

SECTION 08 14 16
FLUSH WOOD DOORS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section describes the requirements for furnishing and installing flush wood doors.
 - 1. Provide rated and non-rated wood doors at all interior door openings at floors 1 through 14 except for historic doors to be re-used.
- B. Related Sections:
 - 1. Interior architectural woodwork is specified in Section 06 40 23.
 - 2. Hollow metal doors and frames are specified in Section 08 11 13.
 - 3. Stile and rail wood doors are specified in Section 08 14 33.
 - 4. Finish hardware is specified in Section 08 71 00.
 - 5. Glass for vision panels is specified in Section 08 80 00.
 - 6. Field finishing of doors and accessories is specified in Section 09 91 00.

1.02 SUBMITTALS

- A. Product Data: Manufacturer's descriptive and technical data and illustrations for each type of door including details of core and edge construction, and trim for openings.
- B. Shop Drawings: Indicate location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other data.
 - 1. Shop drawings shall comply with AWS Section 1 – Submittals.
 - 2. Furnish an AWS "Certified Compliance Label" on the first page of the shop drawings.
- C. Samples: Submit 12-inch square or larger samples as specified or required to represent required characteristics. Resubmit samples until approved.
 - 1. Doors for Transparent Finish: Door faces with solid wood edging representing typical range of color and grain for each species of veneer. Samples shall be representative of the complete range of wood veneer colors to be expected in the work.
- D. Warranty.
- E. LEED Submittals:
 - 1. Credit IEQ 4.4: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin or binder.
 - a. Furnish the LEED Online Credit Template listing all the composite wood and agrifiber products used in the building, stating that they contain no added urea-formaldehyde resins.
 - b. Required Audit Documentation:
 - 1) Product data that wood and agrifiber products used on the interior of the building contain no added urea-formaldehyde resins.
 - 2) Product data that laminating adhesives used to fabricate on-site and shop-applied composite composite wood and agrifiber assemblies do not contain added urea-formaldehyde resins.

1.03 QUALITY ASSURANCE

- A. Flush wood door construction shall comply with Architectural Woodwork Standards (AWS) Section 9 for Premium grade doors.
- B. Fire-Rated Doors: Provide wood doors that comply with California Building Code (CBC) Section 715; are identical in materials and construction to units tested in door and frame assemblies in accordance with NFPA 252 or UL 10C; and are labeled and listed by UL, Warnock Hersey, or other testing and inspection agency acceptable to authorities having jurisdiction. Labels shall comply with NFPA 80 and be permanently affixed to the door.
- C. Allowable Tolerances:
 - 1. Warp Tolerance: As specified in Section WDMA T-2. In addition, warp tolerance shall apply to pairs of doors and to doors in relation to the frame or jamb in which hung.
 - 2. Squareness: WDMA T-3.
 - 3. Gap Tolerance: As specified in Architectural Woodwork Standards Section 9, Section 4.3.8 and Section 6.1.20.
 - 4. Flushness of Joinery: As specified in Architectural Woodwork Standards Section 9, Section 6.1.21.
- D. Flush wood doors and steel frames specified in Section 08 11 13 shall comply with positive pressure test requirements of NFPA 252 or UL 10C and shall be labeled accordingly by the door and frame manufacturer in a manner approved by authorities having jurisdiction. Door label shall include hourly rating followed by the letter "S" indicating conformance with air leakage resistance testing, serial number, and the listing agency's certification mark.
- E. Temperature-Rise Rating: At exit enclosures and exitways, provide doors that have a temperature-rise rating of 450 deg F maximum in 30 minutes of fire exposure. In addition to the requirements specified for positive pressure test requirements in Paragraph D. above, the door label shall include temperature rise rating.
- F. WI Certified Compliance Program (CCP):
 - 1. Before delivery to the Project site, if the fabricator/supplier is:
 - a. A WI licensee, issue WI "Certificates of Compliance" certifying that items comply with WI requirements for specified grade.
 - b. A non-WI licensee, furnish a WI "Certified Compliance Tracking Acknowledgement" with the original submittal, evidencing that they have arranged for and will pay inspections required by the WI to comply with the specified requirements. Certified Compliance labels shall be affixed by the WI Inspector.
 - 2. Upon completion of installation, furnish a WI Certified Compliance Certificate for the installation.
 - 3. In the event of question as to compliance with the referenced standard of any item of work, the County's Representative may require independent inspection service of questioned items as specified in "Independent Inspection Service" of WI "Services and Quality Control Options" published by the WI.

1.04 ENVIRONMENTAL QUALITY ASSURANCE

- A. Credit IEQ 4.4:
 - 1. Composite wood and agrifiber products used on the interior of the building shall contain no added urea-formaldehyde resin.
 - 2. Laminate adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall not contain added urea-formaldehyde resins.
 - 3. Composite wood and agrifiber products are defined as particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores. Materials considered fixtures, furniture and equipment are not considered base building elements and are not included.

B. Applicable LEED Credits:

1. Credit IEQ 4.4 – Low-Emitting Materials - Composite Wood and Agrifiber Products.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors individually protected with polyvinyl or plastic wrap, identified with manufacturer's name, and name and type of door. Identify each door with same symbol used on door schedule. Leave protection on door during construction.
1. Comply with Architectural Woodwork Standards (AWS) – Section 2 for delivery, storage, and handling of doors.
- B. Store doors covered and flat, supported above a level surface in a dry, well ventilated building in compliance with Architectural Woodwork Standards (AWS) – Section 2.
- C. Do not subject doors to extremely high or low temperatures or humidity.
- D. Handle with clean gloves; do not drag doors across one another or other surfaces.
- E. Certain wood species are light sensitive. Protect doors from exposure to natural and artificial light after delivery.

1.06 PROJECT CONDITIONS

- A. Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during the remainder of construction period in compliance with the requirements specified in Architectural Woodwork Standards (AWS) – Section 2.

1.07 WARRANTY

- A. Warrant each solid core interior door against defects in materials and workmanship for the life of the original installation, including costs of re-hanging. Defects include, but are not limited to the following:
1. Cores shall not telegraph through door faces. Stile, rail, and core show-through shall be considered a defect when the face of the door varies from a true plane in excess of 0.010-inch in a 3-inch span.
 2. Doors shall not have warped (bow, cup, or twist) more than that permitted in Architectural Woodwork Standards (AWS) Section 6.1.21.
- B. This warranty shall be in addition to and not a limitation of other rights the County may have against the Developer Design/Builder under the Contract Documents.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

- A. Algoma Hardwoods, Inc., Eggers, Graham, Marshfield Door Systems, VTI, Western Oregon Door or approved equal.

2.02 FLUSH WOOD DOORS, GENERAL

- A. Type: Flush veneered, five-ply construction. Doors with seven-ply construction will not be acceptable.
- B. Door Grade:
1. Fabricate flush wood doors to receive transparent finish in accordance with Architectural Woodwork Standards (AWS) Section 9, Premium Grade.
 2. Fabricate flush wood doors to receive opaque finish in accordance with Architectural Woodwork Standards (AWS) Section 9, Custom Grade.
- C. Cross Banding: Manufacturer's standard, minimum 1/16-inch thick. Fire-retardant treated where required by testing agency.
- D. Door Thickness: 1-3/4-inches.

- E. Fabricate wood doors for either job-site fitting or factory fit doors to suit frame-opening sizes, at the Developer Design/Builder's option. Factory fit doors shall comply with the following uniform clearances and bevels:
 - 1. Non-rated Doors:
 - a. Jambs and Heads: 1/8-inch.
 - b. Meeting Stiles of Pairs of Doors: 1/16-inch.
 - c. Bottom of Door to Top of Finish Floor: 1/2-inch at concrete and resilient flooring, 3/8-inch at carpet, tile, threshold and other finish flooring.
 - 2. Fire-rated Doors: Comply with requirements of CBC Section 715 and NFPA 80.
- F. For doors that are pre-machined, factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame shop drawings, DHI A115-W series standards, and hardware templates.
 - 1. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with factory machining.
- G. Factory Finishing:
 - 1. Transparent Finish Doors: Prefinish to match County's Representative approved samples as follows:
 - a. Architectural Woodwork Standards (AWS) Section 5, Premium Grade.
 - b. Finish: Manufacturer's standard finish with performance requirements comparable to Architectural Woodwork Standards (AWS) Section 5, System 12 – Polyurethane, Water-Based, complying with VOC requirements.
 - c. Staining: Match County's Representative approved sample.
 - d. Effect: Filled finish.
 - e. Sheen: Satin, 31- to 45-degrees.

2.03 INTERIOR FLUSH WOOD DOORS

- A. Veneer:
 - 1. Transparent Finish Doors
 - a. Veneer Species and Grade: Architectural Woodwork Standards (AWS) Grade AA, rift cut, species to be selected.
 - b. Veneer Matching: Book and balance matching.
 - c. Pairs and Sets: Provide pair matching and set matching for pairs of doors and for doors hung in adjacent sets.
 - d. Doors in same room or area shall be matched for color and grain.
 - e. Doors that are adjacent to or become a component of other architectural woodwork shall conform to the applicable requirements of AWS Section 4 – Sheet Products and Section 06 40 23.
- B. Adhesive: NWWDA IS-1.6, Type II adhesive bond or better for cores, Type I adhesive bond for faces and cross bands.
- C. Cores:
 - 1. 20-Minute Fire-Rated Doors and Non-rated Doors (PC-5): Solid particleboard conforming to ANSI A208.1, Grade LD-2, made with binder containing no urea-formaldehyde resin.

2. Fire-Rated Doors Greater than 20-Minute Rated (FD-5): Incombustible mineral approved by labeling authority. Provide top, bottom, and intermediate blocking for surface-mounted hardware.
 3. Where the distance between the lock cutout and the vision lite cutout require, provide door manufacturer's structural composite lumber core (SCLC-5). Notify the County's Representative if the vision lite size and lock location exceeds door manufacturer's maximum dimension.
- D. Edge Construction:
1. 20-Minute Fire-Rated Doors and Non-rated Doors:
 - a. Stiles and Rails: Minimum 1-3/8-inch wide by full core thickness glued to core. Provide wider hinge stile where recommended by door manufacturer for door size and type of hinges to be used. Exposed edges of stiles shall be smooth, straight cut, free from knots, pitch pockets, and other defects for a minimum distance of 1/4-inch from the outside edge along the entire stile.
 - b. Species:
 - 1) Stiles: Same species as face for doors to receive transparent finish with no finger joints permitted on lock stiles.
 - 2) Rails: Hardwood or softwood at manufacturer's option.
 - c. Edge Banding: Minimum 1/2-inch wide by full core thickness. Edge bands if used may reduce the width of stiles and rails.
 - 1) Species for doors to receive transparent finish shall be same as face with no finger joints permitted on lock stile.
 2. Fire-Rated Doors Greater than 20-Minute Rated:
 - a. Top Rail: Door manufacturer's standard special laminated material.
 - b. Stiles and Rails: Hardwood, fire-retardant treated where required by label. Where not required to be fire-retardant treated, provide same species for stiles as face veneer for doors to receive transparent finish. Sizes required by testing agency.
 3. Bevel non-rated doors 1/8-inch in 2-inches at lock and hinge edges.
 4. Bevel fire-rated doors 1/8-inch in 2-inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

2.04 DOOR LOUVERS

- A. Type: Prefabricated 20-gauge steel units.
- B. Finish: Manufacturer's standard baked-enamel finish, of color selected by County's Representative.

2.05 LIGHT FRAMES

- A. Non-Rated Doors and 20 Minute Fire-Rated Doors: Same wood species as door faces, profile as approved.
- B. Fire-Rated Doors over 20 minutes: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in fire-rated doors. Include concealed metal glazing clips where required for opening size and fire ratings scheduled.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine door frames and verify that frames are of the correct type and have been installed as required for proper hanging of corresponding doors. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Condition doors to average prevailing humidity in installation area prior to hanging.

3.03 INSTALLATION

- A. Install wood doors in accordance with the manufacturer's printed instructions and in accordance with Architectural Woodwork Standards, Section 9.
- B. Factory-finished doors shall be installed just prior to Substantial Completion.
- C. Fire-Rated Doors: Install in fire-rated frames in accordance with requirements of NFPA Standard No. 80.
- D. Job-Fit Doors: For doors not factory-machined, align and fit doors in frames with uniform clearances and bevels as specified; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
 - 1. Fitting Clearances:
 - a. Non-rated Doors:
 - 1) Jambs and Heads: 1/8-inch.
 - 2) Meeting Stiles of Pairs of Doors: 1/16-inch.
 - 3) Bottom of Door to Top of Finish Floor: 1/2-inch at concrete and resilient flooring, 3/8-inch at carpet, tile, thresholds and other finish flooring.
 - b. Fire-rated Doors: As specified in CBC Section 715 and NFPA 80.
 - 2. Bevel non-rated doors 1/8-inch in 2-inches at lock and hinge edges.
 - 3. Bevel fire-rated doors 1/8-inch in 2-inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.
- E. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- F. Cutouts, Recesses, and Exposed Rail Edges: Unless factory provided, paint with two coats of clear sealer, each coat well dried, before hardware is set in place.
- G. Meeting stiles of pairs of doors shall be in alignment along the entire height, and offset between adjacent leaves shall not exceed 1/8-inch.

3.04 ADJUSTING AND PROTECTION

- A. When complete, doors shall be flat within allowable tolerance, shall be plumb in all positions of swing, and shall operate smoothly, quietly, and free from binding. Re-hang or replace doors that do not swing or operate freely.
- B. Exposed surfaces shall be uniform in appearance, clean and free from scratches, tool marks, dents, discoloration, stains, and other damage and defects.
- C. Refinish or replace doors damaged during installation.
- D. Protect doors as recommended by door manufacturer to ensure that doors will be without damage or deterioration at completion of Project.

END OF SECTION