SECTION 064013 - EXTERIOR ARCHITECTURAL WOODWORK

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.

Review requirements of the Architectural Woodwork Institute (AWI) before revising this Section.

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes:

Exterior standing and running trim.

Exterior frames and jambs.

Exterior shutters.

Exterior [**stairs**] [**and**] [**railings**].

Wood furring, blocking, shims, and hanging strips for installing exterior architectural woodwork items that are not concealed within other construction.

Shop priming of exterior architectural woodwork.

Shop finishing of exterior architectural woodwork.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

[**Section 061000 "Rough Carpentry"**] [**Section 061053 "Miscellaneous Rough Carpentry"**] for wood furring, blocking, shims, and hanging strips required for installing exterior architectural woodwork that are concealed within other construction before exterior architectural woodwork installation.

Section 062013 "Exterior Finish Carpentry" for exterior carpentry exposed to view that is not specified in this Section.

* + - 1. REFERENCES
         1. Architectural Woodwork Standards (including errata to date) by the Architectural Woodwork Institute (AWI).
      2. COORDINATION
         1. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that exterior architectural woodwork can be supported and installed as indicated.
      3. 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.

If needed, insert list of conference participants.

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

Retain "Wood-Preservative Treatment" Subparagraph below if required.

Wood-Preservative Treatment:

Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

Indicate type of preservative used and net amount of preservative retained.

Include chemical-treatment manufacturer's written instructions for finishing treated material and manufacturer's written warranty.

Retain "Fire-Retardant Treatment" Subparagraph below if required.

Fire-Retardant Treatment: Include data and warranty information from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

Waterborne Treatments: For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

* + - * 1. Sustainable Design Submittals:
        2. Shop Drawings:

Include dimensioned plans, elevations, sections, and attachment details.

Retain second option in first subparagraph below for ornate or complex work.

Show large-scale details.

Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.

Retain subparagraph below and applicable option if retaining other requirements for AWI's or WI's quality certification program.

Apply AWI Quality Certification Program label to Shop Drawings.

Retain "Samples" Paragraph below for single-stage Samples, with a subordinate list if applicable. Retain "Samples for Initial Selection" and "Samples for Verification" paragraphs for two-stage Samples.

* + - * 1. Samples: For each exposed product and for each color and finish specified.

Size:

Panel Products: 12 inches by 12 inches.

Lumber Products: Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.

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

Size:

Panel Products: 12 inches by 12 inches.

Lumber Products: Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.

* + - * 1. Samples for Verification: For the following:

Retain "Lumber for Exterior Wood-Stain Finish," "Lumber for Transparent Finish," and "Lumber and Panel Products with Shop-Applied Opaque Finish" subparagraphs below to control grain character, color, and finish, or insert other subparagraphs to suit Project. Architectural Woodwork Standards requires samples to be "as wide as practical" by 12 inches long for lumber and 12 by 12 inches for panel products.

Lumber for Exterior Wood-Stain Finish: Not less than 5 inches wide by 12 inches long, for each species, with one-half of exposed surface finished.

Lumber for Transparent Finish: Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.

Lumber and Panel Products with Shop-Applied Opaque Finish: 5 inches wide by 12 inches long for lumber and 12 by 12 inches for panels, for each finish system and color.

Finish entire exposed surface.

Retain "Shutter Hardware" Subparagraph below if required.

Shutter Hardware: Full-size samples for each type and size of hardware in each finish, and color required.

Coordinate "Qualification Data" Paragraph below with qualification requirements in "Quality Assurance" Article.

* + - * 1. Qualification Data: For architectural woodwork manufacturer and Installer.

Retain "Evaluation Reports" Paragraph below for preservative-treated or fire-retardant-treated wood materials.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

* + - * 1. Evaluation Reports: For [**preservative-treated**] [**and**] [**fire-retardant-treated**] wood materials, from ICC-ES.

Retain "Field quality-control reports" Paragraph below if AWI or WI field inspections are retained under Part 3 "Field Quality Control" Article. Typically, AWI and WI do not perform inspections for every "certified" project. If field inspection is required, the Architect and Contractor have the option to request these inspections at any time, at no cost to the Owner or Architect.

* + - * 1. Field quality-control reports.
      1. CLOSEOUT SUBMITTALS

Retain "Quality Standard Compliance Certificates" Paragraph below only if retaining requirements for AWI's Quality Certification Program or WI's Certified Compliance Program.

* + - * 1. Quality Standard Compliance Certificates: [**AWI Quality Certification Program**] [**WI Certified Compliance Program**] certificates.
      1. QUALITY ASSURANCE
         1. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.

Retain "Manufacturer's Certification" Subparagraph below if AWI Quality Certification Program or WI Certified Compliance Program is required. Both AWI and WI will inspect work and provide certification for work that passes inspection if manufacturer is not licensed under their respective programs.

Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

Retain "Installer Qualifications" Paragraph below if required. If woodwork must be FSC certified, architectural woodwork manufacturer must either install woodwork or be FSC certified for chain of custody.

* + - * 1. Installer Qualifications: Fabricator of products.
        2. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

Build mockups of [**typical exterior architectural woodwork as shown on Drawings**].

Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless the Director’s Representative specifically approves such deviations per the General Conditions.

Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

* + - 1. DELIVERY, STORAGE, AND HANDLING
         1. Comply with Architectural Woodwork Standards, Section 2.
         2. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

Handle and store fire-retardant-treated wood to comply with chemical-treatment manufacturer's written instructions.

* + - 1. FIELD CONDITIONS

Requirements in "Weather Limitations" Paragraph below may not be realistic for Project location. Consider deleting and including requirement in Part 2 for shop priming to protect woodwork until it can be finished.

* + - * 1. Weather Limitations: Proceed with installation of exterior architectural woodwork only when existing and forecasted weather conditions permit work to be performed and at least one coat of specified finish to be applied without exposure to rain, snow, or dampness.

Retain "Field Measurements" or "Established Dimensions" Paragraph below. Establishing dimensions allows woodwork fabrication to begin before installation areas are complete.

* + - * 1. Field Measurements: Where exterior architectural woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.

Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

* + - * 1. Established Dimensions: Where exterior architectural woodwork is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and MasterWorks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. 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. ARCHITECTURAL WOODWORK, GENERAL

The Section Text is based on the AWI Architectural Woodwork Standards. The Section Text can be revised to incorporate the North American Architectural Woodwork Standards. See the Evaluations.

* + - * 1. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of exterior architectural woodwork indicated for construction, finishes, installation, and other requirements.
      1. EXTERIOR STANDING AND RUNNING TRIM FOR TRANSPARENT FINISH
         1. Architectural Woodwork Standards Grade: Custom.
         2. Backout or groove backs of flat trim members and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: [**All-heart redwood**] [**Western red cedar**] [**Eastern white pine**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH
         1. Architectural Woodwork Standards Grade: Custom.
         2. Backout or groove backs of flat trim members, and kerf backs of other wide, flat members, except for members with ends exposed in finished work.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: [**All-heart redwood**] [**Western red cedar**] [**Eastern white pine**] [**Any closed-grain hardwood**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR FRAMES AND JAMBS FOR TRANSPARENT FINISH
         1. Architectural Woodwork Standards Grade: Custom.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: [**All-heart redwood**] [**Western red cedar**] [**White oak**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Retain one of three options in "Wood Moisture Content" Subparagraph below. First range applies to Ontario, Quebec, and most of the United States. Second applies to damp coastal areas of southern United States and Maritime Provinces. Third applies to dry southwestern United States, Alberta, Manitoba, and Saskatchewan. See relative-humidity and moisture-content map in the Architectural Woodwork Standards. Some locations have microclimates that differ from the surrounding region.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR FRAMES AND JAMBS FOR OPAQUE FINISH
         1. Architectural Woodwork Standards Grade: Custom.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: [**All-heart redwood**] [**Western red cedar**] [**Eastern white pine**] [**Any closed-grain hardwood**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR SHUTTERS FOR TRANSPARENT FINISH
         1. Architectural Woodwork Standards Grade: Custom.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: [**All-heart redwood**][**Eastern White Pine**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR SHUTTERS FOR OPAQUE FINISH
         1. Architectural Woodwork Standards Grade: Custom.

Options in "Wood Species" Paragraph below are examples only. Revise to suit Project. See the Evaluations.

* + - * 1. Wood Species: All-heart redwood[**Eastern White Pine**].

Usually retain first subparagraph below if using softwood lumber.

Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.

Wood Moisture Content: 9 to 15 percent.

* + - 1. EXTERIOR STAIRS AND RAILINGS
         1. Architectural Woodwork Standards Grade: Custom.

First paragraph below can provide high-quality appearance but adds cost and can require extra effort to enforce. Delete paragraph if species and grades retained in remaining paragraphs are suitable without revision.

* + - * 1. Hand select wood for freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot holes, shake, splits, torn grain, and wane.

Retain one of two "Stair Tread" paragraphs below.

* + - * 1. Stair Treads: [**1-1/4-inch-**] [**1-inch-**] thick, kiln-dried[**, pressure-preservative-treated**] stepping with half-round or rounded edge nosing, of any of the following:

Douglas fir, NLGA, WCLIB, or WWPA C & Btr VG (Vertical Grain) stepping.

Hem-fir, NeLMA, NLGA, WCLIB, or WWPA C & Btr VG (Vertical Grain) stepping.

Southern or Eastern pine, NeLMA, SPIB B & B stepping.

* + - * 1. Stair Treads: [**1-1/4-inch-**] [**1 inch-**] actual thickness, kiln-dried with half-round or rounded edge nosing.

Retain one of the following five subparagraphs.

Redwood, RIS [**Deck Heart or Construction Heart**] [**Deck Common or Construction Common**].

Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].

Western red cedar, WWPA [**Patio 1**] [**Patio 2**].

Western red cedar, WCLIB [**Select Dex**] [**Commercial Dex**].

Western red cedar (North), NLGAS [**Select Patio**] [**Commercial Patio**].

Retain one of the following two "Stair Risers" paragraphs.

* + - * 1. Stair Risers: 3/4-inch- thick, kiln-dried[**, pressure-preservative-treated**] finish boards, of any of the following:

Douglas fir, NLGA, WCLIB, or WWPA C & Btr or Superior finish.

Hem-fir, NeLMA, NLGA, WCLIB, or WWPA C & Btr or Superior finish.

Southern or Eastern pine, NeLMA, SPIB B & B.

* + - * 1. Stair Risers: 3/4-inch- actual thickness, kiln-dried with half-round or rounded edge nosing.

Retain one of the following five subparagraphs.

Redwood, RIS [**Deck Heart or Construction Heart**] [**Deck Common or Construction Common**].

Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].

Western red cedar, WWPA [**Patio 1**] [**Patio 2**].

Western red cedar, WCLIB [**Select Dex**] [**Commercial Dex**].

Western red cedar (North), NLGAS [**Select Patio**] [**Commercial Patio**].

Retain one of the following four "Railing Members" paragraphs.

* + - * 1. Railing Members: Clear, kiln-dried, solid, [**yellow poplar**] [**pressure-preservative-treated Douglas fir**] [**pressure-preservative-treated southern pine**]; railing stock of pattern indicated on Drawings.
        2. Railing Members: [**Select Structural**] [**No. 1**] [**No. 2**] [**Construction or No. 2**] grade and[**any of**] the following species:

Hem-fir or hem-fir (North); NLGA, WCLIB, or WWPA.

Douglas fir-larch, Douglas fir-larch (North), or Douglas fir-south; NLGA, WCLIB, or WWPA.

Mixed southern pine; SPIB.

Redwood; RIS.

Spruce-pine-fir or spruce-pine-fir (South); NeLMA, NLGA, WCLIB, or WWPA.

* + - * 1. Railing Members: Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].
        2. Railing Members:[**Any of the following species and grades:**]

Douglas fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Hem-fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].

Southern pine, SPIM B & B finish.

Retain one of four "Balusters" paragraphs below. Revise size to suit Project.

* + - * 1. Balusters: 1-1/16-inch- square, clear, kiln-dried, solid, [**yellow poplar**] [**pressure-preservative-treated Douglas fir**] [**pressure-preservative-treated southern pine**].
        2. Balusters: 1-1/16-inch- square, [**Select Structural**] [**No. 1**] [**No. 2**] [**Construction or No. 2**] grade, and[**any of**] the following species:

Hem-fir or hem-fir (North); NLGA, WCLIB, or WWPA.

Douglas fir-larch, Douglas fir-larch (North), or Douglas fir-south; NLGA, WCLIB, or WWPA.

Mixed southern pine; SPIB.

Redwood; RIS.

Spruce-pine-fir or spruce-pine-fir (South); NeLMA, NLGA, WCLIB, or WWPA.

* + - * 1. Balusters: 1-1/16-inch- square, redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].
        2. Balusters: 1-1/16-inch- square,[**and any of the following species and grades:**]

Douglas fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Hem-fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].

Southern pine, SPIM B & B finish.

Retain one of four "Newel Posts" paragraphs below. Revise size to suit Project.

* + - * 1. Newel Posts: 2-3/4-inch- square, clear, kiln-dried, [**yellow poplar**] [**pressure-preservative-treated Douglas fir**] [**pressure-preservative-treated southern pine**], turned newel posts of pattern and size indicated on Drawings.
        2. Newel Posts: 2-3/4-inch- square, [**Select Structural**] [**No. 1**] [**No. 2**] [**Construction or No. 2**] grade, and[**any of**] the following species:

Hem-fir or hem-fir (North); NLGA, WCLIB, or WWPA.

Douglas fir-larch, Douglas fir-larch (North), or Douglas fir-south; NLGA, WCLIB, or WWPA.

Mixed southern pine; SPIB.

Redwood; RIS.

Spruce-pine-fir or spruce-pine-fir (South); NeLMA, NLGA, WCLIB, or WWPA.

* + - * 1. Newel Posts: 2-3/4-inch- square, redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].
        2. Newel Posts: 2-3/4-inch- square,[**and any of the following species and grades:**]

Douglas fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Hem-fir, NLGA, WCLIB, or WWPA C & Btr finish or C Select.

Redwood, RIS [**Heart Clear**] [**Heart B or Select Heart**].

Southern pine, SPIM B & B finish.

* + - 1. WOOD MATERIALS
         1. Hardboard: ANSI A135.4.
         2. Softwood Plywood: DOC PS 1, exterior.
      2. PRESERVATIVE-TREATED-WOOD MATERIALS

See the Evaluations for discussion of formulations and requirements of the Architectural Woodwork Standards for preservative treatment. Verify compatibility of preservative treatments with specified finishes.

* + - * 1. Preservative-Treated-Wood Materials: Provide with water-repellent preservative treatment complying with AWPA N1 (dip, spray, flood, or vacuum-pressure treatment).

If necessary, revise "Preservative Chemicals" Subparagraph below after verifying availability and compliance of chemicals with environmental and regulatory controls in effect at Project location. Retain option if resistance to wood-destroying insects is also required.

Preservative Chemicals: 3-iodo-2-propynyl butyl carbamate (IPBC)[**, combined with a compatible EPA-registered insecticide**].

Use chemical formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants in solution to distinguish treated material from untreated material.

* + - * 1. Extent of Preservative-Treated Wood Materials: Treat wood materials [**unless otherwise indicated on Drawings**] [**except items indicated to be fire-retardant treated**].

Decay-resistant wood can benefit from treatment with water-repellent preservative. Where subject to termites, decay-resistant wood can also benefit from treatment with an insecticide.

Items fabricated from the following wood species need not be treated:

Redwood or all-heart redwood.

Western red cedar or all-heart western red cedar.

White oak.

* + - 1. FIRE-RETARDANT-TREATED WOOD MATERIALS

If fire-retardant materials are required, verify requirements and acceptability of various materials with authorities having jurisdiction. Verify compatibility of fire-retardant treatments with specified finishes.

* + - * 1. Fire-Retardant-Treated Wood Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products according to test method indicated by a qualified testing agency.

Use treated materials that comply with requirements of the Architectural Woodwork Standards for the grade specified. Do not use materials that are warped, discolored, or otherwise defective.

Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.

* + - * 1. Exterior Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84 after being subjected to accelerated weathering according to ASTM D2898, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

Kiln-dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.

Retain first subparagraph below if items are to receive a stained or natural finish. Organic resin treatments are more expensive than salt treatments but generally result in better stained, transparent, or natural finishes.

For items indicated to receive a stained, transparent, or natural finish, use organic resin chemical formulation.

Retain one of two subparagraphs below. Before retaining first subparagraph, verify that wood species and treatment process specified are approved for milling after treatment.

Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.

Mill lumber before treatment and implement procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.

* + - * 1. Extent of Fire-Retardant-Treated Wood Materials:

Verify requirements of authorities having jurisdiction for locations of fire-retardant-treated wood materials.

Exterior architectural woodwork located more than 40 feet above grade.

Exterior architectural woodwork in locations with a fire-separation distance of 5 feet or less.

[**Where indicated on Drawings**].

* + - 1. SHUTTER HARDWARE
         1. Offset Strap Hinges: For inset shutters and with tapered strap. Shutters can lift off pintles after installation. Provide top and bottom hinges for each shutter and matching wood screws for installation.

Offset: [**1/2 inch**] [**1-1/2 inches**] [**2-1/4 inches**] [**3-1/4 inches**].

Strap Length: [**10 inches**] [**12 inches**] [**14 inches**] [**16 inches**].

Strap Width: 1-3/4 inches at widest point.

Pintle Plate: 3-1/2 by 1-1/2 by 1/8 inches.

Pintle Diameter: 3/8 inch.

Material and Finish: Zinc-chromate-plated steel with black finish.

* + - * 1. New York-Style Hinges: Offset type for full-inset shutters. Provide top and bottom hinges for each shutter and matching wood screws for installation.

Overall Hinge Dimensions: [**4-1/4 by 5 inches**] [**6 by 6-3/4 inches**].

Offset: [**1-1/16 inches**] [**1-1/4 inches**] [**2-1/8 inches**] [**2-1/4 inches**].

Pintle Plate: [**2 by 1-1/8 inches**] [**3-1/8 by 1-1/8 inches**] [**3-5/8 by 1-3/16 inches**].

Material and Finish: [**Cast iron with rust-inhibiting primer and black matte powder-coated polyurethane finish**] [**Galvanized steel**] [**Solid bronze with wax finish**].

* + - * 1. L-Type Hinges: Offset type for inset shutters; with tapered long-leg of L-shape oriented horizontally. Shutters can lift off pintles after installation. Provide top and bottom hinges[**and matching middle, straight-plate hinge**] for each shutter and matching wood screws for installation.

L-Shape Plate: [**5-inch- long vertical leg and 6-inch- long horizontal leg**].

Maximum Leg Width: [**1-3/8 inches**].

Offset: [**1/2 inch**] [**1-1/2 inches**] [**2-1/4 inches**].

Pintle Plate: [**3-1/2 by 1-1/2 by 1/8 inch**].

Pintle Diameter: 3/8 inch.

Material and Finish: Zinc-chromate-plated steel with wrought-iron black finish.

* + - * 1. Connecticut-Style Hinges: Strap-type, loose-joint hinges with threaded pintle. Provide top and bottom hinges[**and matching middle hinge**] for each shutter and matching wood screws for installation.

Type: [**No offset**] [**1-1/4-inch offset**] [**2-3/16-inch offset**].

Strap Dimensions: [**1 by 4-1/4 inches**] [**1 by 6-1/2 inches**].

Pintle: [**2-3/8 inches long with 5/16-inch- diameter thread**] [**2-3/4 inches long with 1/4-inch- diameter thread**] [**4-1/2 inches long with 3/8-inch- diameter thread**] [**4-1/2 inches long with 7/16-inch- diameter thread**].

Material and Finish: [**Galvanized steel**] [**Stainless steel with black finish**].

* + - * 1. Bermuda-Style Hinges: For top-hung shutters. Provide [**two**] <**Insert number**> hinges and one matching, shutter stay per shutter. Provide matching wood screws for installation.

Overall Hinge Dimensions: 6-3/16 by 3-1/2 inches.

Hinge Leg Width: Approximately 1-1/16 inches.

Hinge Material Thickness: Approximately 1/4 inch.

Shutter Stay: 24-inch- long.

Material and Finish: Cast iron and coated with a black textured powder coat.

* + - * 1. Shutter Dogs: For holding shutters in open position.

Type: Traditional scroll design.

Overall Dimensions: [**6-3/4 by 2-3/8 inches**] [**8-1/8 by 3-1/4 inches**].

Material and Finish: Steel with rough black, rust-inhibiting finish.

* + - 1. FASTENERS
         1. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.

Use fasteners with hot-dip zinc coating complying with ASTM A153 or ASTM F2329 unless otherwise indicated.

For pressure-preservative-treated wood, use stainless-steel fasteners.

For redwood, use stainless-steel fasteners.

* + - * 1. Nails: ASTM F1667.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

* + - * 1. Power-Driven Fasteners: ICC-ES AC70.
        2. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.
        3. Carbon-Steel Bolts: ASTM A307 with ASTM A563 hex nuts and, where indicated, flat washers all hot-dip zinc coated.
        4. Stainless-Steel Bolts: ASTM F593, Alloy Group 1 or 2; with ASTM F594, Alloy Group 1 or 2 hex nuts and, where indicated, flat washers.
        5. Postinstalled Anchors: Stainless-steel, chemical or torque-controlled expansion anchors with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing according to ASTM E488 conducted by a qualified independent testing and inspecting agency.

Stainless-steel bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

* + - 1. MISCELLANEOUS MATERIALS

Retain "Blocking, Shims, and Nailers" Paragraph below if not included in a carpentry Section. Revise moisture content to suit regional requirements and local availability.

* + - * 1. Blocking, Shims, and Nailers: Softwood or hardwood lumber, kiln-dried to less than 15 percent moisture content.

Retain "Wood-Preservative Treatment" or "Fire-Retardant Treatment" Subparagraph below, or indicate locations of each treatment on the Drawings or in the "Preservative-Treated-Wood Materials" and "Fire-Retardant-Treated Wood Materials" articles. Treatments cannot be used together.

Wood-Preservative Treatment: By pressure process, AWPA U1; Use Category UC3b.

Maximum moisture content specified in first subparagraph below is standard limit for preservative-treated lumber that is kiln-dried after treatment.

Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.

See the Evaluations for information about treatment chemicals.

Preservative Chemicals: Acceptable to authorities having jurisdiction[**and containing no arsenic or chromium**].

Mark lumber with treatment quality mark of an inspection agency approved by the American Lumber Standards Committee's (ALSC) Board of Review.

Fire-Retardant Treatment: Complying with requirements; provide where indicated on Drawings.

* + - 1. FABRICATION

Retain first paragraph below if fire-retardant-treat wood is applicable.

* + - * 1. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
        2. Fabricate exterior architectural woodwork to dimensions, profiles, and details indicated.

Ease edges to radius indicated for the following:

Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.

Retain "Edges of Rails and Similar Members More Than 3/4 Inch Thick" Subparagraph below if required.

Edges of Rails and Similar Members More Than 3/4 Inch Thick: 1/8 inch.

If applicable, insert subparagraph here to describe conditions where eased edges are not required.

* + - * 1. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.

Disassemble components only as necessary for shipment and installation.

Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

Retain first subparagraph below if Director’s Representative will examine work in manufacturer's shop before it is shipped to Project site.

Notify Director’s Representative seven days in advance of the dates and times exterior architectural woodwork fabrication will be complete.

Retain first subparagraph below for high-quality and large or complex work.

Trial fit assemblies at fabrication shop that cannot be shipped completely assembled.

Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting.

Verify that parts fit as intended, and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.

* + - 1. SHOP PRIMING

Retain this article if shop priming is required and if shop finishing is not specified. Shop priming or shop finishing is recommended to seal woodwork. See the Evaluations.

* + - * 1. Preparations for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.
        2. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of woodwork. Apply two coats to surfaces installed in contact with concrete or masonry and to end-grain surfaces.
      1. SHOP FINISHING

Retain first option in first paragraph below if only woodwork with transparent finishes are shop finished, and retain second option if shop-finished items are indicated on Drawings.

* + - * 1. Finish exterior architectural woodwork [**with transparent finish**] [**indicated on Drawings**] at fabrication shop. Defer only final touchup, cleaning, and polishing until after installation.
        2. Preparation for Finishing: Comply with the Architectural Woodwork Standards for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing exterior architectural woodwork, as applicable to each unit of work.

Generally, retain "Backpriming" Subparagraph below. Backpriming helps moderate alternating shrinking and swelling caused by fluctuations in moisture content resulting from variations in relative humidity.

Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of exterior architectural woodwork. Apply two coats to end-grain surfaces.

* + - * 1. Transparent Finish: Comply with Section 099300 "Staining and Transparent Finishing."
        2. Opaque Finish: Comply with Section 099113 "Exterior Painting."

1. EXECUTION
   * + 1. PREPARATION
          1. Before installation, condition exterior architectural woodwork to average prevailing humidity conditions at Project site.
          2. Before installing exterior architectural woodwork, examine shop-fabricated work for completion, and complete work as required, including removing packing and backpriming concealed surfaces.
       2. INSTALLATION

Revise "Grade" Paragraph below if installation grade is different from fabrication grade.

* + - * 1. Grade: Install exterior architectural woodwork to comply with same grade as item to be installed.
        2. Assemble exterior architectural woodwork, and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
        3. Install exterior architectural woodwork level, plumb, true in line, and without distortion.

Shim as required with concealed shims.

Install level and plumb to a tolerance of 1/8 inch in 96 inches.

Retain "Standing and Running Trim" Paragraph below if applicable.

* + - * 1. Standing and Running Trim:

Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible.

Do not use pieces less than 60 inches long, except where shorter single-length pieces are necessary.

Scarf running joints and stagger in adjacent and related members.

* + - * 1. Scribe and cut exterior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
        2. Preservative-Treated Wood Materials: Where field cut or drilled, treat cut ends and drilled holes according to AWPA M4.
        3. Fire-Retardant-Treated Wood Materials: Install fire-retardant-treated materials to comply with chemical treatment manufacturer's written instructions.
        4. Anchor exterior architectural woodwork to anchors or blocking built in or directly attached to substrates.

Secure with countersunk, concealed fasteners and blind nailing.

Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with exterior architectural woodwork.

For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.

For shop-finished items, use filler matching finish of items being installed.

* + - * 1. Stair and Railing Installation:

Descriptive requirements in "Treads and Risers" Subparagraph below cover basic stair and railing installation only; for best results, supplement with complete details.

Treads and Risers:

Install stair tread with crown side up (bark side down).

Secure treads and risers by gluing and nailing to carriages.

Extend treads over carriages[**and finish with bullnose edge**].

Countersink nail heads, fill flush, and sand filler.

Balusters:

Fit balusters to treads, glue, and nail in place.

Countersink nail heads, fill flush, and sand filler.

Let into railings and glue in place.

Newel Posts: Secure newel posts to stringers and risers with [**through bolts**] [**lag screws**] [**countersunk-head wood screws and glue**].

Railings:

Secure wall rails with metal brackets.

Fasten freestanding railings to newel posts and to trim at walls with glue and countersunk-head wood screws or rail bolts.

For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.

Subparagraph below, which is based on NFPA 101 requirements, is an example only. Revise if more stringent tolerances are required. Coordinate with framing requirements for stairs in Section 061000 "Rough Carpentry."

Install stairs with no more than 3/16-inch variation between adjacent treads and risers and with no more than 3/8-inch variation between largest and smallest treads and risers within each flight.

Coordinate two paragraphs below with requirements retained in "Shop Priming" and "Shop Finishing" articles.

* + - * 1. Touch up finishing work specified in this Section after installation of exterior architectural woodwork.

Fill nail holes with matching filler where exposed.

Apply specified finish coats, including stains and paste fillers if any, to exposed surfaces where only sealer/prime coats are shop applied.

* + - * 1. Field Finishing: See [**Section 099300 "Staining and Transparent Finishing"**] for final finishing of installed exterior architectural woodwork.
      1. REPAIR
         1. Repair damaged and defective exterior architectural woodwork, where possible, to eliminate functional and visual defects and to result in exterior architectural woodwork being in compliance with requirements of the Architectural Woodwork Standards for the specified grade.
         2. Where not possible to repair, replace defective woodwork.
      2. CLEANING
         1. Clean exterior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 064013