

SECTION 08212

STILE AND RAIL WOOD DOORS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Stile and rail wood doors:
 - 1. 20 minute fire rated.
 - 2. 45 minute fire rated.
 - 3. 60 minute fire rated.
 - 4. Non-rated.
 - 5. Factory pre-fit.
 - 6. Factory finished.

B. Wood frames.

C. Wood panels.

D. Glass panels.

E. Transom panels.

F. Wood jambs.

1.2 RELATED SECTIONS

- A. Section 06200 - Finish Carpentry: Wood door frames.
- B. Section 08112 - Standard Steel Frames; Steel door frames.
- C. Section 08211 - Flush Wood Doors.
- D. Section 08712 - Door Hardware.
- E. Section 08800 - Glass and Glazing.
- F. Section 09900 - Painting and Site Finishing Doors.
- G. Section _____ - _____.

1.3 REFERENCES

- A. AWI - Quality Standards of Architectural Woodwork Institute, Seventh Edition.
- B. NWWDA I.S.1.A - Architectural Stile and Rail Door.
- C. NFPA 80 - Fire Doors and Windows, 1995 Publication.

- D. NFPA 252 - Standard Method of Fire Test for Door Assemblies.
- E. Intertek Testing Services/Warnock-Hersey - Certification Listings for fire doors.
- F. _____.

1.4 SUBMITTALS

- A. Submit each item in this article according to the conditions of the Contract and under provisions of Section 01300.
- B. Product Data: Manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers, factory finishing specifications, and warranty.
- C. Shop Drawings: Prepared specifically for this project indicating location and size of each door, veneer species, type and characteristics, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing, requirements for glass and glazing, and other pertinent data.
 - 1. For factory-premachined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
 - 2. Use same reference numbers for openings and details as contract drawings.
- D. Samples:
 - 1. When factory finished, provide manufacturer's standard of color charts, followed by two plywood physical samples, 8-1/2 by 11 inches (215 by 280 mm) in size, illustrating wood grain, stain, color, range, and sheen for Architect's approval.
 - 2. Architect has the option to furnish a color for the manufacturer to match.
 - 3. As an option, submit construction corner samples cut away to show stile, rails, crossbanding, core, and face veneer. Samples 8-1/2 by 11 inches (215 by 280 mm) or larger.
 - 4. Manufacturer's Instructions:
 - a. Instructions regarding care of door during shipping, unloading, storage, and preparation for hanging.

- b. Installation instructions indicating special installations.
- c. Maintenance instructions for sealing door edges.

1.5 QUALITY ASSURANCE

- A. Perform work in accordance with AWI Quality Standards, Seventh edition, Section 1400.
 - 1. Premium Grade.
 - 2. Custom Grade.
- B. Finish doors in accordance with AWI Quality Standards, Seventh edition, Section 1500.
 - 1. Grades identified in Schedule, herein.
 - 2. Grades identified in Section _____.
- C. Fire Door Construction: Conform to NFPA 252.
 - 1. Panel Construction: Same as door.
- D. Installed Fire Door Assembly: Conform to NFPA 80 and all local codes and ordinances for fire rated class as scheduled or otherwise indicated.
 - 1. Transom Panel Assembly: Same as door.
- E. Single Source Responsibility: Provide wood doors for Sections 08212, 08211, and 08213 from a single manufacturer to ensure uniformity in quality of appearance, face veneer, finish, and construction.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Handle doors at the site in accordance with AWI Section 1400-G-7, "Care and Installation at Jobsite," as well as with manufacturer's instructions.
- B. Delivery:
 - 1. 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 remainder of construction period and after installation to comply with the following requirements applicable to project's geographical location:
 - a. Reference 7th Edition of AWI quality standard including Section 100-S-11 "Relative Humidity and Moisture Content."
 - 2. Individually protect factory finished doors to prevent damage.

3. Deliver no doors to the building until wet construction operations are completed and dry, and weatherproof storage space is available.
4. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Storage:

1. Store doors in a clear dry ventilated space having controlled temperature and relative humidity range between 30 and 60 percent. Stack doors flat and off the floor, supported to prevent warpage.
2. Avoid extreme heat, cold, dryness, or humidity by storing doors in a closed-in building with operational HVAC system.
3. Store flat over level surface above floor on wood blocking.

D. Handling:

1. Do not walk on or place other materials on top of stacked doors.
2. Handle doors with clean gloves. Lift or carry, do not drag across one another.
3. Cover doors to keep clean and avoid discoloration with an opaque covering which does not permit light to penetrate during storage or staging. Covering must allow air circulation.
4. At time of installation the protective door wrapping is to remain in place, for door protection, until all work by other trades is completed and final inspection is finished.
5. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door frames and hardware.

1.7 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings, prepared by the manufacturer before proceeding with factory machining.

1.8 COORDINATION

- A. Coordinate work under provisions of Section 01040.
- B. Coordinate the work with door opening construction, door frame, and door hardware installation.

1.9 WARRANTY

- A. General Warranty: Door manufacturer's warranty specified in this article shall not deprive the Owner of other rights the Owner may have under other provisions of the contract documents and shall be in addition to and run concurrent with other warranties made by the Contractor under requirements of the contract documents.
- B. Warrant doors by the manufacturer to be free of manufacturing defects as follows:
 - 1. Interior, Non-Rated and 20 minute: Life of original installation.
 - 2. Interior, 45 and 60 minute: Life of original installation.
 - 3. Exterior, Non-Rated and 20 minute: One year with proper installation for protection from weather elements.
 - 4. Exterior, 45 and 60 minute: Not available.
- C. Exceptions to details or fire rating as shown on plans that may affect the door manufacturer's warranty, or specific fire rating, shall be brought to the attention of the Architect in writing at time of submission of shop drawings.
- D. Submit written warranty agreement signed by Manufacturer, Installer, and Contractor agreeing to pay a reasonable charge to remove a defective door and rehang with a new door provided the defect was not apparent prior to installation and tolerance limitations of the defect do not comply to referenced quality standards.
- E. Contractor's Responsibilities: Replace or refinish doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Products and materials of the following listed manufacturers are acceptable only if specific products and materials can evidence exact compliance with requirements of Contract Documents and these Specifications. ASD.
 - 1. Buell Door Company.

2. The Maiman Company.

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

C. Substitutions: Not permitted.

D. Provide all wood doors from a single manufacturer.

2.2 ACCEPTABLE PRODUCTS

A. Custom Grade Non-Rated and 20 Minute Rated Doors:

1. 3 ply 1/16 inch (1.6 mm) thick face veneered stiles and rails of Laminated Strand Lumber (LSL) core by Trus Joist MacMillan; matching edgebands; 1-1/2 inch (38 mm) thick rim banded tongue and grooved panels, mitered and reinforced with splines; book matched veneers.

2. 5 ply construction of 1/32 inch (0.8 mm) face veneer with 1/16 inch (1.6 mm) crossband hot pressed to Laminated Strand Lumber (LSL) core, matching edgebands; 1-1/2 inch (38 mm) thick rim banded tongue and grooved panels, mitered and reinforced with splines; book matched veneers.

3. Door Thickness: 1-3/4 inches (44 mm).

4. Door Thickness: 2-1/4 inches (57 mm).

B. Fire Doors: 45 minute and 60 minute, Intertek Testing Service/Warnock-Hersey rating.

1. Thickness: 1-3/4 inches (44 mm).

2. Frames, Hinges, and Locks: In accordance with manufacturer's specifications and NFPA 80. Available 8 feet by 8 feet (2.438 by 2.438 m) on paired openings.

C. Frames: Hardwood species to match door species in profiles as detailed on plans.

1. Non-Rated, 20-Minute Rated Frames:

a. Solid hardwood.

b. Veneered MDF.

2. Fire-Rated 45- and 60-Minute Wood Frames: Georgia-Pacific Veneered Firestop Frame.

2.3 DOOR, FRAME, AND TRANSOM PANEL TYPES

A. Interior Doors:

1. Veneer and Laminated Strand Lumber (LSL) stile and rail construction.

2. Doweled and glued joints.

3. Thickness: 1-3/8 inches (35 mm).

4. Thickness: 1-3/4 inches (44 mm).
5. Thickness: 2-1/4 inches (57 mm).
6. Fire rated.

B. Exterior Doors:

1. Veneer and Laminated Strand Lumber (LSL) stile and rail construction.
2. Doweled and glued joints.
3. Thickness: 1-3/4 inches (44 mm).
4. Thickness: 2-1/4 inches (57 mm).

C. Style:

1. Panel.
2. Panel and glass.
3. Sash.
4. French.
5. Louvered.
6. Louver and panel.
7. Movable louver.
8. Chevron style louver.
9. Buell Style No. _____.
10. False louver.
11. Full lite.
12. Sketch face panels as detailed in plans.

D. Transom Panels: Match door, panel face veneer, and other door characteristics indicated.

1. Panel face veneer to match.
2. Panel face veneer to end match.
3. Fire rated.

E. Frames: Hardwood of species to match door species, in profiles as detailed in plans.

2.4 DOOR AND TRANSOM PANEL CONSTRUCTION

A. Core: AWI Section 1400, Type SRC-Stile and Rail.

2.5 DOOR FACE VENEER

A. Interior Doors: NFPA 80-1-2.5.

1. Quality: AWI Custom.
2. Species: _____.

B. Exterior Doors:

1. Quality: AWI Custom.
2. Species: _____.

2.6 ADHESIVES

A. Adhesives: Type I waterproof.

2.7 ACCESSORIES

A. Glazing Stops: Manufactured in accordance with requirements for component of a 20 minute fire rated door.

1. Wood of same species as door facing.
2. Wood with metal clips for rated doors.
3. Mitered corners.
4. Attachments: No. 4 finishing nails.
5. Removable stop.

B. Molding: Wood of same species as door facing, 1/2 inch (12.7 mm) quarter round, mitered corners, with profiles as detailed in plans.

1. 3/8 inch (9.5 mm) quarter round.
2. 3/8 inch (9.5 mm) _____.
3. Mitered corners.
4. Attachments: No. 4 finishing nails.

2.8 FABRICATION

A. Fabricate doors in accordance with AWI Custom Grade Quality Standards requirements.

B. Non-Rated and 20 Minute Fire-Rated Doors:

1. Stile and Rail Construction:
 - a. 3 ply 1/16 inch (1.6 mm) face veneer prior to sanding, hot pressed on with Laminated Strand Lumber (LSL) core; assemble with dowels and Type I waterproof cross-link PVA glue under pressure.
 - b. 5 ply construction of 1/32 inch (0.8 mm) face veneer and 1/16 inch (1.6 mm) crossband hot pressed to Laminated Strand Lumber (LSL) core; assemble with dowels and Type I waterproof cross-link PVA glue under pressure.
2. Stile Edges: 1/2 inch (12.7 mm) Premium grade hardwood, same as face veneer.
3. Panel Construction: Standard Rim Raised panel 3-ply with 1/32 inch (0.8 mm) face veneer, lumber banded, particleboard core, mitered corners.
4. Panel Construction: Flush Panel 5/8 inch (15.9 mm) thick, 3-ply with 1/32 inch (0.8 mm) face veneer, lumber banded, particleboard core, mitered corners.
5. Panel Construction: Rangerboard MDF flush or raised panel, lumber banded for paint grade doors only.

6. Louvers: Non-rated; wood chevron and slat type, vented or unvented.
 7. Lites: Labeled 1/4 inch (6.3 mm) wire glass, Firelite or approved equal.
 8. Moldings: Custom or manufacturer's standard.
 9. STC: 36.6.
 10. Security Rating: Grade 40.
 11. Pairs: 20 minute pairs require fire retardant meeting edges.
- C. Fire Rated 45 and 60 Minute Raised Panel Doors:
1. Stile and Rail Construction:
 - a. Top and Bottom: 15/16 inch (23.8 mm) fire retardant composition.
 - b. Sides: 1-3/36 inch (30.1 mm) 2-ply construction with hardwood outer band, fire retardant composition interband.
 2. Core: Non-combustible cross-ply laminated core.
 3. Raised Panels: Veneered and glued to core in accordance to patented stile and rail construction, labeled by Intertek Testing Services/Warnock-Hersey International.
 4. Moldings: Manufacturer's standard design; approved metal glazing system required for glazed doors.
 5. Pairs: Door factory supplied, machined metal edges and overlapping astragal.
- D. Machine doors for finish hardware in accordance with hardware requirements and dimensions, and with NFPA 80-1-3.5; machine all fire doors in the factory or by an authorized machining distributor.
- E. Make cutouts for glazing at the factory; allow 5-1/2 inches (139 mm) minimum from cutout to a mortised hardware item.
- F. Factory pre-fit doors for frame opening dimensions identified on shop drawings.

2.9 FABRICATION TOLERANCES

- A. Size:
1. Thickness: Plus or minus 1/16 inch (1.6 mm).
 2. Height: Plus or minus 1/16 inch (1.6 mm).
 3. Width: Plus or minus 1/32 inch (0.8 mm).
- B. Squareness: Diagonal measures not to exceed 1/16 inch (1.6 mm).

C. Hardware Location: Plus or minus 1/32 inch (0.8 mm).

2.10 FINISH

A. Site finishing is specified in Section 09900.

B. Factory finish doors and individually polybag.

C. Transparent Finish: Comply with requirements indicated for grade, finish system, staining effect, and sheen:

1. Grade: Custom.

2. Finish: Manufacturer's standard finish with performance requirements comparable to AWI System TR-4 conversion varnish.

3. Staining: Match approved sample for color.

4. Effect: Open-grain finish.

5. Sheen: Semigloss, 60 percent.

6. Match Buell Door Co. Finish Sample No. _____.

D. Opaque Finish: Comply with requirements indicated for grade, finish system, color, and sheen:

1. Grade: Custom.

2. Finish: Manufacturer's standard finish with performance requirements comparable to AWI System OP-4 conversion varnish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine doors and door frames to verify that frames have been installed as required for proper hanging and operation of doors.

1. Frames must comply with indicated requirements for door type, size, location, and swing characteristics, and have been installed with plumb jambs and level heads.

2. Doors with apparent defects should not be hung.

3. Notify the Architect in writing of conditions detrimental to proper installation and operation of wood doors.

4. Do not proceed with installation until unsatisfactory conditions have been corrected.

5. Proceeding with installation shall be considered as acceptance of door and frame conditions.

3.2 INSTALLATION

- A. Field Finishing: Place door in a horizontal position, thoroughly sand all surfaces with hand block and 150-180 grit sand paper to remove handling marks and raised grain to prevent blotchy appearance.
- B. Adjusting and Cleaning: Doors shall swing in their respective frames free of hinge binding or improper latching.
 - 1. Trim non-rated doors width by cutting equally on both jamb edges. Trim height by cutting bottom edges to a maximum of 3/4 inch (19 mm).
 - 2. Trim fire rated door height at bottom edge and in accordance with fire rating requirements.
 - 3. Rehang or replace doors which do not operate freely as directed by the Architect.
 - 4. Seal cut surfaces after fitting and machining.
 - 5. Leave protective door wrappings in place until all work by other trades is complete and final inspection is finished.
 - 6. Furnish Owner with instructions on cleaning and maintaining doors.
- C. Exterior Doors:
 - 1. Provide aluminum flashings full thickness and width of doors.
 - a. Top rail.
 - b. Bottom rail.
 - c. Sill of glazed openings.
 - 2. Apply three coats of marine finish such as Bruning Paint Super Marine Spar Varnish 508-14, a phenolic alkyd resin varnish.
 - 3. Protect door with canopy.
 - 4. Failure to provide these measures can void manufacturer's warranty.

3.3 INSTALLATION TOLERANCES

- A. Conform to AWI for requirements for fit, joint, and clearance tolerances.
- B. Maximum Diagonal Distortion (Warp): 1/4 inch (6.4 mm) measured with straightedge or taut string, corner to corner, over an imaginary 36 inch by 84 inch (914 by 2,133 mm) surface area.

- C. Maximum Vertical Distortion (Bow): 1/4 inch (6.4 mm)
measured with straightedge or taut string, top to bottom,
over an imaginary 36 inch by 84 inch (914 by 2,133 mm)
surface area.

- D. Maximum Width Distortion (Cup): 1/4 inch (6.4 mm)
measured with straightedge or taut string, edge to edge,
over an imaginary 36 inch by 84 inch (914 by 2,133 mm)
surface area.

3.4 ADJUSTING

- A. Adjust work under provisions of Section 01700.

- B. Adjust doors for smooth and balanced door movement.

3.5 SCHEDULE

END OF SECTION