

## SECTION 064214 - STILE AND RAIL WOOD PANELING

### GENERAL

#### SUMMARY

Section Includes:

- Stile and rail wood paneling for transparent finish.
- Stile and rail wood paneling for opaque finish.
- Fire-retardant-treated materials.
- Installation materials.

Related Requirements:

- Section 061000 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling that are concealed within other construction before paneling installation.
- Section 064023 "Interior Architectural Woodwork" for wood trim installed on or next to stile and rail wood paneling.

#### ALLOWANCES

Wood Veneer Allowance: Wood veneer for paneling is part of [**Wood Veneer Allowance**] <Insert name of allowance>. Allowance includes the cost of veneer that is wasted due to selection, cutting, and trimming.

#### COORDINATION

Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

#### PREINSTALLATION MEETINGS

Preinstallation Conference: Conduct conference at [**Project site**] <Insert location>.

#### ACTION SUBMITTALS

Product Data: For each type of product.

- Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

Sustainable Design Submittals:

- [<Double click to insert sustainable design text for regional materials.>](#)
- [<Double click to insert sustainable design text for certified wood.>](#)
- [<Double click to insert sustainable design text for adhesives.>](#)
- [<Double click to insert sustainable design text for composite wood.>](#)
- [<Double click to insert sustainable design text for installation adhesives.>](#)

Shop Drawings: For stile and rail wood paneling.

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

35 Show details full size.  
36 Show locations and sizes of furring and blocking, including concealed blocking specified in other  
37 Sections.  
38 For paneling produced from premanufactured sets, show finished panel sizes, set numbers,  
39 sequence numbers within sets, and method of cutting panels to produce indicated sizes.  
40 For paneling veneered in fabrication shop, show veneer leaves with dimensions, grain direction,  
41 exposed face, and identification numbers indicating the flitch and sequence within the flitch for  
42 each leaf.  
43 Apply [AWI Quality Certification] [WI Certified Compliance] Program label to Shop Drawings.

44 Samples: For each exposed product and for each color and finish specified, in manufacturer's or  
45 fabricator's standard size.

46 Samples for Initial Selection: For each type of exposed finish.

47 Samples for Verification: For the following:

48 Lumber for Transparent Finish: Not less than [5 inches (125 mm) wide by 12 inches (300 mm)  
49 long] [5 inches (125 mm) wide by 24 inches (600 mm) long], for each species and cut, finished  
50 on one side and one edge.  
51 Veneer Leaves: Representative of and selected from flitches to be used for transparent-finished  
52 paneling.  
53 Veneer-Faced Panel Products for Transparent Finish: [8 by 10 inches (200 by 250 mm)] [12 by  
54 12 inches (300 by 300 mm)] [12 by 24 inches (300 by 600 mm)], for each species and cut.  
55 Include at least one face-veneer seam and finish as specified.  
56 Lumber and Panel Products with Shop-Applied Opaque Finish: 5 inches (125 mm) wide by 12  
57 inches (300 mm) long for lumber and [8 by 10 inches (200 by 250 mm)] [12 by 12 inches (300  
58 by 300 mm)] for panels.

59 Provide Samples with[ one-half of] exposed surface finished for each finish system.

60 Corner Pieces: 18 inches (450 mm) high by 18 inches (450 mm) wide by 6 inches (150 mm)  
61 deep.

## 62 INFORMATIONAL SUBMITTALS

63 Qualification Data: For [Installer] [fabricator].

64 Product Certificates: For each type of product.

65 Quality Standard Compliance Certificates: [AWI Quality Certification Program] [WI Certified Compliance  
66 Program].

67 Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

## 68 QUALITY ASSURANCE

69 Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to  
70 those required for this Project and whose products have a record of successful in-service performance.

71 Shop Certification: [AWI's Quality Certification Program accredited participant] [WI's Certified Compliance  
72 Program licensee].

73 Installer Qualifications: [Fabricator of products] [AWI's Quality Certification Program accredited  
74 participant] [WI's Certified Compliance Program licensee].

## 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 stile and rail wood paneling as shown on Drawings] <Insert description>.

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

## DELIVERY, STORAGE, AND HANDLING

Do not deliver paneling until painting and similar operations that might damage paneling have been completed in installation areas. Store paneling in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

## FIELD CONDITIONS

Environmental Limitations without Humidity Control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature and relative humidity at levels planned for building occupants during the remainder of the construction period.

Environmental Limitations with Humidity Control: Do not deliver or install paneling until building is enclosed, wet-work is complete, and HVAC system is operating and will maintain temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between [25 and 55] [43 and 70] [17 and 50] <Insert number> percent during the remainder of the construction period.

Field Measurements: Where paneling is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

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

Established Dimensions: Where paneling 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.

## PRODUCTS

### SOURCE LIMITATIONS

Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of paneling [and] [wood-veneer-faced architectural cabinets] [ornamental woodwork] [wood trim] [wood frames] [and] [wood doors faced with veneers from same flitches as paneling].

Fabricators: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available fabricators offering products that may be incorporated into the Work include, but are not limited to, the following]:

<Insert, in separate subparagraphs, names and contact information for preapproved woodworking firms>.

## PANELING, GENERAL

Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of stile and rail wood paneling (stile and rail wall surfacing) indicated for construction, finishes, installation, and other requirements.

Provide inspections of fabrication and installation together with labels and certificates from [AWI] [WI] certification program indicating that woodwork complies with requirements of grades specified.

The Contract Documents contain requirements that are more stringent than the referenced woodwork quality standard. Comply with requirements of Contract Documents in addition to those of the referenced quality standard.

## STILE AND RAIL WOOD PANELING FOR TRANSPARENT FINISH

Grade: [Premium] [Custom] [Economy].

[<Double click to insert sustainable design text for regional wood materials.>](#)

[<Double click to insert sustainable design text for certified wood.>](#)

Wood Species: [White oak, rift sawn/sliced] [Figured English ash, quarter sawn/sliced] [Butternut, plain sawn/sliced] [Figured red gum, plain-sawn/sliced panels, quarter-sawn/sliced stiles and rails] <Insert species and cut>.

Stiles and Rails: At fabricator's option, stiles and rails may be either lumber or veneered construction with edges banded or with lumber moldings, as indicated, to conceal core and veneer joints.

Panels: [Flat panels] [Raised panels with veneered faces and solid-lumber rims] [Raised panels with veneered faces extending across rims] [Raised panels made from edge-glued solid lumber].

Blueprint Matched Insert Panels: Blueprint matched in a horizontal sequence for adjacent panels and doors, with continuous vertical matching between adjacent panels. **[Book and balance]** **[Book, balance, and center]** match face-veneer leaves within each panel.

See Section 012100 "Allowances" for allowances covering purchase of wood face veneers for stile and rail paneling.

See Section 011000 "Summary" for requirements for flitches reserved by Architect.

Sequence Matched Insert Panels: Cut panels from premanufactured, sequence-matched sets of book-matched veneered panels. Cut panels with veneer leaves centered in each panel. Cut panels with continuous matching between vertically adjacent panels; veneer leaves of upper panels are continuations of veneer leaves of panels below them.

Veneer Leaves: **[Even]** **[or]** **[odd]** in number.

Remainders: At least half as wide as the full veneer leaves.

Book and Balance Matched Insert Panels: Book and balance match face veneers within panels. No matching is required between adjacent panels; select and arrange panels for similarity of grain pattern and color between adjacent panels.

Shop assemble stile and rail paneling into largest units practical for delivery and installation. Provide shop-prepared detachable joints for necessary field connections. Sand and pull joints tight in shop so field joints will comply with joint tolerances for specified grade. Unless otherwise indicated, provide continuous

152 mortise-and-tenon joints between panel units and provide removable temporary protection for joints  
153 during handling and delivery.

154 Outside Corner of Stile and Rail Paneling: Shop prepare using lock-mitered[ **or mitered-and-**  
155 **splined**] construction. Assemble, sand, and glue in shop if site conditions permit.

## 156 **STILE AND RAIL WOOD PANELING FOR OPAQUE FINISH**

157 Grade: [Premium] [Custom] [Economy].

158 [<Double click to insert sustainable design text for regional wood materials.>](#)

159 [<Double click to insert sustainable design text for certified wood.>](#)

160 Wood Species: [Any closed-grain hardwood] [Eastern white pine, ponderosa pine, sugar pine, or western  
161 white pine] <Insert species>.

162 Stiles and Rails: Either solid lumber or particleboard, shop filled on face, with veneered or lumber-banded  
163 edges, at paneling fabricator's option.

164 Flat Insert Panels: MDF or particleboard with shop-filled face.

165 Raised Insert Panels: [Medium-density overlaid softwood plywood (exterior), machined to profile indicated  
166 and shop filled on exposed machined surfaces] [MDF, machined to profile indicated].

167 Provide fire-retardant treatment of stile and rail paneling as indicated below. For components of paneling  
168 fabricated from solid lumber, mill pieces before treatment.

169 Stiles and Rail Components: [Fire-retardant-treated lumber] [fire-retardant MDF] [or] [fire-  
170 retardant particleboard with fire-retardant-lumber edge bands].

171 Insert Panels: [Fire-retardant MDF] [or] [fire-retardant particleboard with closed-grain hardwood  
172 veneer on face and back].

173 Shop assemble stile and rail paneling into largest units practical for delivery and installation. Provide  
174 shop-prepared detachable joints for necessary field connections. Sand and pull joints tight in shop so field  
175 joints will comply with joint tolerances for specified grade. Unless otherwise indicated, provide continuous  
176 mortise-and-tenon joints between panel units and provide removable temporary protection for joints  
177 during handling and delivery.

178 Outside Corner of Stile and Rail Paneling: Shop prepare using lock-mitered[ **or mitered-and-**  
179 **splined**] construction. Assemble, sand, and glue in shop if site conditions permit.

## 180 **MATERIALS**

181 Materials, General: Provide materials that comply with requirements of referenced quality standard for  
182 each quality grade specified unless otherwise indicated.

183 Wood Moisture Content: [5 to 10] [8 to 13] [4 to 9] percent.

184 Composite Wood Products: Provide materials that comply with requirements of referenced quality  
185 standard for each quality grade specified unless otherwise indicated.

186 [<Double click to insert sustainable design text for recycled content.>](#)

187 [<Double click to insert sustainable design text for composite wood products.>](#)

188 MDF: ANSI A208.2, [Grade 130] <Insert grade>.

Particleboard: ANSI A208.1, [Grade M-2] [Grade M-2-Exterior Glue].  
Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

[<Double click to insert sustainable design text for adhesives.>](#)

## **FIRE-RETARDANT-TREATED MATERIALS**

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

Use treated materials that comply with requirements of referenced quality standard. 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.

Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E84, 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 (3.2 m)** 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.  
For items indicated to receive a stained or natural finish, use organic resin chemical formulation.  
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 paneling.

Fire-Retardant Particleboard: Made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E84.

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For panels **3/4 inch (19 mm)** thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, **1600 psi (11 MPa)**; modulus of elasticity, **300,000 psi (2070 MPa)**; internal bond, **80 psi (550 kPa)**; and screw-holding capacity on face and edge, **250 and 225 lbf (1100 and 1000 N)**, respectively.  
For panels **13/16 to 1-1/4 inches (20 to 32 mm)** thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, **1300 psi (9 MPa)**; modulus of elasticity, **250,000 psi (1720 MPa)**; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, **250 and 175 lbf (1100 and 780 N)**, respectively.

Fire-Retardant Fiberboard: Medium-density fiberboard (MDF) panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E84.

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## INSTALLATION MATERIALS

Furring, Blocking, Shims, and Hanging Strips: [**Softwood or hardwood lumber**] [**Fire-retardant-treated softwood lumber**], kiln-dried to less than 15 percent moisture content.

Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls.

Installation Adhesive: Product recommended by panel fabricator for each substrate for secure anchorage.

[<Double click to insert sustainable design text for VOC content of adhesive.>](#)

[<Double click to insert sustainable design text for low emitting adhesives.>](#)

## FABRICATION

Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

Arrange paneling in shop or other suitable space in proposed sequence for examination by Architect. Mark units with temporary sequence numbers to indicate position in proposed layout.

Lay out one elevation at a time if approved by Architect.

Notify Architect seven days in advance of the date and time when layout will be available for viewing.

Provide lighting of similar type and level as that of final installation for viewing layout unless otherwise approved by Architect.

Rearrange paneling as directed by Architect until layout is approved.

Do not trim end units and other nonmodular-size units to less than modular size until after Architect's approval of layout. [**Indicate trimming by masking edges of units with nonmarking material.**]

Obtain Architect's approval of layout before start of assembly. Mark units and Shop Drawings with assembly sequence numbers based on approved layout.

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 ample allowance for scribing, trimming, and fitting.

Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.

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.

Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

## SHOP FINISHING

Finishing:

Finish all paneling at fabrication shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.



273 Finish transparent-finish paneling at fabrication shop as specified in this Section. See  
274 Section 099123 "Interior Painting" for field finishing of opaque-finished paneling.  
275 Finish paneling as indicated on Drawings. Indicate paneling that is required to be shop finished.  
276 Finish shop-finished paneling at fabrication shop as specified in this Section. Refer to  
277 **[Section 099123 "Interior Painting"] [and] [Section 099300 "Staining and Transparent**  
278 **Finishing"]** for field finishing paneling not indicated to be shop finished.

279 Shop Priming: Shop apply the prime coat including backpriming, if any, for **[transparent-finished]**  
280 paneling specified to be field finished.

281 See [Section 099123 "Interior Painting"] [and] [Section 099300 "Staining and Transparent  
282 Finishing"] for material and application requirements.

283 Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk  
284 fasteners, sealing concealed surfaces, and similar preparations for finishing paneling, as applicable to  
285 each unit of work.

286 Backpriming: Apply two coats of sealer or primer, compatible with finish coats, to concealed  
287 surfaces of paneling.

288 Transparent Finish:

289 Grade: [Premium] [Custom] [Economy] [Same as item to be finished].  
290 Finish: System - [1, nitrocellulose lacquer] [2, precatalyzed lacquer] [3, postcatalyzed lacquer] [4,  
291 water-based latex acrylic] [5, conversion varnish] [6, synthetic penetrating oil] [7, catalyzed vinyl]  
292 [8, water-based cross linking acrylic] [9, UV curable acrylated epoxy, polyester, or urethane] [10,  
293 water-based UV curable] [11, catalyzed polyurethane] [12, water-based polyurethane] [13,  
294 catalyzed polyester].  
295 Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to woodwork made from closed-  
296 grain wood before staining and finishing.  
297 Staining: [None required] [Match approved sample for color] [Match Architect's sample].  
298 Open Finish for Open-Grain Woods: Do not apply filler to open-grain woods.  
299 Filled Finish for Open-Grain Woods: **[ After staining, apply wash-coat sealer and allow to dry.]**  
300 Apply paste wood filler and wipe off excess. Tint filler to match stained wood.  
301 Sheen: **[Flat, 15-30] [Satin, 31-45] [Semigloss, 46-60] [Gloss, 61-100]** gloss units measured on  
302 60-degree gloss meter per ASTM D523.

303 Opaque Finish:

304 Grade: [Premium] [Custom] [Economy] [Same as item to be finished].  
305 Finish: System - [1, nitrocellulose lacquer] [2, precatalyzed lacquer] [3, postcatalyzed lacquer] [4,  
306 water-based latex acrylic] [5, conversion varnish] [7, catalyzed vinyl] [8, water-based cross-linking  
307 acrylic] [9, UV curable acrylated epoxy, polyester, or urethane] [10, water-based UV curable] [11,  
308 catalyzed polyurethane] [12, water-based polyurethane] [13, catalyzed polyester].  
309 Colors: [As indicated by manufacturer's designations] [Match Architect's samples] [As selected by  
310 Architect from manufacturer's full range].  
311 Sheen: **[Flat, 15-30] [Satin, 31-45] [Semigloss, 46-60] [Gloss, 61-100]** gloss units measured on  
312 60-degree gloss meter per ASTM D523.

313 **EXECUTION**

314 **PREPARATION**

315 Before installation, condition paneling to humidity conditions in installation areas.



316 Before installing paneling, examine shop-fabricated work for completion and complete work as required,  
317 including removal of packing and backpriming.

## 318 **INSTALLATION**

319 Grade: Install paneling to comply with quality standard grade of paneling to be installed.

320 Install paneling level, plumb, true in line, and without distortion. Shim as required with concealed shims.  
321 Install level and plumb to a tolerance of **1/8 inch in 96 inches (3 mm in 2400 mm)**. Install with no more  
322 than **1/16 inch in 96-inch (1.6 mm in 2400-mm)** vertical cup or bow and **1/8 inch in 96-inch (3 mm in 2400-**  
323 **mm)** horizontal variation from a true plane.

324 Scribe and cut paneling to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.

325 Anchor paneling to supporting substrate with [concealed panel-hanger clips] [splined connection strips]  
326 [blind nailing].

327 Do not use face fastening unless **[covered by trim] [otherwise indicated]**.

328 Complete finishing work specified in this Section to extent not completed at shop or before installation of  
329 paneling. Fill nail holes with matching filler where exposed.

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

332 See [Section 099123 "Interior Painting"] [and] [Section 099300 "Staining and Transparent Finishing"] for  
333 final finishing of installed paneling.

## 334 **ADJUSTING AND CLEANING**

335 Repair damaged and defective paneling, where possible, to eliminate functional and visual defects.  
336 Where not possible to repair, replace paneling. Adjust for uniform appearance.

337 Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

338 **END OF SECTION 064214**