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# Section 08 14 16 – FLUSH WOOD DOORS

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## Master Specifications



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### **PART 1 - GENERAL**

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#### **1.1 SECTION INCLUDES**

Wood doors non-rated and fire-rated (*Choose applicable project requirements*).

- A. Flush.
- B. Factory Glazing (*WDMA and its Building Code and Regulations Committee have recommended an update to NFPA 80 requiring companies licensed to machine wood doors to install fire rated glazing to ensure that the opening meets all fire rating requirements*). See glass types specified in Section 08800.
- C. Louvers.
- D. Transom non-rated and fire-rated.
- E. Positive Pressure rated fire door.
- F. Neutral Pressure rated fire door.
- G. EnviroDesign™ Door LEED® CaGBC Version 1.
- H. Applied moldings.

#### **1.2 RELATED SECTIONS**

List only the following sections that have a direct bearing on this section.

- A. Section 06 20 00 - Finish Carpentry.
- B. Section 06 40 00 - Architectural Woodwork .
- C. Section 08 11 00 - Metal Doors and Frames.
- D. Section 08 14 33 - Stile and Rail Wood Doors.
- E. Section 08 71 00 - Door Hardware.
- F. Section 08 80 00 - Glazing (*Delete when factory glazing is specified*).
- G. Section 08 90 00 - Louvers.

### 1.3 REFERENCE STANDARDS

- A. ANSI / WDMA I.S.1A - Window and Door Manufacturers Association (WDMA).
- B. AWI / AWMAC - Quality standards of the Architectural Woodwork Institute (AWI) and the Architectural Woodwork Manufacturers Association of Canada (AWMAC).
- C. CAN / CSA-0132.2.0-90 – General requirements for wood flush doors.
- D. ASTM E 2074-00 - Standard Methods of Fire Tests for Door Assemblies.
- E. UNDERWRITERS' LABORATORIES - UL 10B (*Neutral Pressure*) and UL 10C (*Positive Pressure*) - Fire Tests of Door Assemblies, and ULC S104 Standard Methods of Fire Tests of Door Assemblies.
- F. NFPA 80 - Fire doors and other opening protectives.
- G. ITS (Warnock Hersey) - Certification listings for fire doors.
- H. ASTM E90-90 - Measurement of Airborne Sound Transmission Loss of Building Partitions.
- I. FSC - Forest Stewardship Council, guidelines for environmentally certified wood doors.

#### **LEED® CaGBC Version 1**

##### **Door Construction**

Recommendations for maximum LEED® contributions.

##### **Core**      Materials and Resources

###### **MR Credits 4.1, 4.2: Recycled Content**

Particleboard core, LD-1 or LD-2, bonded to stiles and rails, 100% pre-consumer, recycled content. Conforms with ANSI A208.1.

###### **MR Credit 7: Certified Wood**

Particleboard core, LD-2, bonded to stiles and rails, FSC certified, SW-COC-001082, conforms with ANSI A208.1.

FSC certified stave lumber core consisting of random lengths of low density wood. Blocks bonded to the stiles and rails.

### **Indoor Environmental Quality**

#### **EQ Credit 4.4 : Low-Emitting Materials**

Composite wood with no added urea-formaldehyde.

**Stiles** Exposed surface same species as or compatible to face veneer. Glued to core. No added urea-formaldehyde in wood components and adhesives. LEED® Credit EQ 4.4.

#### **Top and Bottom Rails**

**Rails** Mill option hardwood or SCL glued to core. No added urea-formaldehyde in wood components and adhesives. LEED® Credits EQ 4.1, EQ 4.4.

#### **Crossbanding**

High-density fiberboard with no added urea-formaldehyde. LEED® Credit EQ 4.4.

#### **Adhesives**

Glue lines for assembly between the plies of face, cross banding and core are to be Type 1 polyvinyl acetate (PVA). LEED® Credit EQ 4.4.

#### **FSC Certified Wood Doors**

**Core** FSC Certified Particulate core (PC-5) with no added urea-formaldehyde.

## **1.4 SUBMITTALS**

- A. Submit under provisions of AWI Section 1300.
- B. Shop Drawings: Illustrate door opening information, such as: location, size, types, construction, swings, undercuts, special beveling, hardware location and preparation requirement, blocking for hardware in mineral core doors, fire ratings, identify cutouts, factory finish, glass and other pertinent data.
- C. Indicate compliance with positive pressure.
- D. Product Data. Indicate door core materials, thickness, construction, veneer species. [*Veneer color selection required in Ash, Birch, and Maple*]. See WDMA "A Specifier's Guide to Door Face Veneers" for cut and matching requirements, factory machining and factory finishing criteria.
- E. Door Construction Samples with door faces, edges and core representative of the specified door type(s).

- F. Pre-Finished Veneer Sample. Sample to illustrate the color of the specified door face materials. Note: Actual grain and color may vary from sample as wood is a natural material and will vary from tree to tree.
- G. Manufacturer's full lifetime warranty.
- H. Glass size, type and thickness for factory glazed doors.
- I. LEED® credits for door types.

## **1.5 QUALITY ASSURANCE**

### **A. MANUFACTURER**

Company specializing in manufacturing products specified in Section with a minimum of five years documented experience. Must be a member in good standing of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

### **B. QUALITY STANDARD**

Meet or exceed WDMA I.S.1-A Premium Grade, or AWI Version 8 Custom Grade (*Choose one, do not use both in the same specification*).

### **C. FIRE RATINGS COMPLIANCE**

Fire-rated wood doors to comply with NFPA 80 requirements according to building code standards having local jurisdiction.

1) Neutral Pressure Testing – CAN/ULC S104; UL10B, NFPA252, and ASTM E-152.

2) Positive Pressure Testing – UBC 7-2-97 or UL10C.

### **D. LABEL CERTIFICATION**

All doors requiring fire-rating will carry either ULC or ITS (Warnock Hersey) label. Manufacturer's certification labels may be used for door size variations if approved by AHJ (Authority Having Jurisdiction).

## **1.6 DELIVERY, STORAGE AND HANDLING, AND SITE CONDITIONS**

- A. Deliver, store, protect and handle products under provisions of WDMA, AWI, AWMAC and manufacturer's care and handling instructions.
- B. Accept doors on site in manufacturer's standard packaging. Inspect for damage.

- C. Do not store in damp or wet areas. HVAC systems should be operating and balanced prior to arrival of doors. Acceptable humidity shall be no less than 25% nor greater than 55% (*Any claim for warp, bow, twist or telegraphing may be denied if required humidity requirements are not maintained*).
- D. Certain wood species such as Cherry, Walnut and Mahogany are light sensitive. Protect all doors from exposure to natural and artificial light after delivery.

## **1.7 WARRANTY**

Provide manufacturer's warranty to the following term:

1. Interior Solid Core Doors: "Full Life of Original Installation" including hanging and finishing if door(s) do not comply with warranty tolerance standards.
2. Include coverage for delamination, warping, bow, cup and telegraphing of core construction beyond warranty tolerances.

## **PART 2 - PRODUCTS**

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### **2.1 MANUFACTURER**

A. Lambton Doors, 5-ply hot pressed door quality as defined in this section.  
Other acceptable manufacturers of 5 ply hot pressed doors:

1. \_\_\_\_\_
2. \_\_\_\_\_

B. Substitutions allowed only if approved by the architect prior to bid date.

### **2.2 MATERIALS**

#### **A. WORKMANSHIP**

Comply with (*Choose one*) WDMA / AWI / AWMAC workmanship for veneer faces, vertical edges, crossbands, horizontal edges and dimensional tolerances. Extra Heavy Duty Performance Level.

#### **B. DOOR CONSTRUCTION GRADE**

Except as otherwise shown on the drawings fabricate the work of this section to WDMA "Premium Grade" / AWI "Custom Grade".

#### **C. WOOD DOOR FACING**

1. Wood Veneer: Choose from the selection of grade, species, cuts and color as detailed by WDMA A-8 or AWI Section 1300 Hardwood Veneer Face Grade Summary.
2. Plastic Laminate: (*Indicate manufacturer, thickness, pattern, color and finish*).
3. MDO (*Medium Density Overlay*) or hardboard for opaque finish.

#### **D. VENEER MATCHING (*Choose one*)**

1. Book Match.
2. Slip Match

#### **E. ASSEMBLY OF SPLICED VENEERS (*Choose one*)**

1. Running Book Match [standard unless otherwise noted].
2. Balance Match.
3. Center Balance Match.

#### **F. DOORS IN PAIRS OR SETS**

Door schedule shall reflect pairs and sets by door numbers, including doors separated by a mullion.

G. DOORS WITH TRANSOMS (*Choose one*)

1. Continuous Match (*Standard unless otherwise noted*).
2. End Match

## 2.3 DOOR FABRICATION

A. Door and Transom Panel Core Construction

Specify per project requirements. Choose one construction and one pressure option, if applicable, from items 1-3.

1. Non-rated: ANSI A208

- LD-1 or LD-2 Particleboard, PB.
- Structural Composite Lumber, SCL.
- Kiln Dried Staves with one species per core, SLC.
- EnviroDesign™ Series:  
FSPC, FSC certified LD-2 Particleboard with no added UF contributes toward LEED® MRc 4.1, 4.2, 7 and EQc 4.4.  
FSLC, FSC certified Stave Lumber Core contributes toward LEED® MRc 7, EQc 4.4.  
[If no added urea-formaldehyde is required, LEED® EQc 4.4, specify vertical edge accordingly (*See vertical edge section C*)].

2. 20-minute fire-rating : ANSI A208

- Neutral Pressure.
- Positive Pressure:
  - Category A (Concealed intumescent) [or],
  - Category B (Frame mounted intumescent).
- LD1 or LD-2 Particleboard, PB.
- Structural Composite Lumber, SCL-20.
- Kiln Dried Staves with one species per core; SLC-20.
- EnviroDesign™ Series:  
FSPC, FSC certified LD-2 Particleboard with no added UF contributes toward LEED® MRc 4.1, 4.2, 7 and EQc 4.4.  
FSLC, FSC certified Stave Lumber Core contributes toward LEED® MRc 7, EQc 4.4.  
[If no added urea-formaldehyde is required (LEED® EQc 4.4) specify vertical edge accordingly (*See vertical edge section C*)].

3. 45, 60 or 90 minute fire-rated

- Neutral Pressure.
- Positive Pressure :
  - Category A (Concealed intumescent) [or]
  - Category B (Frame mounted intumescent).
- Fire-Rated FD 45-60-90.

- EnviroDesign™ Series: FD 45-60-90.  
Fire-rated core with no added UF contributes toward LEED® EQc 4.4.  
[If no added urea-formaldehyde is required, LEED® EQc 4.4, specify vertical edge accordingly (See vertical edge section C)].

Modify or omit this listing to meet your project requirements.  
Specify STC rating required.

#### 4. Acoustical

The Sound Transmission Class (STC) specified shall be certified by the manufacturer to be based on tests conducted at an independent testing agency in accordance with ASTM E90-02 and E413-87. Earlier tests not acceptable. Door may be fire labeled if specified but restriction may apply (STC Ratings 27-47 available).

Modify or omit this listing to meet your project requirements.  
Specify total lead thickness required.

#### 5. Lead Lined

LL [\_\_\_\_\_] inch ([\_\_\_\_\_] mm) thick sheet lead. LL-20 min.

#### 6. Bond stiles and rails to core, abrasive sand core assembly to achieve uniform thickness.

### B. Optional Lite, Louver and Astragal Details

1. Lite openings shall be furnished with same species wood lite beads.
2. Louvers in non-rated doors shall be wood.  
Wood louvers shall be manufacturer's standard construction. Louvers shall be the same species lumber as the door face and be factory installed. Wood louvers shall be (*Choose one*) Chevron, Slat or Architectural.
3. For pairs of fire doors where no metal meeting edges are desired, specify "No Metal Meeting Edges Accepted". Metal astragals or edge sets for pairs of fire doors to be formed, pre-machined and veneer wrapped with same species as the door face.

### C. Vertical Edges (Stiles)

If no added urea-formaldehyde product is required, specify EME, ECE or EBE. Standard stile construction will be applied otherwise.

1. Non-rated and 20-minute rated shall be solid lumber 7/16 prior to pre-fitting or select option 15/16. *Hardwood laminated to an SCL material*

*inner stile, for improved screw holding.*

Veneer banded stiles will be rejected

Stile type specified

- Matching edge (ME) same species as face veneer.
- Compatible edge (CE) hardwood selected for compatibility with the face veneer.
- Blind edge (BE) same species as face veneer laminated to inner stile, after application of cross band.

2. 20-minute rated pairs.

Shall be solid lumber 7/16" prior to pre-fitting or select option 15/16" (s). (*Hardwood laminated to an SCL material inner stile, for improved screw holding.*)

Veneer banded stiles will be rejected

Stile type specified

- Matching edge (ME) same species as face veneer.
- Compatible edge (CE) hardwood selected for compatibility with the face veneer.
- Blind edge (BE) same species as face veneer laminated to inner stile, after application of crossband.

3. 45-60 and 90 minutes rated shall be solid core lumber 7/16" prior to pre-fitting. (*Hardwood laminated to a Fire Proof Composite Material (FPCM) inner stile, for improved screw holding.*)

Veneer banded stiles will be rejected

Stile type specified

- Matching edge (ME) same species as face veneer.
- Compatible edge (CE) hardwood selected for compatibility with the face of the veneer.
- Blind edge (BE) same species as face veneer laminated to inner stile, after application of crossband.
- As required by manufacturer to meet Positive Pressure Category A (Concealed intumescent) or B (Frame mounted intumescent).

D. Horizontal Edges (Rails)

1. Manufacturer's standard (No MDF top and bottom rails permitted).
2. As required to meet positive pressure ratings.

E. Adhesives

Face Adhesive: Type 1.

F. Innerblocking for Mineral Core Fire Doors

Supply inner blocking for all surface applied hardware. Through bolts not accepted.

G. Machining

Factory fit and machine doors for frame and finishes hardware in accordance with hardware and NFPA 80 requirements and dimensions. Do not machine for surface hardware. Apply appropriate fire labels.

H. Dutch Doors Type (*Choose one*)

1. One-side shelf.
2. Two-side shelf.
3. 20-minute shelf.
4. No shelf.
5. Rabbeted meeting rails.

## 2.4 ACCESSORIES

Modify or omit this listing to meet your project requirements.  
If applicable, choose one.

A. Louvers

1. Wood louvers as detailed on the elevations.
2. Louvers to be furnished by the door manufacturer.
3. Metal Louvers: Specified in Section 10255.

Specify per project requirements.  
Choose item 1 or item 2, and one construction option.

B. Glazing Stops

1. Non-Rated
  - Wood, of the same species/compatible with door species.
  - Metal Vision Frames.
2. Fire-Rated
  - Flush, wood veneer of same species as door facing.
  - Veneer wrapped rolled steel, of same species as door facing.

- Metal vision frames.

Verify compatibility of glazing system with positive pressure requirements. Adjust top rail on full glass doors to accept hardware so that no hardware is visible in daylight opening. STC doors with light kits shall be factory glazed to maintain rating & warranty.

#### C. Glass & Glazing in Wood Doors

Glass and glazing provided by the wood door manufacturer.

#### D. Meeting Edges for Pairs of Fire Rated Doors

1. Metal edge and astragal or metal edges (*Select one*).
2. Manufacture doors whereby the opening will not require either an overlapping metal edge or astragal or metal meeting edges (*Special hardware requirements apply*).
3. Meet Positive Pressure requirements for Category A (Concealed intumescent) or Category B (Frame mounted intumescent) doors (*Choose either A or B*).

#### E. Applied Moldings

1. As selected from manufacturer's standard profiles and install as detailed.
2. Applied moldings to be affixed to the door without the use of nails or staples. No visible fasteners are permitted.

## 2.5 FACTORY FINISH

- A. Factory finish doors in accordance with AWI Division 1500-T-11-Finish System Standards. Factory finish to be water based stain and ultraviolet (UV) cured polyurethane. Finish must meet or exceed performance standards of WDMA TR-6 catalyzed polyurethane. Color shall be Lambton Doors color guide [www.lambtondoors.com](http://www.lambtondoors.com).
- B. Custom factory finish doors in accordance with approved sample.
- C. Submit approved sample for all factory finishing.
- D. Factory finished doors to be installed just prior to substantial completion.
- E. Opaque Finish (*Paint*) Meet AWI specifications in section 1500.

## **PART 3 - EXECUTION**

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### **3.1 EXAMINATION**

- A. Verify that opening sizes and tolerances are acceptable and ready to receive this work.
- B. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

### **3.2 INSTALLATION**

- A. Install fire-rated and non-rated doors in accordance with NFPA 80, Manufacturers' instructions and to ITS-WH/UL requirements.
- B. Trim non-rated door width by cutting equally on both jamb edges.
- C. Trim door height by cutting bottom edges to a maximum 3/4 inch (19 mm).
- D. Trim fire door height at bottom edge only, in accordance with fire rating requirements.
- E. Allow a fitting clearance of 1/8" at each side and at top of door.
- F. Do not trim fire rated doors for width.

Choose one option for sections G and H, or omit this listing to meet your project requirements.

- G. Pilot drill screw and bolt holes using templates provided by hardware manufacturer. Use threaded through bolts for half surface hinges. [or] Select pilot holes to be factory drilled.
- H. Pilot holes to be factory drilled.

*Exercise caution when drilling pilot holes and installing hinges to ensure pilot holes are not over-drilled and screws are not over-torqued. Follow Manufacturer's installation instructions.*

- I. Coordinate installation of doors with installation of frames and hardware.
- J. Glass and glazing to be factory installed.
- K. Install door louvers and light kits plumb and level.
- L. Reseal or refinish any doors that required site alteration.

### **3.3 WARRANTY TOLERANCES**

Conform to AWI standards and testing methods for warp, cup, bow and telegraphing.

### **3.4 ADJUSTING**

Adjust doors for smooth and balanced door movement.

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**END OF SECTION**

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