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USACE / NAVFAC / AFCEA UFGS-06200N (September 1999)

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

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 25 June 2004

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##### SECTION 06200

##### FINISH CARPENTRY

09/99

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SECTION 06200

FINISH CARPENTRY  
09/99

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NOTE: This guide specification covers the requirements for covers general exterior and interior finish carpentry.

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.

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NOTE: On the drawings, show:

1. Location, size, type, and thickness of materials;
2. Size and spacing of fasteners;
3. Details of millwork;
4. Color and/or pattern of prefinished material;
5. Profile and size of trim; and
6. Species of any wood that is to be stain, natural, or transparent finish.

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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.

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.6 (1998) Hardboard Siding

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A208.1 (1999) Particleboard

ANSI B18.2.1 (1996; Errata 2003) Square and Hex Bolts  
and Screws Inch Series

ANSI B18.6.1 (1981; R 1997) Wood Screws (Inch Series)

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C1 (2000) All Timber Products - Preservative  
Treatment by Pressure Processes

AWPA C2 (2001) Lumber, Timber, Bridge Ties and  
Mine Ties - Preservative Treatment by  
Pressure Processes

AWPA C9 (2000) Plywood - Preservative Treatment by  
Pressure Processes

AWPA M2 (2001) Standard for Inspection of Treated  
Wood Products

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA E445S (2001; R 2002) Performance Standards and  
Policies for Structural-Use Panels (APA  
PRP-108)

ARCHITECTURAL WOODWORK INSTITUTE (AWI)

AWI Qual Stds (2003) AWI Quality Standards

ASME INTERNATIONAL (ASME)

ASME B18.2.2 (1987; R 1999) Square and Hex Nuts

ASTM INTERNATIONAL (ASTM)

ASTM A 687 (1993) High-Strength Nonheaded Steel Bolts and Studs

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.9 (2003) Cabinet Hardware

HARDWOOD PLYWOOD AND VENEER ASSOCIATION (HPVA)

HPVA HP-1 (2000) American National Standard for Hardwood and Decorative Plywood

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA LD 3 (2000) High-Pressure Decorative Laminates

NATIONAL HARDWOOD LUMBER ASSOCIATION (NHLA)

NHLA Rules (2003) Rules for the Measurement & Inspection of Hardwood & Cypress

NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION (NELMA)

NELMA Grading Rules (2003) Standard Grading Rules for Northeastern Lumber

REDWOOD INSPECTION SERVICE (RIS) OF THE CALIFORNIA REDWOOD ASSOCIATION (CRA)

RIS Grade Use (1998) Redwood Lumber Grades and Uses

SOUTHERN CYPRESS MANUFACTURERS ASSOCIATION (SCMA)

SCMA Spec (1986; Supple No. 1, Aug 1993) Standard Specifications for Grades of Southern Cypress

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB 1003 (2002) Standard Grading Rules for Southern Pine Lumber

U.S. DEPARTMENT OF COMMERCE (DOC)

PS-58 (1974) Basic Hardboard

PS1 (1995) Construction and Industrial Plywood (APA V995)

PS20 (1999) American Softwood Lumber Standard

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 17 (2000) Standard Grading Rules

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA G-5

(1998) Western Lumber Grading Rules

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

WDMA I.S. 4

(2000) Water-Repellent Preservative  
Non-Pressure Treatment for Millwork

1.2 SUBMITTALS

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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.

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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

Prefabricated millwork; G

SD-07 Certificates

Certificates of grade

Certificates of compliance

### 1.3 DRAWINGS

Submit drawings showing prefabricated millwork. Include details and erection data associated with work of other trades; materials and species; arrangements; profiles of moldings; thicknesses; sizes of parts; construction; fastenings; and clearances.

### 1.4 CERTIFICATES

Provide certificates of grade from the grading agency on graded but unmarked lumber or plywood attesting that materials meet the grade requirements specified herein.

Provide certificates of compliance unless materials bear certification markings or statements.

### 1.5 DELIVERY, STORAGE, AND HANDLING

Deliver lumber, plywood, trim, and millwork to job site in an undamaged condition. Stack materials to ensure ventilation and drainage. Protect against dampness before and after delivery. Store materials under cover in a well-ventilated enclosure and protect against extreme changes in temperature and humidity. Do not store products in building until wet trade materials are dry.

### 1.6 QUALITY ASSURANCE

#### 1.6.1 Lumber

Identify each piece or each bundle of lumber, millwork, and trim by the grade mark of a recognized association or independent inspection agency that is certified by the Board of Review, American Lumber Standards Committee, to grade the species.

#### 1.6.2 Plywood

Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over quality of the plywood. Mark shall identify plywood by species group or span rating, and shall show exposure durability classification, grade, and compliance with PS1.

#### 1.6.3 Hardboard and Particleboard

Materials shall bear a marking or statement identifying the producer and the applicable standard.

#### 1.6.4 Pressure-Treated Lumber and Plywood

Each treated piece shall be inspected in accordance with AWP A M2.

#### 1.6.5 Nonpressure-Treated Woodwork and Millwork

Mark, stamp, or label, indicating compliance with WDMA I.S. 4.



#### 1.6.6 Fire-Retardant Treated Lumber

Each piece to bear Underwriters Laboratories label or the label of another nationally recognized independent testing laboratory.

### PART 2 PRODUCTS

#### 2.1 WOOD

##### 2.1.1 Sizes and Patterns of Wood Products

Yard and board lumber sizes shall conform to PS20. Provide shaped lumber and millwork in the patterns indicated and standard patterns of the association covering the species. Size references, unless otherwise specified, are nominal sizes, and actual sizes shall be within manufacturing tolerances allowed by the applicable standard.

##### 2.1.2 Trim, Finish, and Frames

Provide species and grades listed for materials to be paint finished. Provide materials that are to be stain, natural, or transparent finished one grade higher than that listed. Provide species indicated for materials to be transparent finished. Run trim, except window stools and aprons with hollow backs.

\*\*\*\*\*  
**NOTE: Edit table to delete unsuitable species. For small projects, species that are not readily available locally may be deleted.**  
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TABLE OF GRADES FOR WOOD TO RECEIVE PAINT FINISH

<u>Grading Rules</u>	<u>Species</u>	<u>Exterior and Interior Trim, Finish, and Frames</u>
WWPA G-5 grading rules	Aspen Douglas Fir-Larch Douglas Fir-South Engelmann Spruce -Lodgepole Pine Engelmann Spruce Hem-Fir Idaho White Pine Lodgepole Pine Mountain Hemlock Mountain Hemlock -Hem-Fir Ponderosa Pine- Sugar Pine (Ponderosa Pine -Lodgepole Pine) White Woods (Western Woods) Western Cedars Western Hemlock	All Species: C & Btr. Select (Choice & Btr Idaho White Pine) or Superior Finish. Western Red Cedar may be graded C & Btr. Select or A & Btr. per Special Western Red Cedar Rules.
WCLIB 17 standard grading	Douglas Fir-Larch Hem-Fir	All Species: C & Btr VG, except A for

TABLE OF GRADES FOR WOOD TO RECEIVE PAINT FINISH

<u>Grading Rules</u> rules	<u>Species</u>	<u>Exterior and Interior</u> <u>Trim, Finish, and Frames</u>
	Mountain Hemlock Sitka Spruce Western Cedars Western Hemlock	Western Red Cedar
SPIB 1003 grading rules	Southern Pine	C & Btr
SCMA Spec standard specification	Cypress	C-Select
NELMA Grading Rules standard grading rules	Balsam Fir Eastern Hemlock- Tamarack Eastern Spruce Eastern White Pine Norway Pine Northern Pine Northern White Cedar	All Species: C- Select except C & Btr for Eastern White Pine and Norway Pine
RIS Grade Use standard specifications	Redwood	Clear Clear All Heart
NHLA Rules rules	Cypress  Red Gum Soft Elm Birch	B Finish  Select or Btr (for interior use only)
2.1.3 Shelving		
Provide species of grade equal to or exceeding Boards, 3 Common Hem-Fir under WPA G-5.		
2.1.4 Softwood Plywood		
PS1, thicknesses as indicated.		
2.1.4.1 Plywood for Soffits		
Exterior type, B-B medium density overlay.		
2.1.4.2 Plywood for Shelving		
Interior type, [A-B] [B-B] Grade, any species group.		
2.1.4.3 Plywood for Countertops		
Exterior type, A-C Grade.		

#### 2.1.1.5 Hardwood Plywood

\*\*\*\*\*  
**NOTE: Retain bracketed option describing core construction if only hardwood veneer or lumber core construction is acceptable.**  
\*\*\*\*\*

HPVA HP-1, Type [Technical (Exterior)] [I (Exterior)] [II (Interior)] [III (Interior)], [Premium (A)] [Good (1)] [Sound (2)] [Utility (3)] [Backing (4)] [Specialty (SP)] Grade, [hardwood veneer core construction,] [lumber core construction,] face veneers of [\_\_\_\_], of thickness indicated.

#### 2.1.1.6 Hardboard

PS-58, [standard] [tempered] [service] type, [3] [6] mm [1/8] [1/4] inch thick.

#### 2.1.1.7 Particleboard

ANSI A208.1, Grade 1-M-2 or 2-M-2 or better.

#### 2.1.1.8 Stairs

Treads 32 mm 1 1/4 inches thickness, clear red or white oak. Risers 19 mm one inch nominal finish lumber.

#### 2.1.1.9 Shoe Mold

Clear red or white oak, 13 by 16 mm 1/2 by 5/8 inch unless otherwise indicated.

#### 2.1.1.10 Wood Seats

Clear maple, oak, or other suitable hardwood, not less than 40 mm 1 5/8 inches thick, with rounded edges. Provide stainless steel stanchions or brackets [as indicated].

#### 2.1.1.11 Wood Bumpers

Clear oak [, maple] [, birch] [or] [\_\_\_\_], dressed to size indicated and with outer edges beveled.

#### 2.1.1.12 Catwalks

Boards, 19 by 140 mm one by 6 inches nominal, species and grade equal to or exceeding 3 Common Hem-Fir under WWPA G-5.

#### 2.1.1.13 Siding

Horizontal siding shall be hardboard, plywood, or wood. Panel siding shall be hardboard or plywood.

##### 2.1.1.13.1 Horizontal Hardboard Siding

AHA A135.6, factory primed face and longitudinal edges, factory sealed back, lap type, [200] [225] [250] [300] millimeters (mm) [8] [9] [10] [12] inches wide, maximum practicable lengths, 9.5 or 11 mm 3/8 or 7/16 inch thick, [smooth] [embossed] [textured] face.

#### 2.1.13.2 Panel Hardboard Siding

AHA A135.6, factory primed face and longitudinal edges, factory sealed back, 1220 mm 4 feet wide, maximum practicable lengths, 9.5 or 11 mm 3/8 or 7/16 inch thick, [smooth] [embossed] face [, and grooved as selected from manufacturer's standard patterns].

#### 2.1.13.3 Horizontal Plywood Siding

PS1, exterior, [medium-density overlay] lap type, [150] [200] [300] mm [6] [8] [12] inches wide, maximum practicable lengths, [9.5] [11] [12] [13] mm [3/8] [7/16] [15/32] [1/2] inch thick, [smooth] [embossed] [rough-sawn texture] [embossed] face.

#### 2.1.13.4 Panel Plywood Siding

PS1, exterior, [medium-density overlay,] 1220 mm 4 feet wide, maximum practicable lengths, span rating of [400] [600] mm [16] [24] oc, [smooth] [embossed] [rough-sawn texture] [striated] face, [and grooved] as selected from manufacturer's standard patterns.

#### 2.1.13.5 Horizontal Rated Siding

Qualified under APA E445S, exterior type [medium-density overlay], lap types, [150] [200] [250] [300] mm [6] [8] [10] [12] inches wide, maximum practicable lengths, [11] [12] [13] mm [7/16] [15/32] [1/2] inch thick, [smooth] [embossed] [rough-sawn texture] face.

#### 2.1.13.6 Panel Rated Siding

Qualified under APA E445S, exterior type, [medium-density overlay] 1220 mm 4 feet wide, maximum practicable lengths, [span rated at 400 mm 16 oc] [span rated at 600 mm 24 oc,] [smooth] [embossed] [striated] face [, and grooves] as selected from manufacturer's standard patterns.

#### 2.1.13.7 Wood Siding

Species and grades listed in paragraph entitled "Trim, Finish, and Frames" Table. Siding shall be [horizontal bevel type, minimum 5 mm 3/16 inch thin edge by minimum 11 mm 7/16 inch thick edge,] [horizontal plain lap type] [horizontal drop type] [vertical board, tongue and groove or shiplap on long edges,] [vertical board and batten type,] 25 mm one inch thick, [150] [200] [250] mm [6] [8] [10] inches wide, maximum practicable lengths, [smooth] [rough-sawn texture].

### 2.2 LAMINATED PLASTIC

NEMA LD 3.

#### 2.2.1 Countertop Finish

Grade GP 50 or PF 42, satin finish. Color and pattern shall be [\_\_\_\_\_] [as indicated].

#### 2.2.2 Backing Sheet

BK 20.

## 2.3 MOISTURE CONTENT OF WOOD PRODUCTS

Air-dry or kiln-dry lumber. Kiln-dry treated lumber after treatment. Maximum moisture content of wood products at time of delivery to the job site, and when installed, shall be as follows:

\*\*\*\*\*  
NOTE: At the text below, the lower percentages (6  
and 8 percent) may be specified for interior  
woodwork which will be located in spaces which will  
be dry due to heating and air conditioning.  
\*\*\*\*\*

- a. Interior Paneling: [6] [12] percent.
- b. Interior Finish Lumber, Trim, and Millwork 25 mm 1 1/4 Inches Nominal or Less in Thickness: [6] [12] percent on 85 percent of the pieces and [8] [15] percent on remainder.
- c. Exterior Treated and Untreated Finish Lumber and Trim 89 mm 4 Inches Nominal or Less in Thickness: 19 percent.
- d. Moisture content of other materials shall be in accordance with the applicable standards.

## 2.4 PRESERVATIVE TREATMENT OF WOOD PRODUCTS

### 2.4.1 Nonpressure Treatment

Treat woodwork and millwork, such as exterior trim, door trim, and window trim, in accordance with WDMA I.S. 4, with either 2 percent copper napthenate, 3 percent zinc napthenate, or 1.8 percent copper-8-quinolinolate. Provide a liberal brushcoat of preservative treatment to field cuts and holes.

### 2.4.2 Pressure Treatment

Lumber and plywood used on the exterior of buildings [or in contact with masonry or concrete] shall be treated with water-borne preservative in accordance with AWPA C1, AWPA C2, and AWPA C9, as applicable, and inspected in accordance with AWPA M2. Identify treatment on each piece of material by the quality mark of an agency accredited by the Board of Review of the American Lumber Standards Committee.

## 2.5 FIRE-RETARDANT TREATMENT

\*\*\*\*\*  
NOTE: List items to be treated in this paragraph.  
If fire-retardant treatment is not required, delete  
this paragraph and the following subparagraph.  
Specify fire-retardant treated plywood only for  
nonstructural applications not subject to elevated  
temperatures or high humidity. Do not specify  
fire-retardant treated plywood for any part of the  
roof or roofing system.  
\*\*\*\*\*

### 2.5.1 Wood Products

Treat the following items:

- a. [\_\_\_\_].

### 2.6 HARDWARE

Provide sizes, types, and spacings of manufactured building materials recommended by the product manufacturer except as otherwise indicated or specified. Provide hot-dipped galvanized steel or aluminum nails and fastenings where used on the exterior or exposed to the weather.

#### 2.6.1 Wood Screws

ANSI B18.6.1.

#### 2.6.2 Bolts, Nuts, Lag Screws, and Studs

ANSI B18.2.1, ASME B18.2.2, and ASTM A 687.

#### 2.6.3 Adjustable Shelf Standards

\*\*\*\*\*  
NOTE: See BHMA A156.9 for types of hardware  
available.  
\*\*\*\*\*

BHMA A156.9, Type [\_\_\_\_], with shelf rests Type [\_\_\_\_].

#### 2.6.4 Vertical Slotted Shelf Standards

\*\*\*\*\*  
NOTE: See BHMA A156.9 for types of hardware  
available.  
\*\*\*\*\*

BHMA A156.9, Type [\_\_\_\_], with shelf brackets Type [\_\_\_\_].

#### 2.6.5 Closet Hanger Rods

Chromium-plated steel rods, not less than 25 mm one inch diameter by 1.3 mm thick 18 gage. Rods may be adjustable with integral mounting brackets if smaller tube is 25 mm one inch by 1.3 mm thick 18 gage. Provide intermediate support bracket for rods more than 1200 mm 48 inches long.

### 2.7 FABRICATION

#### 2.7.1 Quality Standards (QS)

\*\*\*\*\*  
NOTE: Include this paragraph only if AWI Qual Stds  
will be referenced in the text of this section. See  
paragraph entitled "Casework with Transparent Finish  
(CTF)," for an example of such a reference. See AWI  
Qual Stds for additional examples, and for  
definitions of quality grades.  
\*\*\*\*\*

The terms "Premium," "Custom," and "Economy" refer to the quality grades defined in AWI Qual Stds. Items not specified to be of a specific grade shall be Custom grade. The AWI Qual Stds is superseded by all contract document requirements indicated or stated herein.

#### 2.7.2 Countertops

\*\*\*\*\*  
**NOTE: Use a plastic laminate backing sheet for  
counters exposed to excessive moisture.**  
\*\*\*\*\*

Fabricate with lumber and a core of exterior plywood or particleboard, glued and screwed to form an integral unit. Bond laminated plastic under pressure to exposed surfaces, using type of glue recommended by plastic manufacturer [, and bond a backing sheet under pressure to underside of countertop]. Countertop unit shall be post-formed type with no-drip nose, cove moulding, and Style A back splash, and covered with NEMA LD 3, Grade PF 42 plastic. Back splash shall be not less than 90 mm 3 1/2 inches nor more than 115 mm 4 1/2 inches high.

#### 2.7.3 Cabinets

Wall and base cabinets [and vanity cabinets] shall be of the same construction and appearances. Fabricate with solid ends and frame fronts, or with frames all around. Frames shall be solid hardwood not less than 19 by 38 mm 3/4 by 1 1/2 inches. Ends, bottom, back, partitions, and doors shall be hardwood plywood. Mortise and tenon, dovetail, or dowel and glue joints to produce a rigid unit. Cover exposed edges of plywood with hardwood strips. Doors, frames, and solid exposed ends shall be 19 mm 3/4 inch thick; bottom, partitions, and framed ends 13 mm 1/2 inch minimum; shelves 16 mm 5/8 inch minimum; back 6 mm 1/4 inch minimum.

##### 2.7.3.1 Cabinet Hardware

\*\*\*\*\*  
**NOTE: See BHMA A156.9 for types of hardware  
available. Edit this paragraph to include hardware  
items needed for custom millwork such as custom wood  
wardrobes.**  
\*\*\*\*\*

BHMA A156.9. Provide hardware for each door, including two self-closing hinges. Provide two side-mounted metal drawer slides for each drawer. Hardware exposed to view shall be [bright chromium plated] [\_\_\_\_\_] [as indicated].

##### 2.7.3.2 Finish

Provide a natural factory finish on wood surfaces after fabrication. Finish shall be fabricator's standard natural finish, except that it shall be equivalent to one coat of sealer and one coat of spar varnish on all surfaces and a second coat of spar varnish on surfaces exposed to view. Sand lightly and wipe clean between coats.

#### 2.7.4 Workbenches

Fabricate as indicated. Dovetail and glue drawer corners. Fasten frames with suitable wood screws or bolts. Sand exposed surfaces smooth, and ease

exposed edges. Provide two side-mounted, metal, ball-bearing drawer slides [BHMA A156.9, Type [\_\_\_\_],] for each drawer, and at least two surface-mounted hinges [, Type [\_\_\_\_],] and a magnetic catch [, Type [\_\_\_\_],] for each door.

#### 2.7.5 Casework With Transparent Finish (CTF)

\*\*\*\*\*  
NOTE: This is a sample paragraph for referencing  
the AWI Qual Stds. See the standards for  
definitions of quality grades and for additional  
information on using the AWI Qual Stds.  
\*\*\*\*\*

##### 2.7.5.1 AWI Quality Grade (CTF)

[Premium] [Custom] [Economy] grade.

##### 2.7.5.2 Construction (CTF)

Details shall conform to [reveal overlay] [flush overlay] [exposed face frame] design.

##### 2.7.5.3 Exposed Parts

[\_\_\_\_] specie, [\_\_\_\_] cut.

##### 2.7.5.4 Semi-Exposed Parts

As specified in the AWI Qual Stds for the grade selected.

#### 2.7.6 Casework With High Pressure Laminate Finish (CHPL)

\*\*\*\*\*  
NOTE: This is a sample paragraph for referencing  
the AWI Qual Stds. See the standards for  
definitions of quality grades and for additional  
information on using the AWI Qual Stds.  
\*\*\*\*\*

##### 2.7.6.1 AWI Quality Grade (CHPL)

[Premium] [Custom] grade.

##### 2.7.6.2 Construction (CHPL)

Details shall conform to [reveal overlay] [flush overlay] [exposed face frame] design.

##### 2.7.6.3 Exposed Surfaces

High pressure laminate, color [\_\_\_\_], pattern [\_\_\_\_].

##### 2.7.6.4 Semi-Exposed Surfaces

As specified in the AWI Qual Stds for the grade selected.



## PART 3 EXECUTION

### 3.1 FINISH WORK

Provide sizes, materials, and designs as indicated and as specified. Apply primer to finish work before installing. Where practicable, shop assemble and finish items of built-up millwork. Joints shall be tight and constructed in a manner to conceal shrinkage. Miter trim and moldings at exterior angles and cope at interior angles and at returns. Material shall show no warp after installation. Install millwork and trim in maximum practical lengths. Fasten finish work with finish nails. Provide blind nailing where practicable. Set face nails for putty stopping.

#### 3.1.1 Exterior Finish Work

Machine-sand exposed flat members and square edges. Machine-finish semi-exposed surfaces. Construct joints to exclude water. In addition to nailing, glue joints of built-up items with waterproof glue as necessary for weather-resistant construction. Provide well distributed end joints in built-up members. Provide shoulder joints in flat work. Hold backs of wide-faced miters together with metal rings and waterproof glue. Fascias and other flat members, unless otherwise indicated, shall be 19 mm 3/4 inch thick. Provide door and window trim in single lengths. Provide braced, blocked, and rigidly anchored cornices for support and protection of vertical joints. Install soffits in largest practical size. Joints of plywood shall occur over center lines of supports. Fasten soffits with aluminum or stainless steel nails. Back prime all concealed surfaces of exterior trim.

#### 3.1.2 Interior Finish Work

After installation, sand exposed surfaces smooth. Provide window and door trim in single lengths.

#### 3.1.3 Door Frames

Set plumb and square. Provide solid blocking at not more than 400 mm 16 inches o.c. for each jamb. Position blocking to occur behind hinges and lock strikes. Double wedge frames and fasten with finishing nails. Set nails for putty stopping.

#### 3.1.4 Thresholds

Provide thresholds [shaped as indicated] [16 mm 5/8 inch thick by 70 mm 2 5/8 inches wide with beveled sides] and cut to fit at jambs. Fasten thresholds with casing nails. Set nails for putty stopping.

#### 3.1.5 Window Stools and Aprons

Provide stools with rabbet over window sill. Provide aprons with returns cut accurately to profile of member.

#### 3.1.6 Bases

Flat member with a molded top [and oak shoe mold]. Fasten base to framing or to grounds. [Nail shoe mold to the base.] Set [shoe mold] [one-piece wood base] after finish flooring is in place.

### 3.1.7 Finish Stair Work

Fit, nail, screw, bolt, and glue stair work together to form a strong rigid structure without squeaks or vibrations. Anchor newels and posts securely to rough stair framing. Cut newels, posts, and drops accurately around floor construction to make tight fit. Install balusters into treads and landings with glue. Install railing with straight runs following slope of stairs and with smooth curve turns. Return railing profile at ends and secure joints with bolts and nuts. Secure railing to posts and newels with concealed anchors. Support wall rails on metal brackets spaced near ends and not over 1500 mm 5 feet o.c.

## 3.2 SHELVING

19 mm one inch nominal thick wood shelf material or 19 or 20 mm 3/4 or 23/32 inch thick plywood shelf material supported substantially with end and intermediate supports and arranged to prevent buckling and sagging. [Hook strips shall be 19 by 89 mm one by 4 inches nominal and cleats 19 by 38 mm one by 2 inches nominal.] Provide cleats except where hook strips are specified or indicated. [Where adjustable shelving is indicated, provide standards and brackets or shelf rests for each shelf.] [Anchor standards to wall at not more than 600 mm 2 feet o.c.]

### 3.2.1 Linen Closets

Unless indicated otherwise, linen closets shall have a counter shelf 500 mm 20 inches wide located 900 mm 36 inches above the floor, a lower shelf approximately 450 mm 18 inches wide and 450 mm 18 inches above the floor, and three upper shelves 285 mm 11 1/4 inches wide located 350 mm 14 inches above the counter shelf and 350 mm 14 inches apart.

### 3.2.2 Storage Rooms

Provide storage rooms with shelves [of size and arrangement as indicated] [285 mm 11 1/4 inches wide, bottom shelf 450 mm 18 inches above the floor, top shelf 450 mm 18 inches below the ceiling, and intermediate shelves approximately 450 mm 18 inches apart].

### 3.2.3 Room Closets

Provide two shelves 285 mm 11 1/4 inches wide. Support lower shelf by hook strips at back and ends, and provide full-length wood or metal clothes hanger rods unless indicated otherwise.

### 3.2.4 Cleaning-Gear Closets

Provide [shelves of size and arrangement indicated] [two shelves 350 mm 14 inches wide].

## 3.3 CLOTHES HANGER RODS

Provide clothes hanger rods where indicated and in closets having hook strips. Set rods parallel with front edges of shelves and support by sockets at each end and by intermediate brackets spaced not more than 1200 mm 4 feet o.c.

### 3.4 MISCELLANEOUS

#### 3.4.1 Counters

Construct as indicated. Conceal fastenings where practicable, fit counter neatly, install in a rigid and substantial manner, and scribe to adjoining surfaces. Provide counter sections in longest lengths practicable; keep joints in tops to a minimum; and where joints are necessary, provide tight hairline joints drawn up with concealed-type heavy pull-up bolts. Glue joints with water-resistant glue and, in addition, make rigid and substantial with screws, bolts, or other approved fastenings.

#### 3.4.2 Cabinets

Install level, plumb, and tight against adjacent walls. Secure cabinets to walls with concealed toggle bolts, and secure top to cabinet with concealed screws. [Make cut-outs for fixtures to templates supplied by fixture manufacturer. Carefully locate cut-outs for pipes so that edges of holes will be covered by escutcheons.]

#### 3.4.3 Workbenches

Construct as indicated. Install level, plumb, and tight against adjacent construction. Fasten to walls with screws or toggle bolts and to floors with expansion bolts.

#### 3.4.4 Wood Seats

Support seats [on brackets spiked to the studs] [on stanchions] [as indicated]. Secure seats to supports with [screws] [bolts] as required; countersink heads of [screws] [bolts] and fill holes with hardwood filler, finished flush with tops of seats.

#### 3.4.5 Wood Bumpers

Bore, countersink, and bolt in place where indicated.

#### 3.4.6 Catwalks in Attic Spaces

Lay boards with 25 mm one inch spaces between. Stagger end joints, with each joint on a support.

### 3.5 SIDING

#### 3.5.1 Installation of Siding

Fit and position without springing or otherwise forcing into place. [For siding to have a stain finish, set nails and stop with nonstaining putty to match finished siding.] [For siding to have a paint finish, drive nails flush.]

#### 3.5.2 Horizontal Siding

\*\*\*\*\*  
NOTE: Only one nail at each support is used to  
attach 150 mm 6 inch or less wide siding. Edit last  
sentence accordingly.  
\*\*\*\*\*

Make end joints over framing members and alternate so at least two boards will be between joints on same support. Uniformly distribute shorter pieces throughout area. Provide starter strips to establish proper slant for siding. Predrill ends of siding if necessary to prevent splitting when nailed. [Horizontal bevel or plain lap siding: Overlap and nail into each support in accordance with recommendations of siding manufacturer.] [Horizontal drop siding: Work each course into top edge of previous course. Nail into each support with [two nails, one near lower edge to clear top of previous course, and one just above mid-height of course.] [one nail just above mid-height of course.]]

### 3.5.3 Vertical Board Siding

\*\*\*\*\*  
**NOTE: Only one nail at each support is used to  
attach 150 mm 6 inch or less wide siding. Edit last  
sentence accordingly.**  
\*\*\*\*\*

Apply siding with horizontal joints only at locations indicated. Work each board into edge of previous course. Nail into supports at 600 mm 24 inches on center with [two nails, one blind if possible at or near joint with previous board, and one just outside board centerline.] [one nail just outside board center line.]

### 3.5.4 Vertical Board and Batten Siding

Apply with horizontal joints only at locations indicated. Install each board with 13 mm 1/2 inch space between it and previous board. Nail at center of board and into supports at 600 mm 24 inches on center. Center battens over space between boards and nail down center at 400 mm 16 inches on center.

### 3.5.5 Panel Siding

Apply panels with edges at joints spaced in accordance with manufacturer's recommendations. Shiplapped edges or square edges covered with battens shall be [primed for paint finish,] [sealed for stain finish,]. Back all edges with framing members. Nail panels at edges 150 mm 6 inches on center and at intermediate supports 300 mm 12 inches on center. Edge nailing to be 10 mm 3/8 inch from edges. For shiplap joints, nail 10 mm 3/8 inch from visible joint and at a location to penetrate lap with previous panel. When panel siding is part of an engineered shear wall or used as wall-bracing, nail shiplap joints to supports with double rows of nails. Space battens at [300] [400] mm [12] [16] inches on center and nail down center at 600 mm 24 inches on center.

-- End of Section --