
USACE / NAVFAC / AFCEA UFGS-08210 (September 1999)

Preparing Activity: NAVFAC Replacing without revision
NFGS of same number and date

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 22 December 2004

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SECTION 08210

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09/99

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SECTION 08210

WOOD DOORS 09/99

NOTE: This guide specification covers the requirements for wood doors.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of 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

NOTE: Issue (date) of references included in
project specifications need not be more current than
provided by the latest guide specification. Use of
SpecsIntact automated reference checking is
recommended for projects based on older guide
specifications.

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

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

AWI Qual Stds (2003) AWI Quality Standards

ASTM INTERNATIONAL (ASTM)

ASTM E 152 (1981ae2) Fire Tests of Door Assemblies

ASTM E 283 (2004) Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

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

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (2000) High-Pressure Decorative Laminates

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 252 (2003) Fire Tests of Door Assemblies

NFPA 80 (1999) Fire Doors and Fire Windows

UNDERWRITERS LABORATORIES (UL)

UL 10B (1997; Rev thru Oct 2001) Fire Tests of Door Assemblies

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

WDMA I.S. 1-A (1997) Architectural Wood Flush Doors

WDMA I.S. 4 (2000) Water-Repellent Preservative Non-Pressure Treatment for Millwork

WDMA I.S. 6 (1997) Wood Stile and Rail Doors

WDMA TM-5 (1990) Split Resistance Test Method

WDMA TM-7

(1990) Cycle Slam Test Method

WDMA TM-8

(1990) Hinge Loading Test Method

1.2 SUBMITTALS

NOTE: Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item should be required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Doors; 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, [_____]

Accessories

Water-resistant sealer

Sample warranty

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

[Fire resistance rating; 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, [_____]

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 inches 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.

Warranty shall 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. When laminated panels are furnished, they shall be not less than three ply. Flat panels shall have a minimum finished panel thickness of 13 mm 1/2 inch. Raised panels shall have a minimum finished panel thickness of 20 mm 3/4 inch.

2.1.2 Flush Doors

Flush doors shall conform to WDMA I.S. 1-A. Hollow core doors shall have lock blocks and 25 mm one inch minimum thickness hinge stile. Stile edge bands of doors to receive natural finish shall be hardwood, compatible with face veneer. Stile edge bands of doors to be painted shall be mill option specie. 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. Doors shall have [tempered hardboard] [medium density overlayed hardwood veneer] faces. Edge bands shall be wood. [Openings in exterior flush doors shall be flashed 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. Doors shall be [28.5] [35] mm [1 1/8] [1 3/8] inch thick. Equip doors with the manufacturer's standard hardware, including tracks, hinges, guides, and pulls.

2.1.4 Sliding Closet Doors

[Flush doors shall conform to WDMA I.S. 1-A.] [Paneled] [and] [Louvered] doors shall conform to WDMA I.S. 6 [premium or select] [standard] grade. Doors shall be 35 mm 1 3/8 inch thick. 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 inches 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 inches 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. Lead sheet shall be 99.9 percent pure lead, [_____] mm inch thick, free from dross, oxide, inclusions, laminations, scale, blisters, and cracks. Lead sheets shall be located as standard with the manufacturer, shall extend fully from edge to edge, from top to bottom, and shall 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.

Doors specified or indicated to have a fire resistance rating shall conform to the requirements of UL 10B, ASTM E 152, 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 as specified 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. Louvers shall be of the
manufacturer's standard design and shall transmit a minimum of 35 percent
free air. Louvers shall be the [slat] [sightproof inverted vee slat] type.
[Block hollow core doors to provide solid anchorage for the louvers.] Mount
louvers in the door [as indicated] with [flush wood moldings] [wood lip
moldings]. [Metal louvers for wood doors are specified in Section 10201
METAL WALL AND DOOR LOUVERS.]

2.2.2 Door Light Openings

Provide glazed openings with the manufacturer's standard wood moldings
[except that moldings for doors to receive natural finish shall be of the
same specie and color as the face veneers]. Moldings on exterior doors
shall have sloped surfaces. [Moldings for flush doors shall be lip type.]
[Provide glazed openings in fire-rated doors with fire rated frames.]
Glazing is specified in Section 08800 GLAZING.

2.2.3 Weatherstripping

NOTE: Include weatherstripping when Section 08710,
"Door Hardware," is NOT included in project
specification; otherwise, add to Section 08710.
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 0.003125 per 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. Weatherstripping shall be [tempered spring bronze] [or] [looped neoprene or vinyl held in an extruded non-ferrous metal housing]. [Bronze weatherstripping shall be a minimum of 0.23 mm 0.0089 inch thick for sills, and a minimum of 0.16 mm 0.0063 inch thick elsewhere.] Air leakage of weatherstripped doors shall not exceed [0.0025] [0.003125] 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 fire rated doors with hardware reinforcement blocking. [Size of lock blocks shall be as required to secure the hardware specified.] [Top, bottom and intermediate rail blocks shall measure 125 mm 5 inches minimum by full core width.] Reinforcement blocking shall be in compliance with the manufacturer's labeling requirements and shall not be 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.

Each door shall bear a stamp, brand, 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

Exterior doors shall be water-repellent preservative treated and so marked at the 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. Adhesive for doors to receive a natural finish shall be nonstaining.

2.3.5 Prefitting

At the Contractor's option, doors may be provided factory pre-fit. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced. The work shall include 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 as required to coordinate the work.

2.3.6 Finishes

2.3.6.1 Field Painting

NOTE: Finishes for exterior wood surfaces is specified in Section 09900, "Paints and Coatings." When new interior doors are to be provided, add the following to Section 09900, 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 as specified in Section 09900 PAINTS AND COATINGS.

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 shall be
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. Combined
minimum thickness of laminate sheet and backing shall be 2.5 mm 0.10 inch.

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 a water-resistant sealer compatible with the specified finish[es]
as approved and as recommended by the door manufacturer.

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.

Stiles of "B" and "C" label fire doors utilizing standard mortise leaf
hinges shall meet the following performance criteria:

- a. Split resistance: Average of ten test samples shall be 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: Average of ten test samples shall be
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 inches. 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 inches of each end and spaced 275 mm 11 inches on centers 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 manufacturer's printed 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 [indicated] [specified under Section 08710 DOOR HARDWARE]. [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 inches	28.5 mm
	1 3/8 inches	35 mm
X-Ray resistant doors	1 3/4 inches	44.5 mm
	2 inches	50 mm
	2 1/4 inches	57 mm
	2 1/2 inches	64 mm
Weatherstripping	0.0089 inch	0.23 mm
	0.0063 inch	0.16 mm

-- End of Section --