replace existing damaged or missing hardware with new hardware manufactured by one of the following:
				4. Material and Design:

Revise "Material" and "Design" subparagraphs below to suit Project. If retaining more than one material or design, indicate location of each on Drawings or by inserts.

Material: [**Solid bronze of alloy indicated**] [**Cast or wrought aluminum**] [**Nonmagnetic stainless steel**] <**Insert material**> unless otherwise indicated.

Retain one or both options in "Design" subparagraph below. If retaining both, indicate location of each on Drawings or by inserts. First option is more restrictive and expensive.

Design: [**Custom hardware to replicate**] [**Match type and appearance of**] existing hardware.

Retain "Weight and Pulley Sash-Balance" or "Spring Sash-Balance" subparagraph below for hung windows; revise to suit Project.

Weight and Pulley Sash-Balance: Concealed weight and pulley balance system including steel or cast iron weights, cast-bronze pulleys, [**synthetic sash cord**] [**bronze sash chain**] [**or**] [**stainless-steel sash chain**] <**Insert requirement**>; size and capacity to hold sash stationary at any open position.

Spring Sash-Balance: Concealed [**tape-spring**] [**spiral-tube**] [**spring-loaded, block-and-tackle**] <**Insert description**> type; size and capacity to hold sash stationary at any open position.

Replacement Window Hardware: Match existing window hardware of the following types:

Revise first five subparagraphs below to suit Project.

Projected window hinge.

Window lock.

Window latch.

Handle.

Pole ring.

<**Insert hardware type**>.

* + - * 1. Hardware Finishes: Comply with BHMA A156.18 for base material and finish requirements indicated by the following:

Retain one or more finish designations below. If retaining more than one, indicate location of each on Drawings or by inserts.

BHMA 605: Bright brass, clear-coated; brass base metal.

BHMA 606: Satin brass, clear-coated; brass base metal.

BHMA 611: Bright bronze, clear-coated; bronze base metal.

BHMA 612: Satin bronze, clear-coated; bronze base metal.

BHMA 613: Dark-oxidized satin bronze, oil-rubbed; bronze base metal.

BHMA 624: Dark-oxidized statuary bronze, clear-coated; bronze base metal.

BHMA 628: Satin aluminum, clear-anodized; aluminum base metal.

BHMA 630: Satin stainless steel; stainless-steel base metal.

BHMA 689: Aluminum painted; over any base metal.

<**Insert finish or special custom finish**>.

* + - 1. WEATHER STRIPPING
				1. Compression-Type Weather Stripping: Compressible weather stripping designed for permanently resilient sealing under bumper or wiper action; completely concealed when window is closed.

Weather-Stripping Material: Match existing materials and profiles as much as possible unless otherwise indicated.

Cellular Elastomeric Gaskets: Preformed; complying with ASTM C509.

Dense Elastomeric Gaskets: Preformed; complying with ASTM C864.

Retain "Sliding-Type Weather Stripping" paragraph below if sliding-type weather stripping is required; revise to suit Project. Sliding-type weather stripping is primarily for double-hung windows.

* + - * 1. Sliding-Type Weather Stripping: Woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric.

Retain "Weather Seals" subparagraph below for improved air-infiltration and water-penetration resistance.

Weather Seals: Provide weather stripping with integral barrier fin or fins of semirigid, polypropylene sheet or polypropylene-coated material.

Products described in "Metal Weather Stripping" paragraph below were used at many older window sills, jambs, and meeting rails; sometimes, they become bent or do not seal well against uneven old surfaces. Consider replacing them with sliding, compression, or bulb-type designs.

* + - * 1. Metal Weather Stripping: [**Bronze**] [**Zinc**] <**Insert metal**> weather stripping; designed either as one piece to seal by sliding into a groove in the sash or as two pieces that interlock; and completely concealed when window is closed.
			1. MISCELLANEOUS MATERIALS

Borate preservatives are generally used to pretreat decayed wood to prevent further decay before other wood repairs. See the Evaluations.

* + - * 1. 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.

Insert water-repellent wood preservative here and application requirements in Part 3 if required for Project.

* + - * 1. Cleaning Materials:

Detergent Solution: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent that contains no ammonia, 5 quarts of 5 percent sodium hypochlorite bleach, and 15 quarts of warm water for each 5 gal. of solution required.

Mildewcide: Commercial, proprietary mildewcide or a solution prepared by mixing 1/3 cup of household detergent that contains no ammonia, 1 quart of 5 percent sodium hypochlorite bleach, and 3 quarts of warm water.

* + - * 1. Adhesives: Wood adhesives for exterior exposure, with minimum 15- to 45-minute cure at 70 deg F, in gunnable and liquid formulations as recommended in writing by adhesive manufacturer for each type of repair.
				2. Fasteners: Use fastener metals that are noncorrosive and compatible with each material joined.

Match existing fasteners in material and type of fastener unless otherwise indicated.

Use concealed fasteners for interconnecting wood components.

Use concealed fasteners for attaching items to other work unless exposed fasteners are [**unavoidable**] [**or**] [**the existing fastening method**].

For fastening metals, use fasteners of same basic metal as fastened metal unless otherwise indicated.

Revise first subparagraph below if another type of head is required.

For exposed fasteners, use Phillips-type machine screws of head profile flush with metal surface unless otherwise indicated.

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

* + - * 1. Anchors, Clips, and Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel complying with requirements in ASTM B633 for SC 3 (Severe) service condition.
			1. WOOD WINDOW FINISHES

Retain one or more paragraphs in this article; revise to suit Project. If retaining more than one, indicate location of each on Drawings or by inserts.

* + - * 1. Unfinished Replacement Units: Provide exposed [**exterior**] [**and**] [**interior**] wood surfaces of replacement units unfinished; smooth, filled, and suitably prepared for on-site priming and finishing.

Retain "Factory-Primed Replacement Units" paragraph below if prime-coated replacement window frames or sash are required.

* + - * 1. Factory-Primed Replacement Units: [**Manufacturer's standard**] <**Insert requirement**> factory-prime coat on exposed [**exterior**] [**and**] [**interior**] wood surfaces; compatible with indicated finish coating.

Retain "Factory-Finished Units" paragraph below if factory-finished replacement window frames or sash are required. Copy paragraph and revise for multiple finishes on same project; indicate locations of each on Drawings or by inserts.

* + - * 1. Factory-Finished Units: [**Alkyd**] [**Latex**] <**Insert system type**> finish system consisting of [**primer and two finish coats**] <**Insert requirement**> on exposed [**exterior**] [**and**] [**interior**] wood surfaces.

Retain second option in "Finish Coats" subparagraph below if factory-finished windows are adjacent to site-finished windows and identical coating materials are required as a means to ensure similar weathering characteristics.

Finish Coats: [**Manufacturer's standard.**] [**Match intermediate coat and topcoat products used for adjacent, repaired wood windows.**] <**Insert requirement.**>

Munsell Color and Plochere Color System numbers in "Color and Gloss" subparagraph below are examples only. Munsell color and Plochere color systems are discussed in the Evaluations in Section 090190.52 "Maintenance Repainting."

Color and Gloss: Match [**Munsell Color 10 G 8/2**] [**Plochere Color System #8da399**] [**colors indicated on Drawings**] <**Insert color(s) or requirement**>.

1. EXECUTION
	* + 1. WOOD-WINDOW-REPAIR SPECIALIST

Retain this article if list of preapproved firms is used as quality-control procedure.

If retaining second option in "Wood-Window-Repair Specialist Firms" paragraph below, include procedure for approving other firms in Document 002213 "Supplementary Instructions to Bidders."

* + - * 1. Wood-Window-Repair Specialist Firms: Subject to compliance with requirements, [**provide wood window repairs by one of the following**] [**firms that may provide wood window repairs include, but are not limited to, the following**]:

<**Insert, in separate subparagraphs, names of wood-window-repair specialist firms**>.

* + - 1. PREPARATION
				1. Protect adjacent materials from damage by performing wood window repairs.
				2. Clean wood windows 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.
				3. Condition replacement wood members and replacement units to prevailing conditions at installation areas before installing.
			2. WOOD WINDOW REPAIRS, GENERAL
				1. Have wood window repairs performed only by qualified wood-window-repair specialist.

Retain "Appearance Standard" paragraph below to control overall appearance from a distance.

* + - * 1. Appearance Standard: Completed work is to have a uniform appearance as viewed by Director’s Representative from the window interior at [**5 feet** ] [**10 feet** ] <**Insert distance**> away and from the window exterior at [**20 feet**] [**50 feet**] <**Insert distance**> away.
				2. Execution of the Work: In repairing wood windows, disturb them as minimally as possible and as follows:

Stabilize and repair wood windows to reestablish structural integrity and weather resistance while maintaining the existing form of each item.

Remove coatings and apply borate preservative treatment before repair. Remove coatings according to Section 090190.52 "Maintenance Repainting" unless otherwise indicated.

Repair items in place where possible.

Install temporary protective measures to protect wood window work that is indicated to be completed later.

Refinish wood windows according to Section 090190.52 "Maintenance Repainting" unless otherwise indicated.

* + - * 1. Mechanical Abrasion: Where mechanical abrasion is needed for the work, use gentle mechanical methods, such as scraping and natural-fiber bristle brushing, that will not abrade wood substrate, reducing clarity of detail.

Retain "Repair and Refinish Existing Hardware" paragraph below if required; revise to suit Project.

* + - * 1. Repair and Refinish Existing Hardware: Dismantle window hardware; strip paint, repair, and refinish it to match finish samples; and lubricate moving parts just enough to function smoothly.
				2. Repair Wood Windows: Match existing materials and features.

Repair wood windows by consolidating, patching, splicing, or otherwise reinforcing wood with new wood matching existing wood or with salvaged, sound, original wood.

Retain "Sash Balance" subparagraph below for hung windows; revise to suit Project.

Sash Balance: Repair sash balances to function according to type as specified in "Hardware" Article" above. Provide missing sash balances.

* + - * 1. Replace Wood Units: Where indicated, duplicate and replace units with units made from salvaged, sound, original wood or with new wood matching existing wood. Use surviving prototypes to create patterns for duplicate replacements.
				2. 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.
				3. Identify removed windows, frames, 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 label units in a location that will be concealed after reinstallation.
			1. WOOD WINDOW PATCH-TYPE REPAIR

Indicate on Drawings where wood windows are to be patched; otherwise, the wood-window-repair specialist will generally decide.

* + - * 1. General: Patch wood members that exhibit depressions, holes, or similar voids and that have limited amounts of rotted or decayed wood.

Revise first subparagraph below to suit Project.

Remove [**sash**] [**storm windows**] [**and**] [**screens**] from windows before performing patch-type repairs at meeting or sliding surfaces unless otherwise indicated. Reglaze units before reinstallation.

Verify that surfaces are sufficiently clean and free of paint residue before patching.

Remove rotted or decayed wood down to sound wood.

* + - * 1. Apply borate preservative treatment to accessible surfaces after removing rotted or decayed wood and before applying wood consolidant or patching compound. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom. Allow treatment to dry.
				2. Apply wood-patching compound to fill depressions, nicks, cracks, and other voids created by removed or missing wood.

Prime patch area with application of wood consolidant or manufacturer's recommended primer.

Mix only as much patching compound as can be applied according to manufacturer's written instructions.

Apply patching compound in layers as recommended in writing by manufacturer until the void is completely filled.

Sand patch surface smooth and flush with adjacent wood, without voids in patch material, and matching contour of wood member.

Clean spilled compound from adjacent materials immediately.

* + - 1. WOOD WINDOW MEMBER-REPLACEMENT REPAIR

Indicate on Drawings or in the Wood-Window-Repair Schedule where wood windows are to have parts or entire wood window members replaced; otherwise, the wood-window-repair specialist will generally decide.

* + - * 1. General: Replace parts of or entire wood window members at locations [**indicated on Drawings**] [**indicated in the Wood-Window-Repair Schedule**] [**and**] [**where damage is too extensive to patch**] <**Insert requirement**>.

Revise subparagraphs below to suit Project.

Remove [**sash**] [**storm windows**] [**and**] [**shutters**] from windows before performing member-replacement repairs unless otherwise indicated.

Verify that surfaces are sufficiently clean and free of paint residue before repair.

Remove broken, rotted, and decayed wood down to sound wood.

Custom fabricate new wood to replace missing wood; either replace entire wood member or splice new wood part into existing member.

Secure new wood using finger joints, multiple dowels, or splines 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 sound wood.

* + - * 1. Apply borate preservative treatment to accessible surfaces after replacements are made. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.
				2. Repair remaining depressions, holes, or similar voids with patch-type repairs.
				3. Clean spilled materials from adjacent surfaces immediately.
				4. Glazing: Reglaze units before reinstallation.

Retain first subparagraph below if glass thickness does not match existing glass thickness.

Mill new and rout existing glazed members to accommodate new glass thickness.

Revise subparagraphs below to suit Project. Glazing stops may need to be modified from the existing design profile to accommodate insulating glass if insulating glass was not part of original window.

Provide replacement glazing stops coordinated with glazing system indicated.

Provide glazing stops to match contour of sash frames.

* + - * 1. Reinstall units removed for repair into original openings.

Retain option in "Weather Stripping" paragraph below for hung windows.

* + - * 1. Weather Stripping: Replace nonfunctioning and install missing weather stripping to ensure full-perimeter[**and meeting rail**] weather stripping for each operable sash.
			1. GLAZING
				1. Comply with combined written instructions of manufacturers of glass, glazing systems, and glazing materials, unless more stringent requirements are indicated.

Retain one of first three paragraphs below; revise to suit Project. Retain first paragraph if some window lites will not be reglazed and Contractor will make the evaluation. Retain second paragraph if some window lites will not be reglazed and replacements are indicated on Drawings or scheduled. Retain third paragraph if all windows are to be reglazed with new glass. Existing single-pane glass is often replaced with insulating glass for energy savings. Determine if existing glass, whether sound or cracked, is to be removed and disposed of.

* + - * 1. Remove cracked and damaged glass and glazing materials from openings and prepare surfaces for reglazing.
				2. Remove existing glass and glazing where indicated [**on Drawings**] [**in the Wood-Window-Repair Schedule**], and prepare surfaces for reglazing.
				3. Remove glass and glazing from openings and prepare surfaces for reglazing.
				4. Size glass as required by Project conditions to provide necessary bite on glass, minimum edge and face clearances, with reasonable tolerances.
				5. Apply primers to joint surfaces where required for adhesion of glazing system, as determined by preconstruction testing.
				6. Install setting bead, side beads, and back bead against stop in glazing rabbets before setting glass, according to glazing-system manufacturer's instructions.

Retain first paragraph below; revise to suit Project. Insert additional paragraphs if required for special glass types and for unusual installation conditions.

* + - * 1. Install glass with proper orientation so that coatings, if any, face exterior or interior as required.

Retain option in first paragraph below if using silicone glazing products.

* + - * 1. Install glazing system.[**Install silicone glazing products as specified in Section 088000 "Glazing."**]
				2. Disposal of Removed Glass: [**Remove from site and legally dispose of it**] [**Protect unbroken lites and deliver as salvage to Director’s Representative for storage where directed**] <**Insert requirement**> unless otherwise indicated.
			1. WOOD WINDOW UNIT REPLACEMENT

Retain this article if window frames or sash units are to be replaced with new custom-fabricated window frames or sash units to match existing units.

* + - * 1. General: Replace existing wood [**window frame**] [**sash**] [**storm window**] [**and**] [**shutter**] units with new custom-fabricated units to match existing at locations [**indicated on Drawings**] [**indicated in the Wood-Window-Repair Schedule**] [**and**] [**where damage is too extensive to repair**] <**Insert requirement**>.
				2. Apply borate preservative treatment to accessible surfaces before finishing. Apply treatment liberally by brush to joints, edges, and ends; top, sides, and bottom.
				3. Mill glazed members to accommodate glass thickness. Glaze units before installation.
				4. Install units, hardware, weather stripping, accessories, and other components[**as indicated on Drawings**].
				5. Install units level, plumb, square, true to line, without distortion or impeding movement; anchored securely in place to structural support; and in proper relation to wall flashing, trim, and other adjacent construction.
				6. Set sill members in bed of sealant for weathertight construction unless otherwise indicated.
				7. Install window units with new anchors into existing openings.

Retain option in "Weather Stripping" paragraph below for hung windows.

* + - * 1. Weather Stripping: Install full-perimeter[**and meeting rail**] weather stripping for each operable sash.
				2. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
				3. Disposal of Removed Units: [**Remove from site and legally dispose of them**] [**Deliver as salvage to Director’s Representative for storage where directed**] <**Insert requirement**>.
			1. STORM WINDOW INSTALLATION

Retain this article for storm windows; revise to suit Project.

Retain one or both of first two paragraphs below to suit Project. If retaining both, indicate location of each on Drawings or by inserts.

* + - * 1. Install wood storm windows at each window jamb[**indicated**].
				2. Install interior aluminum storm windows at each window[**indicated**].
				3. Install units by mounting to window frames[**as indicated on Drawings and**] according to manufacturer's written instructions.
			1. SHUTTER INSTALLATION

Retain this article for shutters; revise to suit Project. Indicate on Drawings where exterior and interior shutters are required.

* + - * 1. Install wood shutters at each window jamb[**indicated**].
				2. Install units by mounting[**as indicated on Drawings and**] according to manufacturer's written instructions.
			1. INSECT-SCREEN INSTALLATION

Retain this article if applicable; revise to suit Project. Indicate on Drawings where insect screens are required.

* + - * 1. Install [**wood**] [**aluminum**] insect-screen frames [**for each operable exterior sash or ventilator**] [**where indicated**] <**Insert requirement**>.

Locate insect-screen frames on [**inside**] [**outside**] of window unless otherwise indicated.

Install insect-screen frames by mounting to window or sash frame[**as indicated on Drawings and**] according to manufacturer's written instructions.

Retain first paragraph below if required; revise to suit Project.

* + - * 1. Replace existing insect screening; remove it from site.
				2. Install insect screening to be smooth, flat, and uniformly taut.
			1. WEATHER STRIPPING INSTALLATION

Retain this article if applicable; revise to suit Project. Indicate on Drawings where weather stripping is required.

* + - * 1. Install weather stripping for tight seal of joints as determined by preconstruction testing and demonstrated in benchmark.
			1. FIELD QUALITY CONTROL

Retain "Manufacturer's Field Service" paragraph below to require a Company Service Advisor to provide on-site assistance.

* + - * 1. Manufacturers Field Service: Engage wood-repair-material manufacturers' Company Service Advisors for consultation and Project-site inspection and to provide on-site assistance when requested by Director’s Representative.
			1. ADJUSTING
				1. Adjust existing and replacement operating sash, screens, hardware, weather stripping, and accessories for a tight fit at contact points and weather stripping for smooth operation and weathertight closure. Lubricate hardware and moving parts.
			2. CLEANING AND PROTECTION
				1. Protect window surfaces from contact with contaminating substances resulting from construction operations. Monitor window surfaces adjacent to and below exterior concrete and masonry during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances contact window surfaces, remove contaminants immediately.
				2. Clean exposed surfaces immediately after repairing wood windows. Avoid damage to coatings and finishes. Remove excess sealants, glazing and patching materials, dirt, and other substances.
				3. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction.
			3. WOOD-WINDOW-REPAIR SCHEDULE

This article demonstrates a method to indicate repair requirements for wood windows. A schedule helps to prevent confusion where Project includes several items of varying sizes, characteristics, and complexities; where extensive drawing notations would otherwise be used. The design professional decides what to include in a schedule and what to annotate on Drawings. This schedule is an example only; revise to suit Project. See the Evaluations for another form of schedule.

Assign a drawing designation to each window and item to be treated and indicate the methods of treatment that apply to the item. Include window number in each drawing designation. Use these designations on Drawings to identify locations.

"Wood Window( WW-#)" paragraph below is for a variety of wood window repairs; revise to suit Project. Copy this paragraph and re-edit for different windows and types of repairs at each window.

* + - * 1. Wood Window[**WW-#**] <**Insert drawing designation**>: [**Single-hung**] [**Double-hung**] [**Triple-hung**] [**Casement**] [**Fixed**] <**Insert window description**> window.

Retain one or more of eight subparagraphs below if required; revise to suit Project.

General: Repair existing wood windows using indicated treatments. Repair sash, storm windows, and shutters [**on-site**] [**or**] [**off-site**] <**Insert requirement**>.

Removal of Existing Paint and Refinishing: See Section 090190.52 "Maintenance Repainting" for paint removal, surface preparation for refinishing, and refinishing wood windows.

"Window Frame Repair" subparagraph below is for repairing window frame treated as a unit. Revise if window frame repair is by treatment of individual parts.

Window Frame Repair: [**Wood consolidant**] [**patch-type repairs**] [**whole or partial member-replacement repairs**] [**and**] [**re-anchor frame as indicated on Drawings**] <**Insert repair description**>.

"Window Frame Member Repair" subparagraph below is for repairing window frame parts treated individually; copy and revise as needed for each part. Delete if window frame members are repaired as units.

Window Frame Member Repair: Repair [**head**] [**jambs**] [**sill**] with [**wood consolidant**] [**patch-type repairs**] [**and**] [**whole or partial member-replacement repairs**]. [**Re-anchor**] [**and**] [**realign**] the [**head**] [**jambs**] [**sill**]. <**Insert repair description**>.

First subparagraph below is for repairing window sash or other item treated as a unit. Delete if sash or item repair is by treatment of individual parts.

Window [**Sash**] <**Insert item**> Repair: [**Wood consolidant**] [**patch-type repairs with sash removed from opening**] [**patch-type repairs in place**] [**and**] [**whole or partial member-replacement repairs**] <**Insert repair description**>.

First subparagraph below is for repairing window sash or other item's parts treated individually; copy and revise as needed for each part. Delete if window sash or other items are repaired as whole units.

Window [**Sash**] <**Insert item**> Member Repair: Repair [**stile**] [**rails**] [**parting bead**] [**stop**] [**and**] [**muntins**] <**Insert component**> with [**wood consolidant**] [**patch-type repairs**] [**and**] [**whole or partial member-replacement repairs**]. Realign [**stiles**] [**rails**] [**parting bead**] [**and**] [**stops**] <**Insert component**>.

First subparagraph below is for replacing window sash or other item; revise if only one of two or more sash or other items is to be replaced. Delete if all window sash or items are repaired.

Window [**Sash**] <**Insert item**> Replacement: Remove existing units for replacement with custom-fabricated, replicated units.

Hardware: [**Sash balance**] [**Projected window hinge**] [**Window lock**] [**Window latch**] [**Handle**] [**Pole ring**] <**Insert hardware type**>.

"Wood Window( WW-#)" paragraph below is for wood windows to be removed and replaced with new windows; revise to suit Project. Copy this paragraph and re-edit for different windows and types of repairs at each window location.

* + - * 1. Wood Window[**WW-#**] <**Insert drawing designation**>: [**Single-hung**] [**Double-hung**] [**Triple-hung**] [**Casement**] [**Fixed**] <**Insert window description**> window.

Retain one or more of five subparagraphs below if required; revise to suit Project.

General: Remove wood window completely, including window frame and sash, and replace with custom-fabricated, new replacement windows.

New Replacement Windows: See <**Insert Section number and title.**>

Finishing: See [**Section 090190.52 "Maintenance Repainting."**] <**Insert Section number and title.**>

"Wood (Exterior) (Interior) Shutters" subparagraph below is for new or replacement wood shutters; revise if only one of two units is to be replaced. Revise if items are repaired.

Wood [**Exterior**] [**Interior**] Shutters: Custom-fabricated, [**new**] [**replicated**] units specified in this Section.

Hardware: [**Sash balance**] [**Projected window hinge**] [**Window lock**] [**Window latch**] [**Handle**] [**Pole ring**] <**Insert hardware type**>.

END OF SECTION 080152.61