SECTION 08210 FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flush Wood doors

B. Positive Pressure Fire Rated Wood Doors

C. Factory Glazing for Fire Rated Doors

D. Factory Machining for Hardware

E. Factory Finishing

1.2 RELATED SECTIONS

A. Section 08110 – Steel Doors and Frames

B. Section 08220 - Plastic Doors

C. Section 08710 - Door Hardware

D. Section 08810 - Glazing

E. Section 09900 - Paints and Coatings

F. Section 13710 - Intrusion Detection: Security system

G. Section 13800 - Building Automation and Control: Building monitoring system

H. Section 16123 - Building Wire and Cable: Power supply to electric hardware devices

I. Division 1 Section “LEED Requirements” for additional LEED requirements.

J. Division 1 Section “Construction Waste Management” for general procedures

K. Division 1 Section “Construction Indoor Air Quality Management”

1.3 REFERENCES

A. ASTM - American Society for Testing and Materials

1. ASTM E 90 - Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
2. ASTM E1408 - Standard Test Method for Laboratory Measurement of the Sound Transmission Loss of Door Panels and Door Systems
3. ASTM E 413 - Classification for Rating Sound Insulation.
4. ASTM F 476 Section 18 - Security Test of Swinging Door Assemblies - Door Impact Test

B. ANSI - American National Standards Institute

1. ANSI/DHI A156.115W - Specifications for Hardware Preparation in Wood Doors and Frames.
2. ANSI/DHI A115.IG - Installation Guide for Doors and Hardware.
3. ANSI A156.7 - Hinge Template Dimensions.
4. ANSI/HPVA HP-1 Standards for Hardwood and Decorative Plywood
5. ANSI A208.1-Particleboard
6. ANSI A208.2-Medium Density Fiberboard (MDF)
7. ANSI-ASA S12.60 - Standard Acoustical Performance Criteria, Design Requirements, and Guidelines for Schools
8. ANSI/A117.1 – Accessible and Useable Buildings and Facilities

C. WDMA – Window and Door Manufacturers Association

1. WDMA I.S. 1A, Industrial Standards for Architectural Flush Doors

   a. J-1 – Job Site Information “How to Store, Handle, Finish, Install, and Maintain Wood Doors”
   b. P-1 – Performance Standards for Architectural Wood Flush Doors
   c. T-1 – Test for Telegraphing
   d. T-2 – Test for Warp
   e. T-3 – Test for Squareness

2. WDMA Test Methods (TM)

   a. TM-5 – Split Resistance
   b. TM-6 – Adhesive Bond Durability
   c. TM-7 – Cycle Slam Test
   d. TM-8 – Hinge Loading
   e. TM-10 – Screwholding

D. Building Code references

1. NFPA 80 - Standard for Fire Doors and Other Opening Protective’s.
2. NFPA 101 – Life Safety Code
3. NFPA 105 - Standard for the Installation of Smoke Door Assemblies and Other Opening Protective’s
4. NFPA 252 – Standard Method of Fire Tests of Door Assemblies
5. ANSI/UL 10C - Standard for Safety for Positive Pressure Fire Tests of Door Assemblies
6. UL 1784 - Air Leakage Tests of Door Assemblies
7. UL - Building Materials Directory; Underwriters Laboratories Inc
8. WH - Certification Listings; Warnock Hersey International Inc.
9. Consumer Products Safety Commission (CPSC) 16 CFR 1201 – Standard for Architectural Glazing

1.4 REQUIREMENTS OF REGULATORY AGENCIES

A. Furnish Wood Doors in accordance with the requirements of the following recognized agencies. Wherever possible, all doors and their application are intended to comply with the latest edition of Window and Door Manufacturers Association (WDMA), ANSI A117.1, NFPA 80 and NFPA 101.

B. It is the intent of this specification that all doors and their application shall comply with the standards as listed. The latest publication edition of each standard applies.

C. Fire door assemblies in exit enclosures and exit passageways are to have maximum transmitted temperature end point of not more than 250° above ambient at the end of 30 minutes of the standard fire test exposure.

1.5 SUBMITTALS

A. Submit for review six (6) complete copies of the wood door shop drawings covering complete identification of items required for the project. Include manufacturer's names and identification of product. Include six (6) complete copies of catalog cuts, technical data sheets and other pertinent data as required to indicate compliance with these specifications.

1. Shop Drawings: submit complete and detailed with respect to quantities, dimensions, specified performance, and design criteria, materials and similar data to enable the Architect to review the information as required.

B. Indicate location of cutouts for hardware and blocking to ensure doors are properly prepared and coordinated to receive hardware.

C. Indicate door elevations, internal blocking and cutouts for glass lights and louvers.

D. Shop drawings, product data, and samples: stamp with Contractor's stamp verifying they have been coordinated and reviewed for completeness and compliance with the contract documents.

E. Shop drawings submitted without the above requirements will be considered incomplete, will NOT be reviewed, and will be returned directly to the Contractor.

F. Follow the same procedures for re-submittal as the initial submittal with the appropriate dates revised.

G. Provide evidence of manufacturer's membership in the Window and Door Manufacturers Association

1.6 QUALITY ASSURANCE

A. Select a qualified wood door distributor who is a direct account of the manufacturer of the products furnished. In addition, that distributor must have in their regular employment an Architectural Hardware Consultant (AHC), a Certified Door Consultant (CDC) or an Architectural Openings Consultant (AOC), who will be available to consult with the Architect and Contractor regarding matters affecting the door and frame opening.

B. Conform to requirements of the above reference standards. Submit test reports upon request by the Owner or Architect.

C. Underwriters' Laboratories and Intertek Testing Services / Warnock Hersey, Positive Pressure - Category A labeled fire wood doors:

1. Label fire doors listed in accordance with Underwriters Laboratories standard UL10C, Positive Pressure Fire Tests of Door Assemblies and Air Leakage Tests of Door Assemblies - UL 1784.
2. Construct and install doors to comply with applicable issue of ANSI/NFPA 80.
3. Manufacture Underwriters' Laboratories labeled doors under the UL factory inspection program and in strict compliance to UL procedures, and provide the degree of fire protection, heat transmission and panic loading capability indicated by the opening class.
4. Manufacture Intertek Testing Services / Warnock Hersey labeled doors under the ITS/WH factory inspection program and in strict compliance to ITS/WH procedures, and provide the degree of fire protection capability indicated by the opening class.

5. Affix physical label to fire doors at an authorized and licensed facility as evidence of compliance with procedures of the labeling agency. Labels to be metal. Labels are not to be removed, defaced or made illegible while the door is in service as covered in NFPA 80.
6. Conform to applicable codes for fire ratings. It is the intent of this specification that wood doors comply or exceed the standards for labeled openings. In case of conflict between door types required for fire protection, furnish the type required by NFPA.
7. Validate the Smoke and Draft Control ("S") Label for hardware sets that include Category H smoke and draft control seals
8. All Category G seals required will be concealed in the door or applied to the top rail. No Category G seals will be allowed on the door frame.

D. Door Supplier shall provide one (1) extra door for the door/hardware combinations with the largest number of doors. Architect will select one door at random in the field for destructive sampling to inspect for proper internal construction.

E. Manufacturer Qualifications: Member of WDMA.

F. Warranty: Manufacturer's signed warranty covering manufacturing or material defects for life of original installation, including repair, replacement, machining, and pre-finishing, are required in the manufacturer's warranty for interior doors.

1.7 LEED SUBMITTAL

A. This project is registered with the US Green Buildings Council and shall be certified under the LEED Green Buildings Program. The LEED program of registration is shown below and in Division 1 of this specification.

B. LEED Credits and documentation shall include:

1. Credit EQ 4.4: Provide manufacturer's verification that no component of the door contains added urea formaldehyde. This includes, but is not limited to core, crossband, composite face material and assembly adhesives.
2. Credit MR 4: Provide manufacturer's certification as a percentage by weight for post industrial and post consumer recycled material for all doors on the project and the total value of each door type that contains recycled material.
3. Credit MR 5: Use indigenous resources and reduce environmental impact of transportation. Doors manufactured within 500 miles of the project site shall have some materials extracted, harvested or recovered within the same radius.
4. Credit 7.0: Provide Forest Stewardship Council's (FSC) certificate verifying all doors have been certified FSC and have maintained the Chain of Custody to the job site.

1.8 SAMPLES

A. Sample Submittal

1. Color samples for factory pre-finishing shall consist of four (4) sets of three (3) finish samples per set. Samples to be 5" x 8" size on specified veneer species. The sample should reasonably represent the color range of the veneer species selected.
2. Construction samples. Furnish four (4) each door sections showing door faces, stiles, and core representative of each different door type specified. Samples shall be not less than 5" x 5".

B. If requested by the Architect, submit an 18" X 24" cut-away sample door with provisions for lockset, hinge and top rail.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store and protect doors in accordance with manufacturer's recommendations and Section J-1 of WDMA I.S.1A - “How to Store, Handel, Finish, Install and Maintain Wood Doors”

1. Store doors flat and off the floor on a level surface in a dry, well-ventilated building. Do not store on edge. Protect doors from dirt, water and abuse.
2. Most wood species are light sensitive. Protect all doors from exposure to light (artificial or natural) after delivery.
3. Do not subject interior doors to extremes in either heat or humidity. HVAC systems must be operational and balanced, providing a temperature range of 50 to 80 degrees Fahrenheit and 30% to 60% relative humidity.
4. When handling doors, do not drag across other doors or surfaces. Handle with clean hands or gloves.
5. Each door will be marked on top rail and top hinge pocket with the opening number. Each door will be marked on the top rail with manufacture’s name, factory order number, and order item number.

1.10 COORDINATION

A. Coordinate Work with other directly affected sections involving manufacture or fabrication of internal cutouts and reinforcement for door hardware, electric devices and recessed items. Install necessary blocking in mineral core doors to prevent door failure from surface applied hardware.

B. Coordinate work with frame opening construction, door and hardware installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers for wood doors specified are listed below. Only the products of the listed manufacturers will be accepted. No alternates will be accepted.

1. Algoma Hardwoods, Inc.
2. Eggers Industries
3. Marshfield Door Systems
4. Mohawk Flush Doors, Inc
5. V.T. Industries

B. The manufacturers listed are acceptable providing they adhere to the quality standards as noted herewithin. Any special door construction, noted, shall supersede the manufacturers and industry standard. Products that do not comply with these standards and special construction shall be rejected.

2.2 DOORS

A. All doors shall be constructed in accordance with WDMA, I.S. 1A.

B. All doors to be assembled with Type I (waterproof) adhesive.

C. Non-Fire Rated Wood Doors - All solid core flush wood doors shall meet WDMA Door Grade and Performance Level specified.

1. Custom Grade, and Extra Heavy Duty Performance Level

2. Door Type - PC-5 - Bonded Particle Core, Stiles and rails securely bonded to the core and entire unit abrasively planed prior to application of faces to assure uniform thickness of all components.

D. Fire Rated Wood Doors: Where fire-resistance classifications are shown or scheduled, provide doors which are like the non-fire rated doors above but comply with the WDMA standards for fire rated doors. Doors will meet the requirements of NFPA 80 "Standard for Fire Doors and Windows". Fire rated doors shall bear the label of an inspection program in compliance with UL or ITS/WH procedures.

E. Acoustical Doors

1. Acoustical Doors shall conform to the American National Standard Acoustical Performance Criteria, Design Requirements and Guidelines for Schools, ANSI/ASA, S12.60, 4.5.5.
2. Submit written certification from the manufacturer verifying acoustical performance by an independent accredited testing laboratory and classified in accordance with ASTM E-413.
3. Seals and gasketing provided shall meet the acoustical performance specified.
4. Coordinate door bottom mortise for Solid Wood Edge (SWE) as specified in Section 08710.

F. Veneer And Veneer Matching

1. Veneer Species and Cut: Plain Sliced Red Oak or Plain Sliced Select White Maple **(Select one)**
   a. Veneer Face Grade WDMA: Grade “A” as described in WDMA I.S. 1A and HPVA Door Veneer tables ANSI/HPVA-1.
2. Matching Between Leaves: Book Match
3. Veneer match: Assembly of Spliced Veneer: Running Match
4. Pair match all pairs and set of pairs separated only by mullions.
5. Set match all groups of pairs and/or individual doors indicated on the door schedule or plans.
6. Veneer leaves shall be assembled with minimum Type II water resistant glue.

G. Non Fire Rated Door

1. Core will be Particleboard LD-2. Core will be securely bonded to the stiles and rails with Type I Adhesive.

   a. Particleboard Core (PC) to comply with the minimum physical properties shown in ANSI 208.1 for Grade LD-2. Type II water resistant binder is permitted.

2. Crossbands are to be minimum thickness of 1/16". Composite crossbands of either MDF or particleboard are not permitted unless they meet the following minimum requirements.

   a. Crossbands must extend the full width of the door and have no seams.
   b. Minimum properties for composite crossband must meet physical and mechanical properties of thin MDF - Grade 230 as described in ANSI 208.2

      (i) Internal bond minimum strength of 150 psi.
      (ii) Linear expansion minimum of $\leq$ 0.2 % measured between 50% and 80% relative humidity.

3. Vertical Edges

   a. Matching - same species as face veneer.

b. Vertical Edges to be two piece laminated with matching hardwood outer layer (outer stile) and hardwood lumber or SCL inner layer (inner stile), 1-1/8” minimum before trim.
c. Minimum width of outer stile shall be ¼” after trim.

4. Horizontal Edges

a. Rails must be present on all doors.
Rails are solid lumber, with grain running perpendicular to stiles. SCL is allowed for rails. MDF is unacceptable.

5. Side Panels
a. Fabricate matching panels with same construction as the door. Side panels will be pair matched to the associated door and receive the same finish.

H. Fire-Rated Doors: Provide Positive Pressure Label Doors

1. Positive Pressure labeled doors to be Category A

a. Validate the Smoke and Draft Control (“S”) Label for hardware sets that include Category H smoke and draft control seals.

2. Core material shall be dictated by manufacturer's fire door approvals.

a. Provide 20 and 45 minute fire doors with particleboard core construction minimum LD-2, per ANSI 208.1 where allowed by manufacturers procedure. Mineral core construction is acceptable when requirements exceed particleboard label procedures.

3. Stiles (Vertical Edges) - Provide manufacturer's standard solid or laminated edge construction approved for each fire protection level with improved screw holding capability of not less than 600 lbs. and split resistance not less than 690 lbs.
4. Rails (Horizontal Edges) - Rails are solid lumber or other material contained in manufacturer's fire door approvals.
5. Blocking is required for doors with fire label construction for all surface mounted hardware.

a. Minimum 6 inch top rail after trim for all fire doors having surface mounted hardware.
b. Provide 2 lock blocks minimum 5” x 18” for exit devices,
c. Provide 1 lock block minimum 5” x 18” at all lock sets

6. Pairs of positive pressure doors shall be constructed with concealed intumescent seals.

2.3 DOOR FABRICATION

A. Factory pre-fit and pre-machine doors to receive hardware as specified under Section 08710.

1. All doors shall be machined in accordance with manufacturer’s procedures in order to maintain manufacturer’s warranty and to avoid any machining conflicts.
2. Doors are to be beveled at both hinge and lock edges.
3. Factory pre-drill all hinge screw pilot holes.
4. All fire doors shall be in compliance with NFPA80 for clearances and undercutting.

B. Factory preparation for light openings and louvers - cut openings to comply with NFPA 80 requirements and to maintain door manufacturer's warranty.

1. All fire label doors with lites and glass shall be factory installed, under the manufactures label service, and meet impact and labeling requirements of NFPA 80 and the Consumer Products Safety Commission (CPSC).
2. Provide metal vision kits at all fire labeled doors. Vision kits shall be Anemostat LoPro, 20 gage, with tamperproof screws and beige baked enamel finish. Vision kits shall have UL or W/H classification markings visible for inspection.
3. Provide solid wood glass molding of same species as face veneer for non-rated doors.

2.4 FACTORY FINISHING

A. All doors, including light beads and moldings, to be factory finished, with performance properties equivalent to WDMA Finish System using Catalyzed Polyurethane.

B. Factory pre-finished doors to be individually poly-wrapped at the factory to protect finish during shipping.

C. Transparent finish color selected by Architect.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install all wood doors in accordance with door manufacturer's instructions and all tolerances outlined in WDMA I.S. 1A.

B. Fire-Rated Assemblies: Upon completion of the installation, all fire door assemblies shall be tested to confirm proper operation and that it meets all criteria of a fire door assembly as per NFPA 80 2007 Edition. The inspection of the fire doors that are swinging doors with builders hardware shall be performed by individuals with knowledge and understanding of the operation components of the type of door being subjected to testing. A written record shall be maintained and given to the owner to be made available to the Authority Having Jurisdiction (AHJ). This report shall list the location of all fire door assemblies, including door number and hardware set. The contractor shall correct all deficiencies in order to be in compliance with the code.

C. Install label doors in accordance with NFPA-80.

D. Inspect doors prior to installation for any damage, manufacturing defects or pre-finish inconsistency.

E. Should there be any door issues, do not proceed to installation. Contact appropriate supplier to correct unsatisfactory conditions, and proceed with installation only after corrections have been made.

3.2 ADJUSTING

A. Final Adjustments: Adjust operating doors and hardware items just prior to final inspection and acceptance by the Owner and Architect. Leave work in complete and proper operating condition. Remove and replace defective work, including doors that are damaged or otherwise unacceptable.

3.3 PROTECTION

A. Provide protective measures required throughout the construction period to ensure that doors will be without damage or deterioration at time of acceptance.

END OF SECTION