SECTION 081416 - FLUSH WOOD DOORS

1. GENERAL
   * + 1. SUMMARY

Retain applicable subparagraphs.

* + - * 1. Section Includes:

Five-ply flush wood veneer-faced doors[**and transom panels**] for transparent finish.

Five-ply flush wood doors[**and transom panels**] for opaque finish.

Solid-core flush wood doors[**and transom panels**] with plastic-laminate-faces.

Retain one or both subparagraphs below if applicable. See the Evaluations.

Factory [**priming**] [**finishing**] flush wood doors.

Factory fitting flush wood doors to frames and factory machining for hardware.

Refer to sections listed below for cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections. Sections listed below are for spec editor’s and design team coordination and are to remain as Editor’s Notes. Remove referenced specification sections within the body of the specification if not applicable to the project.

Section 064023 "Interior Architectural Woodwork" for wood door frames[including 20-minute fire-rated wood door frames].

Section 064216 "Flush Wood Paneling" for requirements for veneers from the same flitches for both flush wood doors and flush wood paneling.

Section 083473.16 "Wood Sound Control Door Assemblies" for acoustic flush wood doors.

Section 088000 "Glazing" for glass view panels in flush wood doors.

[Section 099114 "Exterior Painting"] [Section 099123 "Interior Painting"] [and] [Section 099300 "Staining and Transparent Finishing"] for field finishing doors.

Section 134900 "Radiation Protection" for lead-lined flush wood doors.

* + - 1. PREINSTALLATION MEETINGS

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at Project site.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of product, including the following:

Door core materials and construction.

Door edge construction

Door face type and characteristics.

Door louvers.

Door trim for openings.

Factory-machining criteria.

Factory-[**priming**] [**finishing**] specifications.

Manufacturer’s installation instructions.

* + - * 1. Sustainable Design Submittals:
        2. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

Door schedule indicating door location, type, size, fire protection rating, and swing.

Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.

Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.

Dimensions and locations of blocking for hardware attachment.

Dimensions and locations of mortises and holes for hardware.

Clearances and undercuts.

Requirements for veneer matching.

Doors to be factory [**primed**] [**finished**] and application requirements.

* + - * 1. Samples for Initial Selection: For [**plastic-laminate door faces**] [**polymer edging**] [ and] [**factory-finished doors**].

Delete "Samples for Initial Selection" paragraph above if colors and other characteristics are preselected and specified or scheduled. Retain "Samples for Verification" paragraph below with or without above.

* + - * 1. Samples for Verification:

Consider deleting first three subparagraphs below if retaining corner-section Samples.

Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish.[**For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.**]

Plastic laminate, 6 inches square, for each color, texture, and pattern selected.

Polymer edging, in manufacturer's standard colors.

Corner sections of doors, approximately 8 by 10 inches, with door faces and edges representing actual materials to be used.

Louver blade and frame sections, 6 inches long, for each material and finish specified.

* + - * 1. Quality Control Submittals:

Coordinate "Qualification Data" paragraph below and as may be supplemented in "Quality Assurance" Article.

Qualification Data: For door inspector.

Retain one of or both "Fire-Rated Door Inspector" and "Egress Door Inspector" subparagraphs below, or delete first two subparagraphs and retain third subparagraph. First paragraph applies to the BCNYS and NFPA 101. Second subparagraph applies to NFPA 101. Certification in third subparagraph below should be acceptable by all authorities having jurisdiction. See the Evaluations.

Fire-Rated Door Inspector: Submit documentation of compliance with NFPA 80, Section 5.2.3.1.

Egress Door Inspector: Submit documentation of compliance with NFPA 101, Section 7.2.1.15.4.

Submit copy of DHI's Fire and Egress Door Assembly Inspector (FDAI) certificate.

Retain "Field quality-control reports" paragraph below if Contractor is responsible for field quality-control testing and inspecting.

Field quality-control reports.

Sample Warranty: For special warranty.

* + - * 1. Contract Closeout Submittals

Special warranties.

Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

* + - 1. QUALITY ASSURANCE

Retain "Manufacturer's Certification" paragraph below if AWI Quality Certification Program is required. AWI will inspect work and provide certification for work that passes inspection if manufacturer is not licensed under its program.

* + - * 1. Manufacturer's Certification: Licensed participant in **AWI's Quality Certification Program**.
        2. Fire-Rated Door Inspector Qualifications: Inspector for field quality-control inspections of fire-rated door assemblies complies with qualifications set forth in NFPA 80, Section 5.2.3.1 and the following:

Retain subparagraph below if requiring fire door inspectors to be certified under DHI's certification program. Verify, with authorities having jurisdiction, if other DHI certifications are acceptable, such as Architectural Hardware Consultant (AHC), Certified Door Consultant (CDC), and Architectural Openings Consultant (AOC).

DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

* + - * 1. Egress Door Inspector Qualifications: Inspector for field quality-control inspections of egress door assemblies complies with qualifications set forth in NFPA 101, Section 7.2.1.15.4 and the following:

Retain subparagraph below if requiring egress door inspectors to be certified under DHI's certification program. Verify, with authorities having jurisdiction, if other DHI certifications are acceptable, such as AHC, CDC and AOC.

DHI's Fire and Egress Door Assembly Inspector (FDAI) certification.

* + - 1. DELIVERY, STORAGE, AND HANDLING
         1. Comply with requirements of referenced standard and manufacturer's written instructions.

Retain first paragraph below for factory-finished doors and high-quality unfinished doors. Second option is standard with some manufacturers and costs extra with others.

* + - * 1. Package doors individually in [**plastic bags or cardboard cartons**] [**cardboard cartons, and wrap bundles of doors in plastic sheeting**].
        2. Mark each door on[**top and**] bottom rail with opening number used on Shop Drawings.
      1. FIELD CONDITIONS
         1. Environmental Limitations:

Retain subparagraph below if relative humidity is not controlled during occupancy.

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 temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

Retain subparagraph below if relative humidity will be controlled after building is occupied and insert another range based on local climatological data if different than what is specified below. For unfinished wood doors, narrower ranges will be required to maintain optimum moisture content. See relative humidity and moisture-content map in AWI/AWMCA/WI's "Architectural Woodwork Standards."

Do not deliver or install doors until building is enclosed and weathertight, wet work is complete, and HVAC system is operating and maintaining temperature between 60 and 90 deg F and relative humidity between **25 and 55** percent during remainder of construction period.

* + - 1. WARRANTY

When warranties are required, verify with Director’s Representative's counsel that special warranties stated in this article are not less than remedies available to Director’s Representative under prevailing local laws.

* + - * 1. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Delamination of veneer.

Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.

Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

Retain or delete first subparagraph below to suit Project. This provision is not standard with all manufacturers.

Warranty also includes installation and finishing that may be required due to repair or replacement of defective doors.

Warranties for exterior doors vary from no warranty to a warranty for a period of up to five years. Before retaining "Warranty Period for Solid-Core Exterior Doors" subparagraph below, verify availability of warranty period with manufacturers; delete if retaining manufacturers that offer no warranty. Standard manufacturer's warranty generally goes into effect on date of shipment, not date of Substantial Completion.

Warranty Period for Solid-Core Exterior Doors: [**Two**] [**Five**] <**Insert number**> years from date of Substantial Completion.

"Warranty Period for Solid-Core Interior Doors" subparagraph below is typical; revise if required. Coordinate with manufactures included in Part 2.

Warranty Period for Solid-Core Interior Doors: Life of installation.

Warranties for hollow-core doors vary with manufacturer and type of hollow core. Before retaining "Warranty Period for Hollow-Core Interior Doors" subparagraph below, verify availability of warranty period with manufacturers. Standard manufacturer's warranties generally go into effect on date of shipment, not date of Substantial Completion.

Warranty Period for Hollow-Core Interior Doors: [**One**] [**Two**] <**Insert number**> year(s) from date of Substantial Completion.

1. PRODUCTS

Before selecting manufacturers and products, verify availability, suitability for intended applications, and compliance with minimum performance requirements. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

Product options commonly available from manufacturers are included in square brackets throughout the Section Text. Not every manufacturer listed can provide every option offered; verify availability with manufacturers. For definitions of terms and requirements for Contractor's product selection, see Section 016000 "Product Requirements."

* + - 1. MANUFACTURERS

Retain one or both options in "Source Limitations" paragraph below for wood doors that are matched with wood paneling.

* + - * 1. Source Limitations: Obtain flush wood doors [**indicated to be blueprint matched with paneling**] [**and wood paneling**] from single manufacturer.
      1. PERFORMANCE REQUIREMENTS

Retain "Fire-Rated Wood Doors Assemblies" paragraph below if applicable.

* + - * 1. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings [**and temperature-rise limits**]indicated on Drawings, based on testing at positive pressure in accordance with [**UL 10C**] [**or**] [**NFPA 252**].

Retain "Oversize Fire-Rated Door Assemblies" subparagraph below if required by authorities having jurisdiction.

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.

Retain "Temperature-Rise Limit" subparagraph below if required. The BCNYS allows an exception for buildings equipped throughout with fire-suppression sprinklers.

Temperature-Rise Limit: [**Where indicated on Drawings**] [**At vertical exit enclosures and exit passageways**], provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

Retain "Smoke- and Draft-Control Door Assemblies" paragraph below if required. The BCNYS requires fire door assemblies to comply with smoke- and draft-control requirements in corridors, smoke barriers, and smoke partitions.

* + - * 1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.
      1. FLUSH WOOD DOORS, GENERAL
         1. Quality Standard: In addition to requirements specified, comply with **AWI/AWMAC/WI's "Architectural Woodwork Standards."**
      2. SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS[**AND TRANSOM PANELS**]

Insert drawing designation, if applicable, for each product required. Use these designations on Drawings to identify each product.

* + - * 1. Exterior Doors, Solid-Core Five-Ply Veneer-Faced <**Insert drawing designation**>:

Architectural Woodwork Standards Grade: Premium.

Faces: Single-ply wood veneer not less than 1/50 inch thick.

Options in "Species" subparagraph below are examples only; revise or insert another species.

Species: [**Anigre**] [**Select white ash**] [**Figured select white ash**] [**Select white birch**] [**Select red birch**] [**Cherry**] [**Select red gum**] [**Figured select red gum**] [**Select white maple**] [**Red oak**] [**White oak**] [**Persimmon**] [**Sapele**] [**Sycamore**] [**Walnut**] <**Insert species**>.

First option in "Cut" subparagraph below applies only to oak.

Cut: [**Rotary cut**] [**Plain sliced (flat sliced)**] [**Quarter sliced**] [**Rift cut**].

Match between Veneer Leaves: [**Book**] [**Slip**] [**Random**] match.

In "Assembly of Veneer Leaves on Door Faces" subparagraph below, first option is standard for Premium-grade doors. Third option is standard for Custom-grade doors.

Assembly of Veneer Leaves on Door Faces: [**Center-balance**] [**Balance**] [**Running**] match.

Pair and Set Match: Provide for doors hung in same opening[**or separated only by mullions**].

Exposed Vertical , Top, and Bottom Edges: Same species as faces or a compatible species - Architectural Woodwork Standards edge Type A.

Core:

Retain one of first three subparagraphs below.

Glued wood stave.

WDMA I.S. 10 structural composite lumber.

Screw Withdrawal, Door Face: 550 lbf.

Screw Withdrawal, Vertical Door Edge: 550 lbf.

Either glued wood stave or WDMA I.S. 10 structural composite lumber.

Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

Adhesives: Type I in accordance with WDMA T.M. 6.

Insert drawing designation, if applicable, for each product required. Use these designations on Drawings to identify each product.

* + - * 1. Interior Doors, Solid-Core Five-Ply Veneer-Faced <**Insert drawing designation**>:

Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.

Architectural Woodwork Standards Grade: Premium.

Faces: Single-ply wood veneer not less than 1/50 inch thick.

Options in "Species" subparagraph below are examples only; revise or insert another species.

Species: [**Anigre**] [**Select white ash**] [**Figured select white ash**] [**Select white birch**] [**Select red birch**] [**Cherry**] [**Select red gum**] [**Figured select red gum**] [**Select white maple**] [**Red oak**] [**White oak**] [**Persimmon**] [**Sapele**] [**Sycamore**] [**Walnut**] <**Insert species**>.

First option in "Cut" subparagraph below applies only to oak.

Cut: [**Rotary cut**] [**Plain sliced (flat sliced)**] [**Quarter sliced**] [**Rift cut**].

Match between Veneer Leaves: [**Book**] [**Slip**] [**Random**] match.

In "Assembly of Veneer Leaves on Door Faces" subparagraph below, first option is standard for Premium-grade doors. Third option is standard for Custom-grade doors.

Assembly of Veneer Leaves on Door Faces: [**Center-balance**] [**Balance**] [**Running**] match.

Pair and Set Match: Provide for doors hung in same opening[**or separated only by mullions**].

Room Match:

Match door faces for the entirety of the building.

Before retaining "Transom Match" subparagraph below, verify availability of veneers for selected matching; usually retain first option. See "Referenced Standards" Article in the Evaluations.

Transom Match: [**Continuous match**] [**End match**] [**As indicated**].

Retain first option in "Exposed Vertical( and Top) Edges" subparagraph below if top edges of doors are visible, such as doors in multistory spaces.

Exposed Vertical[**and Top**] Edges: Same species as faces or a compatible species - Architectural Woodwork Standards edge Type A.

Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.

Fire-Rated Pairs of Doors:

Retain one of first two subparagraphs below. Retain first subparagraph if steel edges and astragals are unacceptable. Coordinate availability and ratings with manufacturers. Retain second subparagraph if steel edges and astragals are acceptable.

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.

Provide formed-steel edges and astragals with intumescent seals.

Finish steel edges and astragals with baked enamel same color as doors.

Retain last subparagraph above or first subparagraph below; delete option above if edges and astragals are field painted.

Finish steel edges and astragals to match door hardware (locksets or exit devices).

Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

Requirements in "Screw-Holding Capability" subparagraph below are from ANSI/WDMA I.S. 1A. Options are performance duty levels for Extra Heavy Duty. Before retaining, verify that products comply with requirement selected.

Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.

Core for Non-Fire-Rated Doors:

Retain one or more of first four subparagraphs below.

ANSI A208.1, Grade LD-1 particleboard.

Blocking: Provide wood blocking in particleboard-core doors as needed to eliminate through-bolting hardware.

Provide doors with WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices in Section 087100 "Door Hardware.”

Glued wood stave.

WDMA I.S. 10 structural composite lumber.

Screw Withdrawal, Door Face: 550 lbf.

Screw Withdrawal, Vertical Door Edge: 550 lbf.

Either glued wood stave or WDMA I.S. 10 structural composite lumber.

Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.

Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.

Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

* + - 1. SOLID-CORE FLUSH WOOD DOORS[**AND TRANSOM PANELS**] WITH PLASTIC-LAMINATE FACES
         1. Interior Doors, Solid Core <**Insert drawing designation**>:

Insert drawing designation, if applicable, for each product required. Use these designations on Drawings to identify each product.

[Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty](http://www.specagent.com/LookUp/?ulid=13436&mf=&src=wd).

**Architectural Woodwork Standards** Grade: **Premium**.

Plastic-Laminate Faces: High-pressure decorative laminates complying with NEMA LD 3, **Grade HGS**.

Colors, Patterns, and Finishes: **As selected by Director’s Representative from laminate manufacturer's full range of products**.

Retain first option in "Exposed Vertical( and Top) Edges" subparagraph below if top edges of doors are visible, such as doors in multistory spaces. Retain one of four remaining options; last two require factory prefitting. Impact-resistant polymer edging is standard for some manufacturers.

Exposed Vertical[**and Top**] Edges: [**Hardwood edges for staining to match faces**] [**Hardwood edges for painting**] [**Plastic laminate that matches faces, applied before faces**] [**or**] [**impact-resistant polymer edging, applied after faces**].

Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.

Fire-Rated Pairs of Doors:

Retain one of first two subparagraphs below. Retain first subparagraph if steel edges and astragals are unacceptable. Coordinate availability and ratings with manufacturers. Retain second subparagraph if steel edges and astragals are acceptable.

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.

Provide formed-steel edges and astragals with intumescent seals.

Finish steel edges and astragals with baked enamel same color as doors.

Retain last subparagraph above or first subparagraph below; delete option above if edges and astragals are field painted.

Finish steel edges and astragals to match door hardware (locksets or exit devices).

Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

Requirements in "Screw-Holding Capability" subparagraph below are from ANSI/WDMA I.S. 1A. Options are performance duty levels for Extra Heavy Duty, Heavy Duty, and Standard Duty, respectively. Before retaining, verify that products comply with requirement selected.

Screw-Holding Capability: [**550 lbf**] [**475 lbf**] [**400 lbf**] in accordance with WDMA T.M. 10.

Core for Non-Fire-Rated Doors:

Retain one of first four subparagraphs below.

ANSI A208.1, [**Grade LD-1**] [**Grade LD-2**] particleboard.

Consider deleting "Blocking" subparagraph below. Some door manufacturers contend that blocking weakens particleboard-core doors and is not required. If retaining subparagraph, retain one of two options.

Blocking: Provide wood blocking in particleboard-core doors as [**needed to eliminate through-bolting hardware.**] [**follows:**]

If retaining "Blocking" subparagraph and second option above, retain first three subparagraphs below for blocking required.

5-inch top-rail blocking, in doors indicated to have closers.

5-inch bottom-rail blocking, in exterior doors and doors indicated to have kick, mop, or armor plates.

5-inch midrail blocking, in doors indicated to have exit devices.

Usually delete requirement for midrail blocking in last subparagraph above and retain first subparagraph below.

Provide doors with [**glued-wood-stave**] [**or**] [**WDMA I.S. 10 structural-composite-lumber**] cores instead of particleboard cores for doors scheduled to receive exit devices in [**Section 087100 "Door Hardware."**] [**Section 087111 "Door Hardware (Descriptive Specification."**]

Glued wood stave.

WDMA I.S. 10 structural composite lumber.

In each of first two subparagraphs below, first option is for Extra Heavy Duty performance grade, second option is for Heavy Duty performance grade.

Screw Withdrawal, Door Face: [**550 lbf**] [**475 lbf**] [**400 lbf**].

Screw Withdrawal, Vertical Door Edge: [**550 lbf**] [**475 lbf**] [**400 lbf**].

Either glued wood stave or WDMA I.S. 10 structural composite lumber.

Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.

Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as [**needed to eliminate through-bolting hardware.**] [**follows:**]

Retain "Blocking for Mineral-Core Doors" subparagraph above and first four subparagraphs below only after verifying availability for fire-protection rating required. Delete first four subparagraphs below if retaining first option above.

5-inch top-rail blocking.

5-inch bottom-rail blocking, in doors indicated to have protection plates.

5-inch midrail blocking, in doors indicated to have armor plates.

[**4-1/2-by-10-inch lock blocks**] [**5-inch midrail blocking**], in doors indicated to have exit devices.

Construction:

Retain one of two subparagraphs below. Glued-wood-stave core is only allowed with five-ply construction. See the Evaluations.

Three plies, [**hot-pressed**] [**or**] [**cold-pressed**] bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before faces are applied.

Five plies, [**hot-pressed**] [**or**] [**cold-pressed**] bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before faces and crossbands are applied.

* + - 1. LIGHT FRAMES AND LOUVERS

Retain one or more of "Wood Beads for Light Openings in Wood Doors," "Wood-Veneered Beads for Light Openings in Fire-Rated Doors," and "Metal Frames for Light Openings in Fire-Rated Doors" paragraphs below if light openings are required.

* + - * 1. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.

Wood Species: **Same species as door faces**.

Retain one of five options in "Profile" subparagraph below, or revise to suit Project.

Profile: [**Flush rectangular beads**] [**Recessed tapered beads**] [**Recessed tapered beads with exposed banding**] [**Lipped tapered beads**] [**Manufacturer's standard shape**].

Retain subparagraph below if required.

At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.

Retain "Metal Frames for Light Openings in Fire-Rated Doors" paragraph below if required for doors with fire-protection rating exceeding 20 minutes.

* + - * 1. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch- thick, cold-rolled steel sheet; [**factory primed for paint**] [**with baked-enamel- or powder-coated**] finish; and approved for use in doors of fire-protection rating indicated on Drawings.
        2. Wood Louvers: Door manufacturer's standard solid-wood louvers unless otherwise indicated.

Retain one of two options in "Wood Species" subparagraph below.

Wood Species: [**Same species as door faces**] [**Species compatible with door faces**].

Profile: [**Flat**] [**Chevron**].

* + - * 1. Louvers for Fire-Rated Doors: Metal louvers with fusible link and closing device, listed, and labeled for use in doors with fire-protection rating of 1-1/2 hours and less.

Metal and Finish: Hot-dip galvanized steel, 0.040 inch thick, [**factory primed for paint**] [**with baked-enamel- or powder-coated**] finish.

* + - 1. FABRICATION

Typically, retain first paragraph below. Retain paragraph and revise to indicate exceptions if only some doors are required to be factory fitted. Plastic-laminate-edged and factory-finished doors must be factory fitted and machined. Fire-rated and plastic-laminate-faced doors with wood edges should also be factory fitted and machined.

Standard fitting may be inadequate for doors 2-1/2 inches thick or more or for doors exposed to wide changes in humidity and temperature.

* + - * 1. Factory fit doors to suit frame-opening sizes indicated.

Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.

Comply with NFPA 80 requirements for fire-rated doors.

Typically, retain first paragraph below. Retain paragraph and revise to indicate exceptions if only some doors are required to be factory machined.

* + - * 1. 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, ANSI/BHMA-156.115-W, and hardware templates.

Retain first subparagraph below for metal frames for wood doors.

Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.

For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.

Retain "Metal Astragals" subparagraph below with pairs of factory-fitted, fire-rated doors where astragals, etc., are required.

Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.

Retain "Transom and Side Panels" paragraph below if applicable. Indicate here or on Drawings if doors and transoms are rabbeted. Verify that transom sizes and attachment methods comply with fire-protection ratings if using fire-rated doors with transoms.

* + - * 1. Transom and Side Panels:

Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.

Fabricate door and transom panels with full-width, solid-lumber meeting rails.

* + - * 1. Openings: Factory cut and trim openings through doors.

Light Openings: Trim openings with moldings of material and profile indicated.

"Glazing" subparagraph below is unnecessary if using only metal light frames.

Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Section 088000 "Glazing."

Louvers: Factory install louvers in prepared openings.

Retain "Exterior Doors" paragraph below to provide additional weather resistance at exterior doors.

* + - * 1. Exterior Doors: Factory treat exterior doors with water repellent after fabrication has been completed but before factory [**priming**] [**finishing**].

Retain subparagraph below for outswinging exterior doors. Before retaining, verify availability with manufacturers or delete and include with weather stripping in Section 087100 "Door Hardware.”

Flash top of outswinging doors with manufacturer's standard metal flashing.

* + - 1. FACTORY PRIMING

Retain this article if field-finished doors are required to be factory primed. Factory fitting is recommended to minimize damage to factory-primed doors.

* + - * 1. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in [**Section 099113 "Exterior Painting."**] [**Section 099123" Interior Painting."**]
      1. FACTORY FINISHING

Retain this article if factory finishing is required. Factory finishing can be used to help comply with sustainable design requirements, which limit VOC content of paints and coatings used within buildings. Factory finishing also has other advantages. See the Evaluations.

* + - * 1. 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.

Finish faces, all four edges, edges of cutouts, and mortises.

Remove “Factory Finish Doors” when required by Client. Insert language to finish doors on-site.

* + - * 1. Factory finish doors.
        2. Transparent Finish:

Architectural Woodwork Standards Grade: Premium.

Before specifying, verify availability of finishes with manufacturers. Most manufacturers offer AWS System-9 as standard. Require Samples for verification.

Architectural Woodwork Standards System-9, UV Curable, Acrylated Epoxy, Polyester or Urethane.

Retain one of three options in "Staining" subparagraph below.

Staining: [**Match Director’s Representative's sample**] [**As selected by Director’s Representative from manufacturer's full range**] [**None required**].

Retain one of two options in "Sheen" subparagraph below, or revise to suit Project.

Sheen: [**Satin**] [**Semigloss**].

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine doors and installed door frames, with Installer present, before hanging doors.

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.

Reject doors with defects.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
      1. INSTALLATION
         1. Hardware: For installation, see Section 087100 "Door Hardware."
         2. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
         3. Install frames level, plumb, true, and straight.

Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

Anchor frames to anchors or blocking built in or directly attached to substrates.

Secure with countersunk, concealed fasteners and blind nailing.

Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

For factory-finished items, use filler matching finish of items being installed.

Retain first subparagraph below for fire-rated doors and frames.

Install fire-rated doors and frames in accordance with NFPA 80.

Retain subparagraph below for smoke- and draft-control doors. The BCNYS requires fire door assemblies to comply with smoke- and draft-control requirements in corridors, smoke barriers, and smoke partitions.

Install smoke- and draft-control doors in accordance with NFPA 105.

Retain "Job-Fitted Doors" paragraph below if all doors are not factory fitted. Factory fitting of fire-rated doors is preferred to job fitting, because of limitations on trimming narrower stiles and rails.

* + - * 1. 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.

Clearances:

Clearances in first three subparagraphs below describe typical prefit clearances; revise to suit office practice and for doors thicker than 1-3/4 inches.

Provide 1/8 inch at heads, jambs, and between pairs of doors.

Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.

Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.

Retain first subparagraph below for fire-rated doors or if doors are not factory fitted.

Comply with NFPA 80 for fire-rated doors.

Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

Last subparagraph above is standard bevel; revise to suit Project if required. See the Evaluations. Retain subparagraph below for fire-rated doors or if not factory fitted. Fire-rated doors can be trimmed only to a limited extent, because of narrow stiles and rails.

Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

* + - * 1. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
        2. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
      1. FIELD QUALITY CONTROL
         1. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Director’s Representative.
         2. Inspections:

Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.

Retain "Egress Door Inspections" subparagraph below for projects under NFPA 101, for Assembly, Educational, Day-Care, and Residential Board and Care occupancies.

Egress Door Inspections: Inspect each door equipped with panic hardware, each door equipped with fire exit hardware, each door located in an exit enclosure, each electrically controlled egress door, and each door equipped with special locking arrangements in accordance with NFPA 101, Section 7.2.1.15.

* + - * 1. Repair or remove and replace installations where inspections indicate that they do not comply with specified requirements.
        2. Reinspect repaired or replaced installations to determine if replaced or repaired door assembly installations comply with specified requirements.
        3. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in [**NFPA 80**] [**and**] [**NFPA 101**].
      1. ADJUSTING
         1. Operation: Rehang or replace doors that do not meet required clearance conditions, swing, or operate freely.
         2. 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 081416