SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid core doors and panels with wood veneer and plastic laminate faces.
   2. Factory finishing flush wood doors.
   3. Factory fitting flush wood doors to frames and factory machining for hardware.

B. Integration of Security System: The integration of a security system into the flush wood door is required. Make provisions for and coordinate components and installation.

1.2 ACTION SUBMITTALS

A. Product Data: Technical data including details of core and edge construction**,** trim for openings and factory finishing.
   1. Submit laboratory test report results of hinge loading, cycle/slam, stile edge screw withdrawals, and stile edge split resistance for fire rated doors.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
   1. Dimensions and locations of blocking.
   2. Dimensions and locations of mortises and holes for hardware.
   3. Dimensions and locations of cutouts.
   4. Undercuts.
   5. Requirements for veneer matching.
   6. Doors to be factory finished and finish requirements.
   7. Fire protection ratings for fire rated doors.

C. Samples:
   1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches (200 by 250 mm), for each material and finish**.**
   2. Plastic laminate, 6 inches (150 mm) square, for each color, texture, and pattern selected.
   3. Corner sections of doors, approximately 8 by 10 inches (200 by 250 mm), with door faces and edges representing actual materials to be used.
      a. Provide Samples for each species of veneer and solid lumber required.
      b. Provide Samples for each color, texture, and pattern of plastic laminate required.

c. Finish veneer-faced door Samples with same materials proposed for factory-finished doors.

4. Louver blade and frame sections, 6 inches (150 mm) long, for each material and finish specified.

5. Frames for light openings, 6 inches (150 mm) long, for each material, type, and finish required.

1.3 INFORMATIONAL SUBMITTALS

A. Certificate of Compliance for Fire Rated Doors: Provide copies of Certificate of Compliance for all fire rated door assemblies, smoke and draft control door assemblies, and temperature rise rated door assemblies.

1.4 QUALITY ASSURANCE

A. Quality Standard: Comply with the applicable provisions and recommendations of AWI Architectural Woodwork Quality Standards; where standards and specifications conflict the more stringent shall be required.

B. Source Limitations: Obtain flush wood doors from single manufacturer.

C. Preinstallation Conference: Conduct conference at site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Protect wood doors during transit, storage, and handling to prevent damage, soiling, and deterioration. Store wood doors on a flat level surface in a dry, well ventilated, place. Keep wood doors a minimum of 3-1/2 inches off floor surface and protected by a protective covering under the bottom door and over the top door. Cover to protect wood doors from dirt, water and abuse but allow for air circulation under and around the stack. Do not store wood doors in direct sunlight.

C. Package doors individually in heavy duty cardboard cartons prior to shipment from factory. Mark each door on top and bottom rail with opening number used on Shop Drawings using temporary, removable, or concealed markings.

D. Handle wood doors with clean gloves. Lift and carry wood doors when moving around the site, do not drag wood doors across one another.

E. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.6 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating

and maintaining ambient temperature and humidity conditions at occupancy levels during remainder of construction period.

B. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, wet work is complete, and HVAC system is operating and maintaining temperature between 60 degrees F and 90 degrees F (16 degrees C and 32 degrees C) and relative humidity between 17 and 50 percent during remainder of construction period.

1.7 WARRANTY

A. Written warranty signed by Manufacturer in which Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to, the following:
      a. Warping (bow, cup, or twist) more than 1/4 inch (6.4 mm) in a 42 inch by 84 inch (1067 mm by 2134 mm) section.
      b. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3 inch (0.25 mm in a 76.2 mm) span.
   2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
   3. Warranty Period for Solid Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Quality Standard: In addition to requirements specified, comply with AWI Architectural Woodwork Standards.

B. Fire Rated Wood Doors: Doors complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
   1. Oversize Fire Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.
   2. Temperature Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 degrees F (250 degrees C) above ambient after 30 minutes of standard fire test exposure.
   3. Cores: Provide core specified or mineral core as needed to provide fire protection rating indicated.
   4. Edge Construction: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed edges.

5. Pairs: Provide fire retardant stiles that are listed and labeled for applications indicated without formed steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
6. Pairs: Provide formed steel edges and astragals with intumescent seals.
    a. Finish steel edges and astragals with baked enamel color selected by Architect.
    b. Finish steel edges and astragals to match door hardware (locksets or exit devices).

C. Smoke and Draft Control Door Assemblies: Listed and labeled for smoke and draft control, based on testing according to UL 1784.

2.2 FLUSH WOOD DOORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Forte Openings
2. Lambton Doors.
3. Oregon Door.
4. Oshkosh Door Company.
5. Vancouver Door Company.
6. VT Industries, Inc.

B. Quality Standard: In addition to requirements specified, comply with AWI Architectural Woodwork Standards.

C. Particleboard Core Doors:
1. Particleboard: ANSI A208.1, Grade LD-2.
2. Particleboard: Straw based particleboard complying with requirements in ANSI A208.1, Grade M-2, except for density.
3. Blocking: Provide wood blocking in particleboard core doors as necessary to eliminate through bolting hardware and follows:
    a. 5 inch (125 mm) top rail blocking, in doors indicated to have closers.
    b. 5 inch (125 mm) bottom rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.
    c. 5 inch (125 mm) midrail blocking, in doors indicated to have exit devices.
4. Provide doors with glued wood stave or structural composite lumber cores instead of particleboard cores for doors indicated to receive exit devices.
5. Edge Construction: At hinge stiles, provide laminated edge construction with improved screw holding capability and split resistance. Comply with specified requirements for exposed edges.
    a. Screw Holding Capability: 550 lbf (2440 N) per WDMA T.M.-10.

D. Structural Composite Lumber Core Doors:
1. Structural Composite Lumber: WDMA I.S.10.

a. Screw Withdrawal, Face: 700 lbf (3100 N).
b. Screw Withdrawal, Edge: 400 lbf (1780 N).

E. Mineral Core Doors:
1. Core: Noncombustible mineral product complying with requirements of referenced quality standard and testing and inspecting agency for fire protection rating indicated.
2. Blocking: Provide composite blocking with improved screw holding capability approved for use in doors of fire protection ratings indicated:
a. 5 inch (125 mm) top rail blocking.
b. 5 inch (125 mm) bottom rail blocking, in doors indicated to have protection plates.
c. 5 inch (125 mm) midrail blocking, in doors indicated to have armor plates.
d. 5 inch (125 mm) midrail blocking, in doors indicated to have exit devices.
3. Edge Construction: At hinge stiles, provide laminated edge construction meeting label requirements and tested to specified direct screw withdrawal, split resistance, cycle slam, and hinge loading criteria. Comply with specified requirements for exposed edges.
a. Screw Holding Capability: 550 lbf (2440 N) per WDMA T.M.-10.
4. Vertical Edge Construction: Provide edge construction with intumescent seals concealed by outer stile meeting or exceeding the specified direct screw withdrawal, split resistance, cycle slam, and hinge loading criteria. Comply with specified requirements for exposed edges.
a. Split Resistance: Not less than 696 pounds when tested in accordance with WDMA TM-5; or, not less than 1305 pounds when tested in accordance with ASTM D143.
b. Cycle/Slam: Not less than 200,000 cycles with no loosening of hinge screws or other visible signs of failure when tested in accordance with the requirements of WDMA TM-7; or, not less than 502,000 cycles when tested in accordance with ANSI A151.1
c. Direct Screw Withdrawal: Not less than 700 pounds when tested in accordance with WDMA TM-10; or, not less than 877 pounds when tested in accordance with ASTM D1037 using #12 x 1-1/4 steel screws, threaded to the head with either A or AB wood threads.
d. Hinge Loading: Not less than 684 pounds average when tested in accordance with WDMA TM-8.
5. Pairs: Provide formed steel edges and astragals with intumescent seals.
a. Finish steel edges and astragals with baked enamel same color as doors.

2.3 VENEER FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid Core Doors:
1. Grade: Premium, with Grade A faces.
2. Species: Indicated in Finish Schedule Hard White Maple, stained and finished as selected by Architect..
3. Cut: Rift cut.

4. Match between Veneer Leaves: Reverse Slip match.
5. Assembly of Veneer Leaves on Door Faces: Balance match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Room Match: Match door faces within each separate room or area of building. Corridor door faces do not need to match where they are separated by 20 feet (6 m) or more.
8. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
9. Transom Match: End match.
10. Blueprint Match: Where indicated, provide doors with faces produced from same flitches as adjacent wood paneling and arranged to provide blueprint match with wood paneling. Comply with requirements in Section 06 42 16.
11. Exposed Vertical and Top Edges: Same species as faces - edge Type A.
12. Core: Particleboard except where indicated otherwise for fire-rating and/or hardware mounting requirements..
13. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before veneering. Faces are bonded to core using a hot press.
14. WDMA I.S.1-A Performance Grade:
    a. Heavy Duty unless otherwise indicated.
    b. Extra Heavy Duty: Provide at toilet rooms, Janitor's Closets, Assembly Spaces, Exits and along the Egress path.

2.4 PLASTIC LAMINATE FACED DOORS

A. Interior Solid Core Doors:
   1. Grade: Premium.
   2. Plastic Laminate Faces: High pressure decorative laminates complying with NEMA LD 3, Grade HGS.
   3. Colors, Patterns, and Finishes: As indicated.
   4. Exposed Vertical and Top Edges: Plastic laminate that matches faces, applied before faces.
   5. Core: Particleboard.
   6. Construction: Five plies. Stiles and rails are bonded to core, then entire unit is abrasive planed before faces and crossbands are applied. Faces are bonded to core using a hot press.
   7. WDMA I.S.1-A Performance Grade: Heavy Duty.

2.5 LIGHT FRAMES AND LOUVERS

A. Wood Beads for Light Openings in non fire rated Wood Doors: Provide wood beads unless otherwise indicated.
   1. Wood Species: Same species as door faces.
   2. Profile: Flush rectangular beads.
   3. At wood core doors with 20 minute fire protection ratings, provide wood beads and metal glazing clips approved for use.

B. Wood Veneered Beads for Light Openings in Fire Rated Wood Veneer Doors: Wood veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire protection rating indicated. Include concealed metal glazing clips where required for opening size and fire protection rating indicated.

C. Metal Frames for Light Openings in Fire Rated Doors: Frame formed of 0.048 inch (1.2 mm) thick, cold rolled steel sheet; with factory applied baked enamel or powder coated finish; and approved for use in doors of fire protection rating indicated.

2.6 FABRICATION

A. Factory fit doors to suit frame opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

1. Comply with NFPA 80 requirements for fire rated doors.

B. 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, BHMA-156.115-W, and hardware templates.

1. Coordinate with hardware mortises in metal frames to verify dimensions and alignment before factory machining.
2. Metal Astragals: Factory machine astragals and formed steel edges for hardware for pairs of fire rated doors.

C. Transom and Side Panels: Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors. Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.

1. Fabricate door and transom panels with full width, solid lumber meeting rails. Provide factory installed spring bolts for concealed attachment into jambs of metal door frames.

D. Openings: Factory cut and trim openings through doors.

1. Light Openings: Trim openings with moldings of material and profile indicated.
2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 08 80 00.
3. Louvers: Factory install louvers in prepared openings.

2.7 FACTORY FINISHING

A. Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.

B. Factory finish doors.

C. Transparent Finish:

1. Grade: Premium.
2. Finish: AWI Architectural Woodwork Standards System 5, conversion varnish System 11, catalyzed polyurethane.
3. Staining: Selected by Architect.
4. Effect: Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
5. Sheen: Satin.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and installed door frames before hanging doors.
   1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
   2. Reject doors with defects.

B. Proceed with installation after correcting unsatisfactory conditions.

3.2 INSTALLATION

A. Hardware: Refer to Section 08 71 00.

B. Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
   1. Install fire rated doors according to NFPA 80.
   2. Install smoke and draft control doors according to NFPA 105.

C. Job Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
   1. Clearances: Provide 1/8 inch (3.2 mm) at heads, jambs, and between pairs of doors. Provide 1/8 inch (3.2 mm) from bottom of door to top of decorative floor finish or covering unless otherwise indicated. Where threshold is shown or scheduled, provide1/4 inch (6.4 mm) from bottom of door to top of threshold unless otherwise indicated.
      a. Comply with NFPA 80 for fire rated doors.
   2. Bevel nonfire rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock and hinge edges.
   3. Bevel fire rated doors 1/8 inch in 2 inches (3-1/2 degrees) at lock edge; trim stiles and rails only to extent permitted by labeling agency.

D. Factory Fitted Doors: Align in frames for uniform clearance at each edge.

E. Factory Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 ADJUSTING

A. Operation: Rehang or replace doors that do not swing or operate freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION

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