
USACE / NAVFAC / AFCEA UFGS-08 14 00 (July 2006)

Preparing Activity: NAVFAC Superseding
UFGS-08 14 00 (April 2006)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 18 July 2006

Revised throughout - changes not indicated by CHG tags

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SECTION 08 14 00

WOOD DOORS 07/06

NOTE: This guide specification covers requirements
for wood doors.

Comments and suggestion on this specification are
welcome and should be directed to the technical
proponent of the specification. A listing of the
technical proponents, including their organization
designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as
a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer
choices or locations where text must be supplied by
the designer.

NOTE: On the drawings, show:

1. Locations
2. Sizes, types, thicknesses, glazing, and louvers
3. Designs
4. Fire rating requirements
5. Color
6. Door swing
7. Sound transmission class.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

AWI Qual Stds (1999; 7th Ed) Architectural Woodwork
Quality Standards and Quality
Certification Program

ASTM INTERNATIONAL (ASTM)

ASTM E 90 (2004) Standard Test Method for Laboratory
Measurement of Airborne Sound Transmission
Loss of Building Partitions and Elements

ASTM E 2074 (2004) Standard Test Method for Fire Tests
of Door Assemblies, Including Positive
Pressure Testing of Side-Hinged and
Pivoted Swinging Door Assemblies

ASTM E 283 (1991; R 1999) Determining Rate of Air
Leakage Through Exterior Windows, Curtain
Walls, and Doors Under Specified Pressure
Differences Across the Specimen

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (2000) High-Pressure Decorative Laminates

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 80 (2001) Standard for Fire Doors and Fire
Windows

NFPA 252 (2003) Standard Methods of Fire Tests of
Door Assemblies

UNDERWRITERS LABORATORIES (UL)

UL 10B (1997) Fire Tests of Door Assemblies

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

WDMA I.S. 1-A (1999) Architectural Wood Flush Doors

WDMA I.S. 4 (1994) Water-Repellent Preservative
Non-Pressure Treatment for Millwork

WDMA I.S. 6 (1991) Wood Stile and Rail Doors

WDMA TM-5 (1990) Split Resistance Test

WDMA TM-7 (1990) Cycle - Slam Test

1.2 SUBMITTALS

NOTE: Where a "G" in submittal tags follows a submittal item, it indicates Government approval for that item. Add "G" in submittal tags following any added or existing submittal items deemed sufficiently critical, complex, or aesthetically significantly to merit approval by the Government. Submittal items not designated with a "G" will be approved by the QC organization.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES.

SD-02 Shop Drawings

Doors[; G][; G, [____]]

Submit drawings or catalog data showing each type of door unit [; descriptive data of head and jamb weatherstripping with installation instructions shall be included]. Drawings and data shall indicate door type and construction, sizes, thickness, [methods of assembly,] [door louvers,] and [glazing,].

SD-03 Product Data

Doors[; G][; G, [____]]

Accessories

Water-resistant sealer

Sample warranty

[Sound transmission class rating[; G][; G, [____]]]

[Fire resistance rating[; G][; G, [____]]]

SD-04 Samples

NOTE: Require door samples only for relatively larger quantities of doors and only when justified and desired.

Doors

Prior to the delivery of wood doors, submit a sample section of each type of door which shows the stile, rail, veneer, finish, and core construction.

Door finish colors[; G][; G, [____]]

Submit a minimum of three color selection samples [for selection

by the Contracting Officer].

SD-06 Test Reports

NOTE: Require tests and test reports when fire rated wood doors are included in the project. Doors designated to have "C" label have a 3/4 hour rating, doors designated to have "B" label have a one or 1 1/2 hour rating.

Split resistance

Cycle-slam

Hinge loading resistance

Submit split resistance test report for doors tested in accordance with **WDMA TM-5**, cycle-slam test report for doors tested in accordance with **WDMA TM-7**, and hinge loading resistance test report for doors tested in accordance with **WDMA TM-8**.

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver doors to the site in an undamaged condition and protect against damage and dampness. Stack doors flat under cover. Support on blocking, a minimum of **100 mm 4 inch** thick, located at each end and at the midpoint of the door. Store doors in a well-ventilated building so that they will not be exposed to excessive moisture, heat, dryness, direct sunlight, or extreme changes of temperature and humidity. [Do not store in a building under construction until concrete, masonry work, and plaster are dry.] Replace defective or damaged doors with new ones.

1.4 WARRANTY

NOTE: The warranty clause in this guide specification has been approved by NAVFACENGCOMHQ in accordance with the requirements of NAVFAC P-68. The paragraph in this guide specification may be used without any other HQ approval or request for waiver.

Warrant doors free of defects as set forth in the door manufacturer's standard door warranty.

PART 2 PRODUCTS

2.1 DOORS

NOTE: It is preferred that door sizes, designs and thicknesses be indicated on the drawings; if not indicated, schedule appropriate criteria in specifications. Refer to **WDMA I.S. 1-A** and **WDMA I.S. 6** for stock sizes and designs; the use of stock doors is recommended.

NOTE: Include requirements for wood frames, except for prehung interior wood door units, in Section 06200 FINISH CARPENTRY. Include requirements for metal frames for wood doors in Section 08110 STEEL DOORS AND FRAMES. Include requirements for hardware, other than for sliding and bi-fold doors, in Section 08710 DOOR HARDWARE.

NOTE: Premium or select grade is intended for natural or stain finish, standard grade is intended for opaque (paint) finish.

Provide doors of the types, sizes, and designs [indicated] [specified].

2.1.1 Stile and Rail Doors

[Premium] [Standard] grade Ponderosa Pine doors or [premium or select] [standard] stile and rail doors conforming to WDMA I.S. 6. Furnish laminate panels in not less than three ply thickness. Provide flat panels with a minimum finished panel thickness of 13 mm 1/2 inch and 20 mm 3/4 inch thickness for raised panels.

2.1.2 Flush Doors

Conform to WDMA I.S. 1-A for flush doors. Provide hollow core doors with lock blocks and 25 mm 1 inch minimum thickness hinge stile. Hardwood stile edge bands of doors receives a natural finish, compatible with face veneer. Provide mill option for stile edge of doors scheduled to be painted. No visible finger joints will be accepted in stile edge bands. When used, locate finger-joints under hardware.

[2.1.2.1 Exterior Flush Doors

NOTE: Use of wood doors on exterior of buildings is not recommended for permanent structures unless the doors are well protected from the weather.

Solid wood core, Type I conforming to WDMA I.S. 1-A. Provide doors with [tempered hardboard] [medium density overlaid hardwood veneer] faces. Provide wood edge bands. Install in exterior flush doors with [aluminum] [bronze] [copper] flashings at the bottom of the openings.

]2.1.2.2 Interior Flush Doors

NOTE: Hollow core doors should be used for light duty residential only. Face veneers of doors for painted finish should be either hardboard or sound grade rotary cut hardwood. Face veneers of doors for natural finish should be premium or good grade rotary cut hardwood. Premium grade, book matched,

wood veneer should only be specified for medical facilities and other high quality installations such as chapels, hospitals, and where the additional cost is justified. Select grade and species desired for hardwood veneer faced doors. Specify other veneers if desired (poplar, cherry, etc.); refer to WDMA I.S. 1-A. Luan is not acceptable.

Provide [staved lumber] [particleboard] [hollow] core, Type II flush doors conforming to WDMA I.S. 1-A with faces of [sound grade hardwood or hardboard for painted finish] [[premium] [good] grade natural birch] [select [premium white] [red] birch] [[premium] [good] grade [red] [white] oak] [[premium] [good] grade walnut] [plastic laminate]. [Hardwood veneers shall be [[rotary cut] [plain sliced] [quarter sliced]] [[random] [slip] [book] matched]]. [Finish plastic laminate faced doors on both vertical edges with [wood] [laminated plastic] of color matching faces.]

2.1.3 Bi-Fold Closet Doors

Provide [hardboard grade flush doors conforming to WDMA I.S. 1-A.] [paneled] [louvered] doors [premium or select] [standard] grade, conforming to WDMA I.S. 6 with [28.5] [35] mm [1-1/8] [1-3/8] inch thickness. Equip doors with the manufacturer's standard hardware, including tracks, hinges, guides, and pulls.

2.1.4 Sliding Closet Doors

Provide flush wood doors to conform to WDMA I.S. 1-A. Provide [paneled] [and] [louvered] doors to conform to WDMA I.S. 6 [premium or select] [standard] grade with 35 mm 1-3/8 inch thickness. Equip doors with the manufacturer's standard hardware.

2.1.5 X-Ray Resistant Doors

NOTE: Specify minimum door thickness as follows:
44.5 mm 1-3/4 inch for lead sheet 5 mm 3/16 inch thick and less; 50 mm 2 inch for lead sheet over 5 to 6 mm 3/16 to 1/4 inch thick; 57 mm 2-1/4 inches for lead sheet over 6 to 10 mm 1/4 to 3/8 inch thick; 64 mm 2-1/2 inch for sheet lead over 10 to 13 mm 3/8 to 1/2 inch thick. Coordinate with Section 13092 X-RAY SHIELDING.

WDMA I.S. 1-A solid core flush doors, hardwood veneered, minimum [44.5] [50] [57] [64] mm [13/4] [2] [2 1/4] [2 1/2] inch thick, of sizes and construction indicated. Provide lead sheets with 99.9 percent pure lead, [_____] mm inch thickness, free from dross, oxide, inclusions, laminations, scale, blisters, and cracks. Locate lead sheets in accordance with manufacturer's standard, to extend fully from edge to edge, from top to bottom, and to be an integral part of the door. Provide wood edge strips compatible with face veneers.

2.1.6 Acoustical Doors

NOTE: Ensure that STC rating is coordinated with

the STC ratings of walls detailed on drawings. Doors should be provided with STC rating equal to the walls and ceilings. Except where walls and ceilings are designed for an STC of 40 or more, specify STC of 35. Doors requiring STC ratings greater than 35 may have to be thicker than otherwise specified. Check manufacturer's literature.

WDMA I.S. 1-A, solid core, constructed to provide Sound Transmission Class rating of [35] [_____] when tested in accordance with ASTM E 90.

2.1.7 [Composite-Type] Fire Doors

NOTE: Composite-Type fire doors are not recommended for use in areas where security is desired and/or high abuse is expected. A hollow-metal type fire door will provide a higher degree of security and withstand more abuse.

Provide doors specified or indicated to have a fire resistance rating conforming to the requirements of UL 10B, ASTM E 2074, or NFPA 252 for the class of door indicated. Affix a permanent metal label with raised or incised markings indicating testing agency's name and approved hourly fire rating to hinge edge of each door.

2.1.8 Prehung Doors

NOTE: Use of wood frames in new construction is not recommended except for family housing.

Frames for prehung interior doors to be for [painted] [clear] finish, with [3 piece adjustable jamb units] [3 piece adjustable jamb units with pins]. Provide doors complete with frame, hinges, and prepared to receive finish hardware.

2.2 ACCESSORIES

2.2.1 Door Louvers

NOTE: The use of wood louvers in exterior wood doors is not recommended. Louvers are not permitted in fire-rated doors with glass lights or exit devices. Louvers may be no larger than 600 by 600 mm 24 by 24 inch and must be an approved fusible link type. Delete the sentence referring to blocking if hollow core doors are not included in the project.

Fabricate from wood and of sizes indicated. Provide louvers with a minimum of 35 percent free air. Equip louvers with [slat] [sightproof inverted vee slat] type. [Block hollow core doors to provide solid anchorage for the louvers.] Mount louvers in the door with [flush wood moldings.] [wood lip moldings.]

2.2.2 Door Light Openings

Provide glazed openings with the manufacturer's standard wood moldings. [Provide moldings for doors to receive natural finish of the same wood species and color as the wood face veneers.] Provide moldings on the exterior doors with sloped surfaces. [Lip type moldings for flush doors.]

2.2.3 Weatherstripping

NOTE: Include weatherstripping when Section 08710 DOOR HARDWARE is NOT included in project specification; otherwise, add to Section 08710 DOOR HARDWARE Complete weatherstripping should be specified for exterior doors of heated and air-conditioned spaces. Thresholds with extended lip will require door weatherstripping shaped to engage the extended lip on the threshold. Thresholds with raised stops to receive latch bolts of panic-type hardware will require vinyl or neoprene inserts in face of stop. Specify overlapping astragal only when one leaf of double doors is inactive and is equipped with head and foot bolts. Avoid installations which will require door "coordinators."

NOTE: Maximum air leakage rates are 0.0025 cubic meter per second per sq. m 0.5 cfm per sq. ft. of door area for residential swinging doors and 0.0031per cubic meter per second per sq. m 1.25 cfm per sq. ft. of door area for non-residential swinging doors.

Provide weatherstripping that is a standard cataloged product of a manufacturer regularly engaged in the manufacture of this specialized item. Provide weatherstripping [tempered spring bronze] [or] [looped neoprene or vinyl held in an extruded non-ferrous metal housing]. Install [bronze weatherstripping with a minimum thickness of 0.23 mm 0.0089 inch for sills, and a minimum thickness of 0.16 mm 0.0063 inch elsewhere.] Air leakage of weatherstripped doors not to exceed [0.0025] [0.0031] cubic meter per second of air per square meter [0.5] [1.25] cubic feet per minute of air per square foot of door area when tested in accordance with ASTM E 283.

2.2.4 Additional Hardware Reinforcement

NOTE: Size and shape of core blocking can add considerably to the price of doors. Check manufacturer's catalogs prior to specifying the larger five inch blocking.

Provide the minimum lock blocks to secure the specified hardware. The measurement of top, bottom, and intermediate rail blocks are a minimum 125 mm 5 inch by full core width. Comply with the manufacturer's labeling

requirements for reinforcement blocking, but not mineral material similar to the core.

2.3 FABRICATION

2.3.1 Marking

NOTE: Marking may not be required for smaller jobs,
or for doors not required to be fire-rated. Delete
this paragraph and coordinate with paragraph
"SUBMITTALS" when appropriate.

Stamp each door with a brand, stamp, or other identifying mark indicating quality and construction of the door.

2.3.2 Quality and Construction

Identify the standard on which the construction of the door was based [, identify the standard under which preservative treatment was made,] and identify doors having a Type I glue bond.

2.3.3 Preservative Treatment

Treat doors scheduled for restrooms, janitor closets and other possible wet locations including exterior doors with a water-repellent preservative treatment and so marketed at the manufacturer's plant in accordance with **WDMA I.S. 4**.

2.3.4 Adhesives and Bonds

WDMA I.S. 1-A. Use Type I bond for exterior doors and Type II bond for interior doors. Provide a nonstaining adhesive on doors with a natural finish.

2.3.5 Prefitting

Provide factory [prefinished] [finished] [and] factory prefitted doors for the specified hardware, door frame and door-swing indicated. Machine and size doors at the factory by the door manufacturer in accordance with the standards under which the doors are produced and manufactured. The work includes sizing, bevelling edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules to coordinate the work.

2.3.6 Finishes

2.3.6.1 Field Painting

NOTE: Finishes for exterior wood surfaces is
specified in Section 09 90 00 PAINTS AND COATINGS.
When new interior doors are to be provided, add the
following to Section 09 90 00 PAINTS AND COATINGS,
Table 7:

1. Wood Door Surfaces, Pigmented Finish:

1 coat of sealer, CID A-A-2335
1 coat of primer, CID A-A-2994
Sand (220 grit)
2 coats of alkyd semigloss enamel, CID A-A-50574
Sand (220 grit)
2 coats of urethane coating, FS TT-C-542

2. Wood Door Surfaces, Natural Finish:

Factory prime or seal doors, and field paint.

2.3.6.2 Factory Finish

NOTE: Factory finish, other than plastic laminate and natural finishes, may not be available nor cost effective for relatively small quantities of doors (less than 200 doors of the same finish). Contact door manufacturers for availability and cost.

NOTE: Select open grain effect where the more expensive closed grain effect is not required. Closed grain effect provides a near furniture-like finish and adds considerably to the cost of a door while it may not necessarily add to the durability.

Provide doors finished at the factory by the door manufacturer as follows:
AWI Qual Stds Section 1500, specification for System No. 4 Conversion varnish alkyd urea or System No. 5 Vinyl catalyzed. The coating is **AWI Qual Stds** premium, medium rubbed sheen, [open] [closed] grain effect. Use stain when required to produce the finish specified for color. Seal edges, cutouts, trim, and wood accessories, and apply two coats of finish compatible with the door face finish. Touch-up finishes that are scratched or marred, or where exposed fastener holes are filled, in accordance with the door manufacturer's instructions. Match color and sheen of factory finish using materials compatible for field application.

2.3.6.3 Plastic Laminate Finish

Factory applied, **NEMA LD 3**, General or Specific purpose type, **1.25 mm 0.050 inch** minimum thickness. Glue laminated plastic for hollow core doors to wood veneer, plywood, or hardboard backing to form door panel. Provide a combined thickness of laminate sheet and backing of **2.5 mm 0.10 inch** minimum.

2.3.6.4 Color

Provide **door finish colors** [as indicated] [as selected by the Contracting Officer from the color selection samples].

2.3.7 Water-Resistant Sealer

Provide manufacturer's standard water-resistant sealer compatible with the specified finish[es].

2.4 SOURCE QUALITY CONTROL

NOTE: Require tests and test reports when fire rated wood doors are included in the project. Doors designated to have "C" label have a 3/4 hour rating, doors designated to have "B" label have a one or 1 1/2 hour rating.

Meet or exceed the following minimum performance criteria of stiles of "B" and "C" label fire doors utilizing standard mortise leaf hinges:

- a. **Split resistance:** Averages of ten test samples not less than 225 kilograms 500 pounds load when tested in accordance with WDMA TM-5.
- b. **Cycle-slam:** 200,000 cycles with no loose hinge screws or other visible signs of failure when tested in accordance with the requirements of WDMA TM-7.
- c. **Hinge loading resistance:** Averages of ten test samples not less than 315 kilograms 700 pounds load when tested for direct screw withdrawal in accordance with WDMA TM-8 using a No. 12, 30 mm 1-1/4 inch long, steel, fully threaded wood screw. Drill 4 mm 5/32 inch pilot hole, use 40 mm 1-1/2 inch opening around screw for bearing surface, and engage screw full, except for last 3 mm 1/8 inch. Do not use a steel plate to reinforce screw area.

PART 3 EXECUTION

3.1 INSTALLATION

NOTE: If area rugs or carpeting is used in spaces which door openings serve, such as residential occupancies, specify adequate clearance at bottom of doors.

Before installation, seal top and bottom edges of doors with the approved water-resistant sealer. Seal cuts made on the job immediately after cutting using approved water-resistant sealer. Fit, trim, and hang doors with a 2 mm 1/16 inch minimum, 3 mm 1/8 inch maximum clearance at sides and top, and a 5 mm 3/16 inch minimum, 6 mm 1/4 inch maximum clearance over thresholds. Provide 10 mm 3/8 inch minimum, 11 mm 7/16 inch maximum clearance at bottom where no threshold occurs. Bevel edges of doors at the rate of 3 mm in 50 mm 1/8 inch in 2 inch. Door warp shall not exceed 6 mm 1/4 inch when measured in accordance with WDMA I.S. 1-A.

3.1.1 Fire Doors

NOTE: Fire doors shall be installed in fire rated frames and with fire rated hardware. Frames and hardware shall be specified in their respective sections of the specifications.

Install fire doors in accordance with NFPA 80. Do not paint over labels.

3.1.2 Prehung Doors

Install doors in accordance with the manufacturer's instructions and details. Provide fasteners for [stops] [and] [casing trim] within 75 mm 3 inch of each end and spaced 279 mm 11 inch on center maximum. Provide side and head jambs joined together with a dado or notch of 5 mm 3/16 inch minimum depth.

[3.1.3 Weatherstripping

NOTE: Use of wood doors on exterior of buildings is
not recommended for permanent structures unless they
are well protected from the weather.

Install doors in strict accordance with the door manufacturer's printed installation instructions and details. Weatherstrip exterior swing-type doors at sills, heads and jambs to provide weathertight installation. Apply weatherstripping at sills to bottom rails of doors and hold in place with a brass or bronze plate. Apply weatherstripping to door frames at jambs and head. Shape weatherstripping at sills to suit the threshold. [Meeting stiles of exterior double-doors shall be made weathertight by means of [a looped vinyl or neoprene strip in an extruded nonferrous metal housing applied to the edge of one door leaf] [a neoprene, vinyl or spring-bronze weatherstripped astragal secured to the inactive door leaf].]

] 3.2 SCHEDULE

Some metric measurements in this section are based on mathematical conversion of inch-pound measurements, and not on metric measurement commonly agreed to by the manufacturers or other parties. The inch-pound and metric measurements are as follows:

| <u>PRODUCTS</u> | <u>INCH-POUND</u> | <u>METRIC</u> |
|-----------------------|-------------------|---------------|
| Closet doors | 1-1/8 inch | 28.5 mm |
| | 1-3/8 inch | 35 mm |
| X-Ray resistant doors | 1-3/4 inch | 44.5 mm |
| | 2 inches | 50 mm |
| | 2-1/4 inch | 57 mm |
| | 2-1/2 inch | 64 mm |
| Weatherstripping | 0.0089 inch | 0.23 mm |
| | 0.0063 inch | 0.16 mm |

-- End of Section --