

SECTION 08211

FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Solid flush wood doors:
  - 1. Wood veneer facing material.
  - 2. High-pressure decorative laminate veneer facing material.
  - 3. Hardboard facing material.
  - 4. Fire rated.
  - 5. Non-rated.
  - 6. Flush design.
  - 7. Glazed design.
  - 8. Louvered.
  - 9. Factory pre-fit.
  - 10. Factory premachined.
  - 11. Factory finished.
  
- B. Hollow core flush wood doors:
  - 1. Wood veneer facing material.
  - 2. Hardboard facing material.
  - 3. Factory pre-fit.
  - 4. Factory premachined.
  - 5. Factory finished.

1.2 RELATED SECTIONS

- A. Section 06400 - Wood door frames.
  
- B. Section 08112 - Standard Steel Frames; Steel door frames.
  
- C. Section 08212 - Aluminum Frames.
  
- D. Section 08115 - Custom Steel Frames; Steel door frames.
  
- E. Section 08213 - Stile and Rail Wood Doors.
  
- F. Section 08712 - Door Hardware.
  
- G. Section 08800 - Glass and Glazing.
  
- H. Section 09900 - Painting and Site Finishing Doors.
  
- I. Section \_\_\_\_\_ - \_\_\_\_\_.

1.3 REFERENCES

- A. AWI - Quality Standards of Architectural Woodwork Institute, Seventh Edition, Section 1300 and 1500.
- B. NWWDA I.S.1.A - Architectural Wood Flush Doors of National Wood Window and Door Association.
- C. WIC Quality Standards of Woodwork Institute of California.
- D. NFPA 80 - Fire Doors and Windows, 1995 Publication.
- E. NFPA 101 - Life Safety Codes.
- F. NFPA 252 - Standard Method of Fire Test for Door Assemblies.
- G. UL-10B - Fire Test of Door Assemblies.
- H. ASTM D 5456 - Specification for Evaluation of Structural Composite Lumber Products.
- I. ASTM E 152 - Methods of fire test for door assemblies.
- J. ASTM E 90 - Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- K. ASTM E 413 - Classification for Rating Sound Insulation.
- L. ASTM F 476 - Test Methods for Security of Swinging Door Assemblies.
- M. ANSI/AHA A135.4 - Basic Hardboard.
- N. ANSI A208.1 - Particleboard, Mat-Formed Board.
- O. ANSI/HPVA HP-1 - Hardboard and Decorative Plywood.
- P. NEMA LD-3 - High Pressure Decorative Laminates.
- Q. Intertek Testing Services/Warnock-Hersey International - Certification Listings for fire doors.
- R. ADA - Americans with Disability Act.
- S. \_\_\_\_\_.

#### 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 lite 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. For decorative laminate doors, each color, finish, and pattern are required.
  - 4. As an option, submit construction corner samples cut away to show stile, rails, crossbanding, core, and face veneer. Samples 6 by 6 inches (150 by 150 mm) or larger.
  - 5. Metal Louvers: Blade and frame 6 inch (150 mm) lengths for each material and finish required.
  - 6. Frames for Lite Openings: Lite frame 6 inches (150 mm) in length for each material, type, and finish required.
  - 7. Manufacturer's Instructions: Submit instructions regarding care of door during shipping, unloading, storage, and preparation for hanging.
- E. Test Reports:

1. Submit certification letters of the following laboratory test results:
  - a. Stile edge screw withdrawals test and stile edge split resistance tests for fire-rated doors.
  - b. STC ratings for each class specified.
  
- F. Substitutions: Submit requests for substitutions in exact accordance with Section 01600.

#### 1.5 QUALITY ASSURANCE

- A. Non-Fire Rated Wood Doors: Solid core premium grade or custom grade architectural flush wood doors; comply with the following:
  1. AWI Quality Standard: "Architectural Woodwork Quality Standards" including Section 1300 "Architectural Flush Doors," of Architectural Woodwork Institute (AWI) for grade of door, core construction finish, and other requirements exceeding those of NWWDA quality standard.
  2. NWWDA Quality Standard: ISI "Industry Standard for Wood Flush Doors," of National Wood Window and Door Association (NWWDA).
  
- B. Fire Rated Wood Doors: Provide fire rated wood doors which are identical in material and construction to units tested in door and frame assemblies per ASTM E 152, and which are labeled and listed for ratings indicated by Intertek Testing Services/Warnock-Hersey, UL, or other testing and inspection agency acceptable to the authority having jurisdiction.
  1. Oversize Fire Rated Wood Doors: For door assemblies exceeding sizes of tested assemblies, provide manufacturer's certificate stating that doors conform to all standard construction requirements of tested and labeled fire door assemblies except as to size.
  2. Temperature Rise Rating: At stairwell enclosures, provide doors that have a temperature rise rating of 250 degrees F (121 degrees C) maximum in 30 minutes of fire enclosure.
  3. Notify Architect, prior to fabrication, if fire doors indicated cannot qualify for labeling because of design, size, hardware, or other reason.
  4. If material specified as fire rated and labeled can be obtained from one source, no consideration will be given to those manufacturers who are not authorized to fabricate and label items.

5. Where fire rated classifications are shown or scheduled for wood door assemblies, doors shall be installed in compliance with the requirements of "NFPA 80 Standard for Fire Doors and Windows." Attach labels permanently at eye level to hinge stile.
- C. Single Source Responsibility: Provide wood doors for Sections 08211, 08212, 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 1300-G-23 and Section G-20 "Care and Installation at Jobsite" of NWWDA I.S.-1A, 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. Contractor shall be responsible for coordinating and obtaining necessary information from Hardware and Frame manufacturers to provide door supplier with approved hardware and frame schedules with templates 60 days prior to desired delivery date of doors.

#### 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 Solid Core: Life of original installation.
  2. Exterior Solid Core: Two years.

3. Interior Industrial Hollow Core: Two years.
- 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 repair or replace defective doors and rehang with new doors provided the defect was not apparent prior to installation and they do not conform to tolerance limitations of referenced quality standards as follows: warped (bow, cup, or twist) more than 1/4 inch (6.35 mm) in a 42-by-84 inch (1067 by 2134 mm) section or show telegraphing of core construction in face veneers exceeding 0.01 inch in a 30 inch (0.25 mm in a 762 mm) span.
- 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.
1. Buell Door Company
  2. Algoma Hardwoods, Inc.
  3. Eggers Industries, Architectural Door Division
  4. Weyerhaeuser Company
- B. Provide flush wood doors as manufactured by Buell Door Company, 5200 East Grand Avenue, Dallas, TX 75223: ASD. Tel: (800) 556-0155 or (214) 827-9260, Fax: (214) 826-9163, Email: Buell@ix.netcom.com; Website: www.buelldoor.com
- C. Requests for substitutions will be considered in accordance with provisions of Section 01600.
- D. Substitutions: Not permitted.

E. Provide all wood doors from a single manufacturer.

## 2.2 DOOR AND TRANSOM PANEL TYPES

### A. Flush Interior Doors:

1. Thickness: 1-3/4 inches (44 mm).
2. Thickness: 2-1/4 inches (57 mm).
3. Type: Solid core.
4. Type: Hollow core.
5. Fire rated.
6. Acoustic rated.
7. Lead lined.
8. Bullet resistant construction.

### B. Flush Exterior Doors:

1. Thickness: 1-3/4 inches (44 mm).
2. Thickness: 2-1/4 inches (57 mm).
3. Type: Solid core.

C. Transom Panels: Match face veneer with continuous match and other door characteristics indicated.

## 2.3 DOOR AND TRANSOM PANEL CONSTRUCTION

A. Core (solid, non-rated): AWI Section 1300-S-7, Type PC-5 bonded particleboard.

B. Core (solid, fire rated): AWI Section 1300-S-13, Type S (FD 1 1/2, FD 1, FD 3/4, FD 1/2, FD 1/3).

C. Core (solid, acoustical): AWI Section 1300-S-13, Type SR.

D. Core (solid, lead lined): AWI Section 1300-S-13, Type LL.

E. Core (solid, electrostatic shielded): AWI Section 1300-S-13, Type ES.

F. Core (hollow): AWI Section 1300-S-15, Type IHC institutional.

## 2.4 FLUSH DOOR FACING

### A. Interior Natural Wood Veneer Doors:

1. Veneer Cut and Specie: \_\_\_\_\_.
2. Veneer Thickness and Grade: 1/40 inch (0.64 mm) before sanding minimum with quality characteristics of AWI Section 1300 and 200-S-9 Panel Products "A" Grade veneer face with edge glued joints.
3. Veneer Leaf Match: Book match grain.
4. Veneer Face Match: Running match.



5. Transoms: Continuous matched.
  6. Pairs and Sets: Provide pair matching and set matching for pairs of doors and for doors hung in adjacent sets.
  7. Door Thickness: 1-3/4 inches (44 mm).
- B. Interior Hardwood Composite Veneer Doors:
1. Face Veneer: Brookline hardwood composite veneer no. \_\_\_\_\_.  
 a. Specie: \_\_\_\_\_.
  2. Veneer Thickness: 1/42 inch (0.60 mm) before sanding.
  3. Veneer Leaf Match: Slip match.
  4. Veneer Face Match: Running match.
  5. Transoms: Continuous matched.
  6. Pairs and Sets: Provide pair matching and set matching for pairs of doors and for doors hung in adjacent sets.
  7. Door Thickness: 1-3/4 inches (44 mm).
- C. Exotic Veneer/Sketch Face Match: Fabricate sketch face doors with sketch face veneers that comply with the designer's dimensioned door elevations detailed in the project plans, showing veneer component species, grain direction, and finish.
- D. High-Impact Polyvinyl Chloride Thermoplastic Veneer Doors:
1. Type: Rigid high-impact polyvinyl chloride thermoplastic sheet veneer.  
 a. Manufacturer: \_\_\_\_\_.
  2. Thickness: 0.040 inches (1.02 mm).
  3. Thickness: 0.060 inches (1.52 mm).
  4. Color No. and Name: \_\_\_\_\_.
  5. Surface Finish: Standard texture.
  6. Surface Finish: \_\_\_\_\_.
  7. Edge Trim: Bevel both edges of door 1/8 inch in 2 inches (3.1 mm in 51 mm) and laminate (clad) edges with same PVC material as the face, using hot-melt glue that is cured under heat and pressure for permanent adhesion.
  8. Door Thickness: 1-3/4 inches (44 mm).
- E. Interior Painted Finish Doors:
1. Hardboard: ANSI/AHA A135.4, Class 1 - tempered, type SIS hardboard 1/8 inch (3 mm) thick, for paint finish.
  2. MDO: Medium Density Overlay non-directional, 0.015 inch (0.38 mm) face veneer over standard hardwood

crossband, AWI Grade 1. International Paper "Uniwood" product 10306 Luxcell face is acceptable for interior application.

3. Close Grain Hardwood Veneer: Minimum B or sound grade, 1/50 inch (0.51 mm) thickness at 12 percent moisture content.

- a. Specie: \_\_\_\_\_.

- b. Veneer Cut: \_\_\_\_\_.

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

F. Exterior Wood Veneer Doors:

## 2.5 FABRICATION

A. Grade: Custom.

B. Grade: Premium.

C. Construction: AWI 1300; PC-5, for Wood Veneer Doors.

D. Non-Rated and 20 Minutes Fire-Rated Doors:

1. Core: Mat Formed Wood Particle Board, Grade 1-L-2; 28-32 pcf (0.448 to 0.513 g/cc) density meeting requirements of ANSI A208.1.
2. Bonding: Stiles and rails bonded to core using Type I glue and sanded as a unit prior to applying veneers. Drop in core is not acceptable.
3. Crossbands: Dried to 6-9 percent moisture content, minimum 1/16 inch (1.58 mm) thick spliced hardwood with no voids or defects, extending full width of doors with grain at right angles to face veneer.
4. Stiles: 1-1/2 inch (38 mm) deep before fitting. 1-1/8 inch (28.5 mm) minimum after trimming, 2 ply construction without fingerjoints, consisting of 1/2 inch (12.7 mm) thick outerband specie matching or compatible with face veneer and 1 inch (25.4 mm) thick innerband of TimberStrand Laminated Strand Lumber (LSL) by Trus Joist MacMillan or hardwood at mill option. The vertical edges on particleboard core doors will require a minimum testing rating as follows:
  - a. 525 pounds (2.335 kN) per the NWWDA TM-5 "Split Resistance."
  - b. 930 pounds (4.137 kN) per the NWWDA TM-8 "Hinge Loading Resistance."
  - c. 1,000 pounds (4.448 kN) per the NWWDA TM-10 "Screw Holding Capacity" test reports.

5. Rails: 1-1/8 inch (28.5 mm) after trimming; Laminated Strand Lumber (LSL) by Trus Joist MacMillan or hardwood at mill option.
  6. Pairs: Use ITS/Warnock-Hersey or UL 20 minute labeled pairs with fire retardant stiles without steel channels covering meeting edges on a pair measuring 4 feet by 10 feet (1.219 by 3.048 m) maximum each leaf.
- E. Fire Rated, 45, 60, and 90 Minute Doors: AWI 1300-S-4-13. Comply with requirements of Paragraph 1.02 and the following minimum requirements. Test labeled doors in conformance with UL or ITS/Warnock-Hersey International, NFPA 252, and ASTM E 152.
1. Core: Door manufacturer's standard non combustibile mineral core; incombustible, asbestos-free mineral composition, engineered to meet labeling requirements.
  2. Stiles and Rails: Manufacturer's standard sizes to meet fire rating, bonded to the core, complying with the following:
    - a. Stile Edge Screw Withdrawals: Minimum 740 pounds (3.292 kN) when tested in accordance with ASTM D 1037.
    - b. Stile Edge Split Resistance: Minimum 750 pounds (3.336 kN) when tested in accordance with ASTM D 143 (modified); vertical edge solid, laminated, or veneered of same species as visible surface. Reinforce hinge edge on all fire doors to accommodate full mortise hinges and to provide additional screw holding power when hinge is installed, unless specified otherwise.
  3. Crossbands: Dried to 6-9 percent moisture content, minimum 1/16 inch (1.58 mm) thick spliced hardwood with no voids or defects, extending full width of doors with grain at right angles to face veneer.
  4. Blocking: No through-bolting is allowed for attaching finished hardware. Refer to Section 08700 for hardware requirements. Provide composite blocking designed to maintain fire resistance of door but with improved screw-holding capacity "as required by specified hardware" with one or all of the following options:
    - a. 5 inch (127 mm) top rail blocking to accommodate surface mounted closer attached with wood screws.

- b. 5 inch (127 mm) bottom rail blocking to accommodate hardware attachment not unlimited undercutting.
  - c. 5 inch by 18 inch (127 by 457 mm) lockblocks for locksets and exit devices.
  - d. Blocking for flushbolts and vertical rod exit devices.
5. Pairs: Provide 20, 45, 60, and 90 minute single swing or double egress fire rated doors "as required by specified hardware." Where exit devices are required, comply with one or more of the following:
- a. Non-Rated and 20 Minute Fire Rated Doors:
    - 1) Single Swing or Double Egress doors up to 8 feet by 10 feet (2.438 by 3.048 m) opening size, manufacture doors to receive:
      - a) Surface-applied vertical rod fire exit devices; no metal edges or astragals required.
      - b) Concealed vertical rod exit devices require 5 inch (127 mm) Georgia-Pacific Firestop or approved equal, with Natural matching full length wood edge meeting stiles, no finger joints, 1/2 inch (12.7 mm) maximum width of wood after trim, no metal edges or astragals required.
      - c) Surface-applied top vertical rod only exit devices: Adams Rite Mfg. or approved equal; no metal edges or astragals required.
      - d) Concealed top vertical rod only exit devices: Adams Rite Mfg. or approved equal; no metal edges or astragals required; maximum size 8 feet by 8 feet.
  - b. 45, 60, and 90 Minute Fire Rated Doors:
    - 1) Single Swing or Double Egress doors up to 8 feet by 8 feet (2.438 by 2.438 m) opening size:
      - a) Manufacture doors to receive surface applied vertical rod fire exit devices with Georgia-Pacific fire door components or approved equal, having Natural matching wood edge meeting stiles, 2 ply construction consisting of an innerband of fire retardant composition material of Georgia-Pacific Firestop or approved equal, outerband natural hardwood matching or compatible to face veneer.

- b) Double egress requires through-bolting or "sex" bolts at latching points; surface top rod only devices must be through-bolted (sex bolts). Metal edges and overlapping astragals are available, but not required.
    - 2) Single Swing or Double Egress doors up to 8 feet by 8 feet (2.438 by 2.438 m) opening size:
      - a) Concealed top vertical rod only exit devices: Adams Rite Mfg. or approved equal.
      - b) Natural matching wood edge meeting stiles, Georgia-Pacific Firestop II System or approved equal.
      - c) 48 inch (1.219 m) protection plate of metal, stainless steel, or IPC high-impact PVC.
      - d) Metal hinge protectors.
    - 3) Single Swing up to 8 feet by 9 feet (2.438 by 2.743 m) opening size:
      - a) 5 inch (127 mm) metal U channel on lock stiles, primed or veneer wrapped with natural wood. Channel may not be mortised. Von Duprin or approved equal.
      - b) 5 inch (127 mm) wide edge meeting stiles, Georgia-Pacific Firestop or approved equal.
  - 6. 45 Minute Full Lite Door Pairs up to 8 feet by 9 feet (2.438 by 2.743 m) opening size: Manufacture using Georgia-Pacific fire door components or approved equal, with 3/4 inch (19 mm) transparent composite light panel manufactured by SuperLite Panel II - 45 as distributed by O'Keefe's Inc., maximum clear view area of 2,638 sq. in. (1.701 sq. m) per leaf.
- F. Security Rating: ASTM F 476, Grade 40.
- G. Individually polybag all doors.
- H. Door and Transom Combination:
- 1. Wood Grain Patterns: Continuous veneer match as per NWWDA I.S.-1 Standards.
  - 2. Top Rail of Door and Bottom Rail of Transom: Full width; matching species lumber or veneered with same face veneer species.
- I. Acoustically Rated Construction: AWI 1300 G-10-SR.

1. Core: Manufacturer's standard sound dampened core construction to achieve a sound transmission class rating of not less than 41 for a door thickness of 1-3/4 inches (44 mm), certified by the manufacturer to be based on tests conducted at an independent testing agency in accordance with ASTM E 90 and E 413, as operating units.
  2. Vertical Stiles: Minimum 1-3/8 inch (34.9 mm) minimum after trimming, 2 ply construction without fingerjoints, consisting of 5/8 inch (15.8 mm) thick mill option hardwood.
  3. Bottom Rail: 2-1/8 inch (53.9 mm) minimum mill option hardwood.
  4. Top Rail: 1-3/8 inch (34.9 mm) minimum mill option hardwood.
  5. Crossbands: Full width of door with grain running horizontally, tapeless sliced without voids.
  6. Face Veneer: As specified, laminated to crossband and edges.
  7. Bonding:
    - a. Core to Stiles, Rails, and Blocking: Type I adhesive; sand prior to assembly of face veneers.
    - b. Face Veneers and Crossband to Core and Edges: Type I adhesive by hot press process.
  8. Door equipped with concealed retracting bottom seal and perimeter concealed door gasketing.
- J. Lead Lined Construction: AWI 1300-S-3(LL).
1. Core: Manufacturer's standard construction; one piece lead sheet or sheets extending to all four edges; total door thickness 1-3/4 to 2-1/2 inches (44 to 63 mm).
  2. Face Veneer: Same as non-lead lined doors.
  3. Stile and Rails:
    - a. Vertical Edges: 1-1/8 inch (28.5 mm) minimum hardwood; solid, laminated, or veneered same species visible surface. No visible joints permitted.
    - b. Top and Bottom Rails: 1-1/8 inch (28.5 mm) minimum mill option hardwood.
    - c. Securely bond vertical edges and rails to core.
- K. Stave Lumber Core Construction:
1. Core: Construct stave core using random length kiln dried (6 to 9 percent moisture content) wood blocks
  2. Stagger core and joints tightly in adjacent rows, all blocks securely edge glued together under pressure.

- L. Structural Composite Lumber Core Construction:  
TimberStrand LSL by Trus Joist MacMillan.
  - 1. Core: TimberStrand LSL or other structural composite lumber (SCL) in accordance with ASTM D 5456; uniform density of 38 pcf (0.61 g/cc), with minimum target MOR at 6,000 psi/MOE  $1.3 \times 10^6$  psi.
  
- M. Institutional Hollow Core: Phenolic impregnated honeycomb with two woven interlocking cells; two lock blocks.
  
- N. Bullet Resistant Wood Door Construction: Solid core consisting of ArmorCore Bullet Resistant Fiberglass Armor as shown in the drawings and manufactured by Waco Composites, Inc., Waco, TX or ArmorTex Bullet Resistant Fiberglass as manufactured by Safeguard Security, San Antonio, TX; veneer or plastic laminate as selected.
  - 1. Level I - Class 1, Medium power small arms NIJ HA-1/4 inch thick.
  - 2. Level II - Class 2, High power small arms NIJ H-5/16 inch thick.
  - 3. Level III - Class 3, Super power small arms NIJ IIIA-7/16 inch thick.
  
- O. Flush Doors with Flat Panels:
  - 1. Grade: Premium.
  - 2. Construction: 5 ply, 20 minute rated.
  - 3. Core: Solid particleboard.
  - 4. Panel: 7/8 inch (22.2 mm) medium density fiber board laminated with 7/16 inch (11.1 mm) molding on each side.
  
- P. Flush Doors with Face Reveals:
  - 1. Fabricate with identical reveals measuring up to 1/4 inch (6.3 mm) in width and maximum 3/64 inch (1.2 mm) in depth on both sides of the door.
  - 2. Comply with designer's dimensioned door elevations detailed in project plans.
  - 3. Approved by door manufacturer's Fire Door labeling authority.
  - 4. In no case shall the area grooved exceed 3 percent of the area of the face.

## 2.6 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).

## 2.7 ADHESIVE

- A. Facing Adhesive: Type I - waterproof.

## 2.8 ACCESSORIES

- A. Lite and Louver Details:
1. Field glaze all lite openings.
  2. Install lite openings for non-rated wood doors with manufacturer's standard wood beads. Cut lite openings and install wood beads permanently on one side, tacked loose on other side.
  3. Furnish lite openings for fire doors with either flush wood veneered lite bead or primed metal vision panels (veneered covered metal vision panels optional) as per the manufacturer's approvals. Flush wood veneered lite beads or metal vision panels shall be approved by Intertek Testing Services/Warnock-Hersey International for use in 20, 45, 60, and 90 minute doors.
  4. Glazing Stops:
    - a. Wood Species: \_\_\_\_\_, with metal clips for rated doors.
    - b. Channel Shape: Roll steel.
    - c. Channel Shape: Aluminum.
    - d. Corners: Mitered.
    - e. Corners: Butted.
    - f. Prepare for countersink style screws.
    - g. Prepare for countersink style tamperproof screws.
  5. Wood Louvers: Manufacturer's standard construction.
    - a. Same species lumber as face veneer.
    - b. Factory installed using manufacturer's standard method.
    - c. Slat Type: Single slat.
    - d. Slat Type: V-slat chevron.
  6. Metal Louvers: \_\_\_\_\_.



7. To maintain warranty, do not cut light exceeding maximum 40 percent of height and 5-1/2 inches (140 mm) from door edge and face hole prep-of lock set.

B. Applied Molding:

1. Species: Matching or compatible with face veneer.
2. Selected from manufacturer's standard profiles approved by Architect.
3. Apply molding to door face with finishing nails; putty holes so they are not visible.

## 2.9 PREFIT AND PREMACHINE

A. Prefit doors at the factory with the following clearances:

1. 1/8 inch (3.1 mm) on top and hinge edges.
2. 1/8 inch (3.1 mm) on lock edge of single doors
3. 1/16 inch (1.6 mm) per leaf on pair meeting edges.
4. Bevel both edges of door 1/8 inch in 2 inches (3.1 mm in 51 mm).
5. Bottom: 1/4 inch (6.3 mm) above floor or threshold, except where undercutting is indicated. Specific bottom clearance is shown on door schedule.

B. Premachine doors for finish hardware.

1. Furnish wood door manufacturer an approved frame schedule (including all hardware locations), approved hardware schedule (including all necessary hardware templates), and an approved door schedule.
2. In lieu of these three schedules, furnish door manufacturer one coordinated schedule showing all data relative to frame, hardware, and door information.

C. Make cutouts for glazing at the factory. Allow 5-1/2 inches (140 mm) minimum from cutout to mortised hardware items.

D. Contractor is responsible for boring pilot holes, wood screw holes, mounting holes for face plates, and other surface applied hardware listed on the hardware schedule, unless special arrangements are made with the door manufacturer prior to submittal of shop drawings to the Architect.

E. Kickplates, push plates, stretcher plates, edge guards, and other protective hardware shall be furnished by the

hardware supplier or Contractor and installed in the field.

2.10 PREFINISHING

- A. General: Comply with referenced quality standards requirements for factory finishing.
  
- B. 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 TR6 catalyzed polyurethane.
  - 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. \_\_\_\_\_.
  
- C. 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-6 catalyzed polyurethane.
  - 3. Color: Match approved sample for color selected from manufacturer's standard colors.
  - 4. Sheen: Semigloss, 60 percent.

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. Seal top and bottom rails.
- B. Adjusting and Cleaning: Doors shall swing in their respective frames free of hinge binding or improper latching.
  1. Trim non-rated door 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.
- D. Hardware: For installation, see Section 08710.

### 3.3 INSTALLATION TOLERANCES

- A. Conform to AWI for requirements for fit and clearance tolerances.

### 3.4 ADJUSTING

- A. Adjust work under provisions of Section 01700.
- B. Adjust doors for smooth and balanced door movement.

### 3.5 FIELD QUALITY CONTROL

- A. Architect may require one randomly selected door to be used for testing for Contract Document compliance. Test will consist of cutting door up to expose blocking, stiles and rails, core bonding, and veneer cross-section.
- B. Tests may also be conducted for quality and type of factory finishing.
- C. If tested samples show non-compliance with Contract Document requirements, all doors provided under this Section shall be replaced at no addition to Contract Sum or extension of Contract time.

### 3.6 SCHEDULE

END OF SECTION