UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION TABLE OF CONTENTS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

SECTION 06 20 00

FINISH CARPENTRY

08/16, CHG 2: 11/18

PART 1 GENERAL

1.1 REFERENCES
1.2 SUBMITTALS
1.3 DETAIL DRAWINGS
1.4 PRODUCT DATA
1.5 SAMPLES
1.6 DELIVERY, STORAGE, AND HANDLING
1.7 QUALITY ASSURANCE
1.7.1 Certifications
1.7.1.1 Certified Wood Grades
1.7.1.2 Certified Sustainably Harvested Wood
1.7.1.3 Indoor Air Quality Certifications
1.7.1.3.1 Adhesives and Sealants
1.7.1.3.2 Composite Wood Products
1.7.2 Lumber
1.7.3 Plywood
1.7.4 Hardboard [and Particleboard]
1.7.5 Pressure Treated Lumber and Plywood
1.7.6 Non-Pressure Treated Woodwork and Millwork
1.7.7 Fire-Retardant Treated Lumber

PART 2 PRODUCTS

2.1 WOOD PRODUCTS
2.1.1 Sizes and Patterns of Wood Products
2.1.2 Species and Grades
2.1.3 Trim, Finish, and Frames
2.1.4 Utility Shelving
2.1.5 Softwood Plywood
2.1.6 Hardwood Plywood
2.1.7 Hardboard
2.1.8 Medium Density Fiberboard (MDF) and Particleboard
2.1.9 Stairs
2.1.10 Shoe Mould

2.1.11 Wood Seats
2.1.12 Wood Bumpers
2.1.13 Catwalks
2.1.14 Siding
2.1.14.1 Horizontal Hardboard Siding
2.1.14.2 Panel Hardboard Siding
2.1.14.3 Horizontal Plywood Siding
2.1.14.4 Panel Plywood Siding
2.1.14.5 Horizontal Rated Siding
2.1.14.6 Panel Rated Siding
2.1.14.7 Wood Siding
2.1.14.8 Engineered Wood Structural Panels
2.1.14.9 Epoxy Coated Wood Panels
2.2 SOFFITS
2.2.1 Hardboard and Plywood
2.3 FASCIAS AND TRIM
2.3.1 Wood
2.4 COUNTERTOPS
2.4.1 Laminated Plastic-faced Countertops
2.4.1.1 Countertop Finishes
2.4.1.2 Backing Sheet
2.4.2 Solid Surface
2.5 MOISTURE CONTENT OF WOOD PRODUCTS
2.6 PRESERVATIVE TREATMENT OF WOOD PRODUCTS
2.6.1 Non-Pressure Treatment
2.6.2 Pressure Treatment
2.7 FIRE-RETARDANT TREATMENT
2.7.1 Wood Products
2.8 HARDWARE AND ACCESSORIES
2.8.1 Wood Screws
2.8.2 Bolts, Nuts, Lag Screws, and Studs
2.8.3 Nails
2.8.4 Adjustable Shelf Standards
2.8.5 Vertical Slotted Shelf Standards
2.8.6 Closet Hanger Rods
2.9 FABRICATION
2.9.1 Quality Standards (QS)
2.9.1.1 Grades
2.9.1.2 Adhesives
2.9.2 Countertops
2.9.3 Cabinets
2.9.3.1 Cabinet Hardware
2.9.3.2 Finish
2.9.4 Workbenches
2.9.5 Casework with Transparent Finish (CTF)
2.9.5.1 AWI Quality Grade
2.9.5.2 Construction
2.9.5.3 Exposed Parts
2.9.5.4 Semi-Exposed Parts
2.9.6 Casework with High Pressure Laminate Finish
2.9.6.1 AWI Quality Grade
2.9.6.2 Construction
2.9.6.3 Exposed Surfaces
2.9.6.4 Semi-Exposed Surfaces
2.9.6.5 Edge Banding

PART 3 EXECUTION

3.1 FINISH WORK

3.1.1 Exterior Finish Work
3.1.2 Interior Finish Work
3.1.3 Door Frames
3.1.4 Thresholds
3.1.5 Window Stools and Aprons
3.1.6 Bases
3.1.7 Finish Stair Work
3.2 SHELVING
3.2.1 Linen Closets
3.2.2 Storage Rooms
3.2.3 Room Closets
3.2.4 Cleaning Gear Closets
3.3 CLOTHES HANGER RODS
3.4 MISCELLANEOUS
3.4.1 Countertops
3.4.2 Cabinets
3.4.3 Workbenches
3.4.4 Wood Seats
3.4.5 Wood Bumpers
3.4.6 Catwalks in Attic Spaces
3.5 SIDING
3.5.1 Installation of Siding
3.5.2 Horizontal Siding
3.5.3 Vertical Board Siding
3.5.4 Vertical Board and Batten Siding
3.5.5 Panel Siding
3.5.6 Epoxy Coated Panels
3.6 SOFFITS
3.6.1 Wood
3.7 FASCIA AND EXTERIOR TRIM
3.8 MOULDING AND INTERIOR TRIM

-- End of Section Table of Contents --

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USACE / NAVFAC / AFCEC / NASA	**UFGS-06 20 00 (August 2016)** **Change 2 - 11/18**
Preparing Activity: NAVFAC	**Superseding** **UFGS-06 20 00 (February 2016)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

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****

SECTION 06 20 00

FINISH CARPENTRY

08/16, CHG 2: 11/18

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NOTE: This guide specification covers general exterior and interior finish carpentry in a condensed format and is therefore intended for use on small projects.

Consider specifying medium density fiberboard (MDF) composite materials in lieu of solid wood. Made from recycled wood fibers and resin, MDF is machine dried and pressed to produce dense, durable, dimensionally stable sheets that perform well in moderate heat and humidity. MDF is a cost effective alternative to wood, both initially and throughout its life cycle. MDF is also referred to herein as particleboard. Evaluate humidity requirements of the project before specifying MDF.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

****

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NOTE: On the drawings, show:

1. Location, size, type, and thickness of materials;

2. Size, type, and spacing of fasteners;

3. Details of millwork;

4. Color and pattern of prefinished material;

5. Profile and sizes of all trim components;

6. Species, color, and finish of all wood that is to be stained, installed in its natural finish, or to have a transparent finish.

****

PART 1 GENERAL

1.1 REFERENCES

****

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

****

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 FOREST FOUNDATION (AFF)

ATFS STANDARDS	(2015) American Tree Farm System Standards of Sustainability 2015-2020

AMERICAN HARDBOARD ASSOCIATION (AHA)

AHA A135.4	(1995; R 2004) Basic Hardboard
AHA A135.6	(1998; R 2006) Hardboard Siding

AMERICAN LUMBER STANDARDS COMMITTEE (ALSC)

ALSC PS 20	(2015) American Softwood Lumber Standard

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B18.2.1	(2012; Errata 2013) Square and Hex Bolts

	and Screws (Inch Series)
ASME B18.2.2	(2015) Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
ASME B18.6.1	(2016) Wood Screws (Inch Series)

AMERICAN WOOD PROTECTION ASSOCIATION (AWPA)

AWPA M4	(2015) Standard for the Care of Preservative-Treated Wood Products
AWPA U1	(2020) Use Category System: User Specification for Treated Wood

APA - THE ENGINEERED WOOD ASSOCIATION (APA)

APA E445	(2002) Performance Standards and Qualification Policy for Structural-Use Panels (APA PRP-108)
APA L870	(2010) Voluntary Product Standard, PS 1-09, Structural Plywood
APA S350	(2014) PS 2-10, Performance Standard for Wood-Based Structural-Use Panels

ASTM INTERNATIONAL (ASTM)

ASTM D2898	(2010; R 2017) Standard Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
ASTM F547	(2017) Standard Terminology of Nails for Use with Wood and Wood-Base Materials

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.9	(2015) Cabinet Hardware

CALIFORNIA AIR RESOURCES BOARD (CARB)

CARB 93120	(2007) Airborne Toxic Control Measure (ATCM) to Reduce Formaldehyde Emissions from Composite Wood Products

CALIFORNIA DEPARTMENT OF PUBLIC HEALTH (CDPH)

CDPH SECTION 01350	(2010; Version 1.1) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers

COMPOSITE PANEL ASSOCIATION (CPA)

CPA A208.1	(2016) Particleboard

CSA GROUP (CSA)

CSA Z809-08	(R2013) Sustainable Forest Management

FOREST STEWARDSHIP COUNCIL (FSC)

FSC STD 01 001	(2015) Principles and Criteria for Forest Stewardship

GREEN SEAL (GS)

GS-36	(2013) Adhesives for Commercial Use

HARDWOOD PLYWOOD AND VENEER ASSOCIATION (HPVA)

HPVA HP-1	(2016) American National Standard for Hardwood and Decorative Plywood

INTERNATIONAL CODE COUNCIL (ICC)

ICC IBC	(2018) International Building Code

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

ANSI/NEMA LD 3	(2005) Standard for High-Pressure Decorative Laminates

NATIONAL HARDWOOD LUMBER ASSOCIATION (NHLA)

NHLA Rules	(2015) Rules for the Measurement & Inspection of Hardwood & Cypress

NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION (NELMA)

NELMA Grading Rules	(2013) Standard Grading Rules for Northeastern Lumber

PROGRAMME FOR ENDORSEMENT OF FOREST CERTIFICATION (PEFC)

PEFC ST 2002:2013	(2015) PEFC International Standard Chain of Custody of Forest Based Products Requirements

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

RIS Grade Use	(1998) Redwood Lumber Grades and Uses

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD Rule 1168	(2017) Adhesive and Sealant Applications

SOUTHERN PINE INSPECTION BUREAU (SPIB)

SPIB 1003	(2014) Standard Grading Rules for Southern Pine Lumber

SUSTAINABLE FOREST INITIATIVE (SFI)

SFI 2015-2019	(2015) Standards, Rules for Label Use, Procedures and Guidance

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 770	Formaldehyde Standards for Composite Wood Products

UNDERWRITERS LABORATORIES (UL)

UL 2818	(2013) GREENGUARD Certification Program For Chemical Emissions For Building Materials, Finishes And Furnishings

WEST COAST LUMBER INSPECTION BUREAU (WCLIB)

WCLIB 17	(2015) Standard Grading Rules

WESTERN WOOD PRODUCTS ASSOCIATION (WWPA)

WWPA G-5	(2017) Western Lumber Grading Rules

WINDOW AND DOOR MANUFACTURERS ASSOCIATION (WDMA)

WDMA I.S.4	(2015A) Preservative Treatment for Millwork

WOOD MOULDING AND MILLWORK PRODUCERS ASSOCIATION (WMMPA)

WMMPA WM 6	(2007) Quality Industry Standards Booklet

WOODWORK INSTITUTE (WI)

NAAWS 3.1	(2017; 2018 Errata Edition) North American Architectural Woodwork Standards

1.2 SUBMITTALS

****

NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters 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, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

****

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Detail Drawings Indicating All Wood Assemblies; G[, [_____]]

SD-03 Product Data

Wood Products; G[, [_____]]

Countertops; G[, [_____]]

Engineered Wood Products; G[, [_____]]

Treated Wood Products; G[, [_____]]

Soffits; G[, [_____]]

Fascias and Trim; G[, [_____]]

Hardware and Accessories; G[, [_____]]

[VOC Content for Siding; S

][Recycled Content for MDF/Particleboard; S

] SD-04 Samples

Samples; G[, [_____]]

SD-07 Certificates

Certificates of Grade; G[, [_____]]

[Certified Sustainably Harvested Wood for Trim and Frames; S

][Certified Sustainably Harvested Softwood Plywood; S

][Certified Sustainably Harvested Hardwood Plywood; S

][Certified Sustainably Harvested Hardboard; S

][Certified Sustainably Harvested Siding; S

][Indoor Air Quality for Hardwood Plywood; S

][Indoor Air Quality for MDF and Particleboard; S

][Indoor Air Quality for Non-aerosol Adhesives; S

][Indoor Air Quality for Aerosol Adhesives; S

]1.3 DETAIL DRAWINGS

Submit detail drawings indicating all wood assemblies proposed for use in the project. Indicate materials, species, grade, density, grain, finish details of construction, location of use in the project, finishes, types, method and arrangement of fasteners, and installation details. This includes all fabricated assemblies.

1.4 PRODUCT DATA

Submit Manufacturers printed data including proposed species, grade, density grain, and finish as applicable; sufficient to demonstrate compliance with this specification for each type of wood product specified. For treated wood products also provide documentation of environmentally safe preservatives for each type of wood product specified.

Provide Manufacturers printed data for hardware and all wood accessories including but not limited to edge banding, adhesives, and sealers.

1.5 SAMPLES

Samples indicating proposed species, grade, density grain, and finish for each type of wood product specified. Provide samples of sufficient size to show pattern and color ranges of proposed products.

1.6 DELIVERY, STORAGE, AND HANDLING

Deliver wood products to the jobsite 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. Keep materials wrapped and separated from off-gassing materials (such as drying paints and adhesives). Do not use materials that have visible moisture or biological growth. Do not store products in building until wet trade materials are dry and humidity of the space is within wood manufacturer's tolerance limits for storage.

1.7 QUALITY ASSURANCE

1.7.1 Certifications

1.7.1.1 Certified Wood Grades

Provide certificates of grade from the grading agency on graded but

unmarked lumber or plywood attesting that materials meet the grade requirements specified herein.

****

NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Sustainably Harvested Wood is a product which comes from a third-party Forestry Certification Program and thus carries certain characteristics: 1) Protection of biodiversity, species at risk and wildlife habitat, sustainable harvest levels, protection of water quality, and prompt regeneration (e.g., replanting and reforestation); 2) Third-party certification audits performed by accredited certification bodies; 3) Publicly available certification audit summaries; 4) Multi-stakeholder involvement in a standards development process; 5) Complaints and appeals process.

Verify suitability, availability within the region, cost effectiveness and adequate competition before specifying these sustainably harvested wood certifications - if these conditions are verified for the project locale, include the following section. For projects pursuing LEED, delete certifications other than FSC; for all other projects pursuing third-party certification allow the entire list of third party certifications.

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[1.7.1.2 Certified Sustainably Harvested Wood

Provide wood certified as sustainably harvested by FSC STD 01 001[, ATFS STANDARDS, CSA Z809-08, SFI 2015-2019, or other third party program certified by PEFC ST 2002:2013]. Provide a letter of Certification of Sustainably Harvested Wood signed by the wood supplier. Identify certifying organization and their third party program name and indicate compliance with chain-of-custody program requirements. Submit sustainable wood certification data; identify each certified product on a line item basis. Submit copies of invoices bearing certification numbers.

][1.7.1.3 Indoor Air Quality Certifications

****

NOTE: Include the following section where these products are used on the interior of the building (defined as inside of the weatherproofing system).

****

1.7.1.3.1 Adhesives and Sealants

Provide products certified to meet indoor air quality requirements by UL 2818 (Greenguard) Gold, SCS Global Services Indoor Advantage Gold or provide certification or validation by other third-party programs that products meet the requirements of this Section. Provide current product certification documentation from certification body. When product does not have certification, provide validation that product meets the indoor air quality product requirements cited herein.

****

NOTE: Include the following section where these products are used on the interior of the building (defined as inside of the weatherproofing system).

****

1.7.1.3.2 Composite Wood Products

For purposes of this specification, composite wood products include hardwood plywood, particleboard, medium density fiberboard (MDF), panel substrates, and door cores. Provide products certified to meet requirements of both 40 CFR 770 and CARB 93120. Provide current product certification documentation from certification body.

]1.7.2 Lumber

Identify each piece or each bundle of lumber, millwork, and trim by the grade mark of a recognized association or independent inspection agency certified by the Board of Review of the ALSC to grade the species.

1.7.3 Plywood

Provide each sheet of plywood with the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood. Marks must identify plywood by species group or span rating, exposure durability classification, grade, and compliance with APA L870.

1.7.4 Hardboard [and Particleboard]

Provide materials marks or written documentation identifying the producer and the applicable standard.

1.7.5 Pressure Treated Lumber and Plywood

Inspect each treated piece in accordance with AWPA U1.

1.7.6 Non-Pressure Treated Woodwork and Millwork

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

1.7.7 Fire-Retardant Treated Lumber

Each piece must bear an Underwriters Laboratories fire resistance label or comparable label of another nationally recognized independent fire retardant materials testing laboratory.

PART 2 PRODUCTS

2.1 WOOD PRODUCTS

2.1.1 Sizes and Patterns of Wood Products

Provide yard and board lumber sizes in accordance with ALSC PS 20. Provide shaped lumber and millwork in the patterns indicated and in standard patterns of the association covering the species. Size references, unless otherwise specified, are nominal sizes. Provide actual sizes within manufacturing tolerances allowed by the applicable standard.

2.1.2 Species and Grades

Provide in accordance with AWPA U1 Use Category System Tables unless otherwise specified herein.

2.1.3 Trim, Finish, and Frames

****
NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.
****

Provide species and grades listed in the table below for wood materials that must be painted. For materials that must be stained, have a natural, or a transparent finish, provide materials one grade higher than those listed in the table below. Provide trim, except window stools and aprons with hollow backs.[Provide certified sustainably harvested wood for trim and frames.]

****
NOTE: Edit table to delete unsuitable species. For small projects, species that are not readily available locally may be deleted.
****

TABLE OF GRADES FOR WOOD TO RECEIVE PAINT FINISH

Grading Rules	Species	Exterior and Interior Trim, Finish, and Frames
WWPA G-5 standard 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 in accordance with Special Western Red Cedar Rules.

TABLE OF GRADES FOR WOOD TO RECEIVE PAINT FINISH		
Grading Rules	Species	Exterior and Interior Trim, Finish, and Frames
WCLIB 17 standard grading rules	Douglas Fir-Larch, Hem-Fir, Mountain Hemlock, Sitka Spruce, Western Cedars, Western Hemlock	All Species: C & BTR VG, except A for Western Red Cedar
SPIB 1003 standard grading rules	Southern Pine	C & BTR
NHLA Rules	Cypress	C-Select
NELMA Grading Rules standard grading rules **	Balsam Fir, Eastern Hemlock-Tamarack, Eastern Spruce, Eastern White Pine, Northern 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	Cypress	B Finish
	Red Gum, Soft Elm, Birch	Select or BTR (for interior use only)

Note: ** http://www.nelma.org/library/2013-standard-grading-rules-for-northeastern-lumber/

2.1.4 Utility Shelving

Provide utility shelving in a suitable species equal to or exceeding the requirements of No. 3 common white fir under WWPA G-5, 25 mm 1 inch thick; or plywood, interior type, Grade A-B, 13 mm 1/2 inch thick, any species group.

2.1.5 Softwood Plywood

****

NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.

****

****

NOTE: For projects where these products are located

on the interior of the building (defined as inside of waterproofing system), include the last bracketed statement requiring no added urea-formaldehyde resins.
****

Provide in accordance with APA L870.[Provide certified sustainably harvested softwood plywood.][When located on the interior of buildings, provide products with no added urea-formaldehyde resins.]

a. Plywood for Soffits: Exterior type, B-B medium density overlay.

b. Plywood for Shelving: Interior type, [A-B] [B-B] Grade, any species group.

c. Plywood for Countertops: Exterior type, A-C Grade.

2.1.6 Hardwood Plywood

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

****
NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.
****

****
NOTE: In order to be in compliance with HPVA HP-1 noted below, national manufacturers of hardwood plywood must produce their products in compliance with 40 CFR 770 and the California Air Resource Board (CARB) Regulation requirements regarding Volatile Organic Compounds (VOC) levels. For projects where these products are located on the interior of the building (defined as inside of waterproofing system), include the last bracketed statements requiring no added urea-formaldehyde resins and indoor air quality certifcation.
****

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.[Provide certified sustainably harvested hardwood plywood.][When located on the interior of buildings, provide products with no added urea-formaldehyde resins. For products located on the interior of the building (inside of the weatherproofing system), provide certification of indoor air quality for hardwood plywood.]

2.1.7 Hardboard

****
NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.
****

AHA A135.4, [standard] [tempered] [service] type, [3] [6] mm [1/8] [1/4] inch thick.[Provide certified sustainably harvested hardboard.]

[2.1.8 Medium Density Fiberboard (MDF) and Particleboard

****
NOTE: Particleboard is prohibited in some areas. Verify before using.
****

****
NOTE: Do not use particleboard in humid locations or project locations with Environmental Severity Classifications (ESC) of C4 and C5. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations.
****

****
NOTE: In order to be in compliance with CPA A208.1 noted below, national manufacturers of Medium Density Fiberboard (MDF)/Particleboard must produce their products in compliance with 40 CFR 770 and the California Air Resource Board (CARB) Regulation requirements regarding Volatile Organic Compounds (VOC) levels. For projects where these products are located on the interior of the building (defined as inside of waterproofing system), include the last bracketed statement requiring indoor air quality certification.
****

CPA A208.1, Grade 1-M-2 or 2-M-2 or better.[For products located on the interior of the building (inside of the weatherproofing system), provide certification of indoor air quality for MDF and particleboard.]

****
NOTE: MDF/Particleboard is an EPA designated product for recycled content. Use materials with recycled content, calculated on the basis of post-industrial and post-consumer percentage content where appropriate for use. Verify suitability, availability within the region, cost effectiveness and adequate competition before specifying this product. A resource that can be used to identify products with recycled content is the "Comprehensive Procurement Guidelines (CPG)" page within the EPA's

website at http://www.epa.gov. Other products with recycled content are also acceptable when meeting all requirements of this specification.

Research shows products are available from US national manufacturers above the minimum recycled content stated.

****

Provide products with 80 percent total recovered materials content. Provide data identifying percentage of recycled content for MDF/particleboard.

]2.1.9 Stairs

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

2.1.10 Shoe Mould

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

2.1.11 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.

2.1.12 Wood Bumpers

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

2.1.13 Catwalks

Boards, 19 by 140 mm 1 by 6 inches nominal, species and grade equal to or exceeding 3 Common Hem-Fir under WWPA G-5.

2.1.14 Siding

****

NOTE: The use of wood shingles is now prohibited for all applications. This is due to fire and maintenance issues.

****

****

NOTE: Use certified sustainably harvested wood where suitable for application and cost effective. Verify suitability, availability within the region, cost effectiveness, and adequate competition before specifying this certification.

****

****

NOTE: Do not use hardboard siding in humid locations or project locations with Environmental Severity Classifications (ESC) of C4 and C5. Humid

locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations. Manufactured from tempered hardboard, it is usually finished with a texture to simulate wood siding. It comes in sheets like plywood siding and installation is the same as for plywood. However, it cannot be treated against termites and, although it is not preferred over wood for food and nests, they will eat through it to find wood. If wood siding is desired, specify treated plywood siding.

****

****

NOTE: For projects where these products are located on the interior of the building (defined as inside of the weatherproofing system), include the last bracketed statements requiring no added urea-formaldehyde resins and data indicating VOC content.

****

Provide hardboard, plywood, or wood for horizontal siding. Provide hardboard or plywood for panel siding.[Provide certified sustainably harvested siding.][When located on the interior of buildings, provide products with no added urea-formaldehyde resins. Provide data identifying VOC content for siding.]

2.1.14.1 Horizontal Hardboard Siding

AHA A135.6, factory primed face and longitudinal edges, factory sealed back, lap type, [200] [225] [250] [300] 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.

2.1.14.2 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].

2.1.14.3 Horizontal Plywood Siding

APA L870, 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.

2.1.14.4 Panel Plywood Siding

APA L870, exterior, [medium density overlay,] 1220 mm 4 feet wide, maximum practicable lengths, span rating of [400] [600] mm [16] [24] inches on center, [smooth] [embossed] [rough sawn texture] [striated] face, [and grooved] as selected from manufacturer's standard patterns.

2.1.14.5 Horizontal Rated Siding

Qualified under APA E445, 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.

2.1.14.6 Panel Rated Siding

Qualified under APA E445, exterior type, [medium density overlay] 1220 mm 4 feet wide, maximum practicable lengths, [span rated at 400 mm 16 inch] [span rated at 600 mm 24 inch,] [smooth] [embossed] [striated] face [, and grooves] as selected from manufacturer's standard patterns.

2.1.14.7 Wood Siding

Provide [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 1 inch thick, [150] [200] [250] mm [6] [8] [10] inches wide, maximum practicable lengths, [smooth] [rough sawn texture].

2.1.14.8 Engineered Wood Structural Panels

Comply with ICC IBC, Chapter 23 Wood, and with APA S350, exterior, exposure [1] [2], [single-faced] [double-faced], 1200 mm 4 feet wide, maximum practicable lengths, selected from manufacturer's standard patterns to satisfy the wind load for the specified span.

2.1.14.9 Epoxy Coated Wood Panels

****

NOTE: Epoxy coated wood panels may be included in the design for architectural purposes and then only as accent and spandrel panels. If not included in the design, delete this information.

****

Provide prefinished epoxy coated wood panels consisting of an asbestos-free cement board base sheet with a factory applied surface of epoxy resin and decorative natural stone chips. Provide factory applied finish in a minimum 0.5 mm 20 mils thickness consisting of 100 percent solids, with a two component epoxy resin based coating followed by an application of inert aggregate. Provide stone color(s) and accessory colors as selected by Contracting Officer's Representative from manufacturer's full color and pattern ranges. Provide cement board base sheets in a minimum thickness of 6 mm 1/4 inch thick. Dimensionally stable finished panels are required. Water absorption on the surfaced side of panels cannot exceed 0.20 percent after 24 hours of submergence in water. Provide accessories in manufacturer's standard extruded aluminum. Provide mouldings for meeting strips, end caps, inside corners, outside corners. Provide non-corrosive, self-tapping screw type fasteners finished to match the color of the panel surface. Provide caulking compounds that are color compatible, low modulus silicone or urethane types.

2.2 SOFFITS

2.2.1 Hardboard and Plywood

Provide hardboard and plywood soffits in siding grade hardboard, 10 or 11 mm 3/8 or 7/16 inch thick; plywood, APA L870, exterior type, [Grade A-C] [plywood panel siding] [rated siding],[9 mm11/32 inch thick for 600 mm 24 inches on center] [12 mm15/32 inch thick for 800 mm 32 inches on center] [15 mm19/32 inches thick for 1200 mm 48 inches on center] maximum span with all edges supported.

2.3 FASCIAS AND TRIM

2.3.1 Wood

Provide species and grades for all fascia and trim, including exterior door and window casings, in accordance with AWPA U1 Use Category System Tables. Provide sizes indicated. Metal corners may be provided in lieu of wood corner boards for horizontal siding. If metal corners are used, provide galvanized steel or aluminum, completely coated with primer compatible for the specific metal substrate.

2.4 COUNTERTOPS

2.4.1 Laminated Plastic-faced Countertops

ANSI/NEMA LD 3.

2.4.1.1 Countertop Finishes

High pressure plastic laminate, Grade GP 50 or PF 42, satin or textured finish. Provide color and pattern [_____] [as selected by Contracting Officer's Representative from manufacturer's full color and pattern ranges].

2.4.1.2 Backing Sheet

Heavy gauge, BK 20.

2.4.2 Solid Surface

For solid surface countertops refer to Section 06 61 16, SOLID POLYMER (SOLID SURFACING) FABRICATIONS.

2.5 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 jobsite, and when installed, must be as follows:

****

NOTE: At the text below, the lower percentages (6 and 8 percent) may be specified for interior woodwork to be located in spaces that 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. Exterior Wood Siding: 15 percent.

e. Provide moisture content of other materials in accordance with the applicable standards.

2.6 PRESERVATIVE TREATMENT OF WOOD PRODUCTS

****

NOTE: Include the non-pressure treatment below for cabinets on projects in humid locations or project locations with Environmental Severity Classification (ESC) of C4 and C5. Humid locations are those in ASHRAE climate zones 0A, 1A, 2A, 3A, 3C, 4C and 5C (as identified in ASHRAE 90.1). See UFC 1-200-01 for determination of ESC for project locations. Only the copper-8-quinolinolate is permitted for use on wood in contact with food.

****

2.6.1 Non-Pressure Treatment

Treat woodwork and millwork, such as [cabinets,]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 brush coat of preservative treatment to field cuts and holes.

2.6.2 Pressure Treatment

Treat lumber and plywood used on the exterior of buildings [or in contact with masonry or concrete] with a waterborne preservative listed in AWPA U1 (P series is included therein by reference) as applicable, and inspected in accordance with AWPA U1. 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. Provide treated plywood to a reflection level as follows:

Preservative treat exterior wood moulding and millwork that will be within 455 mm 18 inches of soil or in contact with water or concrete in accordance with WMMPA WM 6. Provide a field treatment in accordance with AWPA M4 of exposed areas of treated wood that have been cut or drilled. Items of all-heart material of cedar, cypress, or redwood do not require preservative treatment except when in direct contact with soil.

2.7 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.

****

2.7.1 Wood Products

Pressure treat fire-retardant treated lumber and plywood in accordance with AWPA U1. Comply with material use as defined in AWPA U1 for Interior Type [A] [and] [B] and Exterior Type. Treatment and performance inspection must be conducted by a qualified independent testing agency that establishes performance ratings. Each piece or bundle of treated material must bear identification of the testing agency to indicate performance with such rating. Subject treated materials that will be exposed to rain wetting to an accelerated weathering technique in accordance with ASTM D2898, Method A, prior to being tested for compliance with AWPA U1.

Treat the following items:

[_____].

2.8 HARDWARE AND ACCESSORIES

Provide sizes, types, and spacings of hardware and accessories as recommended in writing by the wood product manufacturer, except as otherwise specified.

2.8.1 Wood Screws

ASME B18.6.1.

2.8.2 Bolts, Nuts, Lag Screws, and Studs

ASME B18.2.1 and ASME B18.2.2.

2.8.3 Nails

Use nails of a size and type best suited for each application and in accordance with ASTM F547. Use hot-dipped galvanized or aluminum nails for exterior applications. For siding, provide nails of sufficient length to extend 40 mm 1-1/2 inches into supports, including wood sheathing over framing. Where nailing is impractical, provide screws of a size and type best suited for each application.

2.8.4 Adjustable Shelf Standards

****

NOTE: See ANSI/BHMA A156.9 for types of hardware available.

****

ANSI/BHMA A156.9, Type [_____], with shelf rests Type [_____].

2.8.5 Vertical Slotted Shelf Standards

****

NOTE: See ANSI/BHMA A156.9 for types of hardware available.

****

ANSI/BHMA A156.9, Type [_____], with shelf brackets Type [_____].

2.8.6 Closet Hanger Rods

Chromium plated steel rods, not less than 25 mm 1 inch diameter by 1.3 mm thick 18 gage. Rods may be adjustable with integral mounting brackets if smaller tube is 25 mm 1 inch by 1.3 mm thick 18 gage. Provide intermediate support brackets for rods more than 1200 mm 48 inches long.

2.9 FABRICATION

2.9.1 Quality Standards (QS)

****

NOTE: Include this paragraph only if NAAWS 3.1 will be referenced in this section. See NAAWS 3.1 for definitions of quality grades.

If an NAAWS 3.1 Quality Certified Project (QCP) is required, add requirements for certification herein. Evaluate added cost prior to requiring a QCP. For more information, see the AWI QCP website http://www.awiqcp.org/.

****

2.9.1.1 Grades

The terms "Premium," "Custom," and "Economy" refer to the quality grades defined in NAAWS 3.1. Provide items not otherwise specified in a specific grade as "Custom" grade.

2.9.1.2 Adhesives

Select adhesives for durability and permanent bonding. Address factors such as materials that must be bonded, expansion and contraction, bond strength, fire rating, moisture resistance, and manufacturer's recommendations.

****

NOTE: If a project design includes use of adhesive products on the building interior (inside the weatherproofing system), include the following bracketed sentences requiring products with indoor air quality certifications or validations as defined in Part 1 of this specification.

****

[Provide non-aerosol adhesive products used on the interior of the building (defined as inside of the weatherproofing system) meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of SCAQMD Rule 1168. Provide aerosol adhesives used on the interior of the building meeting either emissions requirements of CDPH SECTION 01350 (limit requirements for either office or classroom spaces regardless of space type) or VOC content requirements of GS-36. Provide certification or validation of indoor air quality for non-aerosol adhesives applied on the interior of the building (inside of the weatherproofing system).

Provide certification or validation of indoor air quality for aerosol adhesives used on the interior of the building.

]2.9.2 Countertops

****
NOTE: Use a plastic laminate backing sheet for countertops 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 adhesive as recommended by the plastic manufacturer [, and bond a backing sheet under pressure to underside of countertop]. Provide countertop units as post-formed type, no-drip nose, cove mouldings, Style A backsplash, and surfaced with ANSI/NEMA LD 3, Grade PF 42 plastic. Provide backsplashes not less than 90 mm 3-1/2 inches nor more than 115 mm 4-1/2 inches high.

2.9.3 Cabinets

Unless specified otherwise, provide wall and base cabinets of the same construction, materials, and finishes as countertops. Fabricate cabinets with solid ends and frame fronts, or with frames all around. Provide frames of solid hardwood not less than 19 by 38 mm 3/4 by 1-1/2 inches. Provide ends, bottoms, backs, partitions, and doors as hardwood plywood. Mortise and tenon, dovetail, or dowel and glue joints to produce a rigid unit. Cover exposed edges of plywood with hardwood strips. Provide cabinet doors, frames, and solid exposed ends 19 mm 3/4 inch thick minimum. Provide cabinet bottoms, partitions, and framed ends to be 13 mm 1/2 inch minimum. Provide shelves to be 16 mm 5/8 inch thick minimum. Provide cabinet backs 6 mm 1/4 inch thick minimum.

2.9.3.1 Cabinet Hardware

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

ANSI/BHMA A156.9. Provide cabinet hardware including two self, closing hinges for each door, two side mounted metal drawer slides for each drawer, and pulls for all doors and drawers as follows. Provide hardware exposed to view [as bright chromium plated][_____]. Comply with the following requirements for all cabinet hardware:

a. Provide frameless concealed European style, back mounted hinges with 165 degree opening and a self closing feature when at less than 90 degrees open.

****
NOTE: Static drawer slide capacity of 444 N (100 lbs) are appropriate for housing kitchens, vanities, and light commercial construction. Specify a heavier capacity slide for more abusive situations or where heavier loading of drawers is anticipated.
****

b. Provide drawer slides having a static rating capacity of [444 N100 lbs.][_____]. Slides to have a self closing/stay closed action, zinc or epoxy coated steel finish, ball bearing rollers, and positive stop with lift out design.

c. Provide drawer pulls as [wire type pulls with center-to-center dimension of not less than 89 mm 3-1/2 inches and a cross sectional diameter of 8 mm 5/16 inch]. Provide handle projections not less than[33 mm 1-5/16 inches]. [_____].

d. Provide heavy duty magnetic drawer catches.

2.9.3.2 Finish

Provide a clear factory finish on wood surfaces after fabrication. Provide fabricator's standard natural finish equivalent to one coat of sealer, one coat of varnish on all surfaces and a second coat of varnish on surfaces exposed to view. Provide spar varnish in exterior or wet area applications. Sand lightly and wipe clean between coats.

2.9.4 Workbenches

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 [ANSI/BHMA A156.9, Type [_____],] for each drawer, and at least two surface mounted hinges[, Type [_____],] and a magnetic catch[, Type [_____],] for each door.

2.9.5 Casework with Transparent Finish (CTF)

2.9.5.1 AWI Quality Grade

[Premium] [Custom] [Economy] grade.

2.9.5.2 Construction

Provide [reveal overlay] [flush overlay] [exposed face frame] design details.

2.9.5.3 Exposed Parts

[_____] specie, [_____] cut.

2.9.5.4 Semi-Exposed Parts

As specified in the NAAWS 3.1 for the grade selected.

2.9.6 Casework with High Pressure Laminate Finish

2.9.6.1 AWI Quality Grade

[Premium] [Custom] grade.

2.9.6.2 Construction

Provide [reveal overlay] [flush overlay] [exposed face frame] design details.

2.9.6.3 Exposed Surfaces

High pressure plastic laminate, color and pattern [_____][as selected by Contracting Officer's Representative from manufacturer's full range].

2.9.6.4 Semi-Exposed Surfaces

As specified in the NAAWS 3.1 for the grade selected.

[2.9.6.5 Edge Banding

Provide edge banding for casework doors and drawer fronts in PVC vinyl [0.5 mm0.020 inch] [3 mm0.125 inch] [_____] thick. Provide width [23.8 mm 15/16 inches] [_____].[Match color and pattern to exposed door and drawer front laminate pattern and color.][Provide color and pattern [_____].]

]PART 3 EXECUTION

Do not install building construction materials that show visual evidence of biological growth.

3.1 FINISH WORK

Apply primer to finish work before installing. Where practicable, shop assemble and finish millwork items. Construct joints tight and in a manner to conceal shrinkage but to avoid cupping, twisting and warping after installation. Miter trim and mouldings at exterior angles; cope at interior angles and at returns. Provide 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 with waterproof glue as necessary for weather resistant construction. Evenly distribute end joints in built-up members. Provide shoulder joints in flat work. Reinforce backs of wide-faced miters with metal rings and waterproof glue. Unless otherwise indicated, provide fascia and other flat members 19 mm 3/4 inch thick minimum. Provide door and window trim in single lengths. Provide braced, blocked, and rigidly anchored cornices for support and protection of vertical joints. Provide soffits in largest practical size. Align joints of plywood over centerlines 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 on center for each jamb. Position blocking to occur behind hinges and lock strikes. Double wedge frames and fasten with finish nails. Set nails for putty stopping.

3.1.4 Thresholds

Unless otherwise indicated, provide thresholds [16 mm5/8 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 rabbets over window sills. Provide aprons with returns cut accurately to profile of member.

3.1.6 Bases

Provide flat member with a moulded top [and oak shoe mould]. Fasten base to framing or to grounds.[Nail shoe mould to base.] Set [shoe mould] [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 stair framing. Cut newels, posts, and drops accurately around floor construction to make a tight fit. Embed balusters into treads and landings and secure with glue. Provide railings with straight runs that follow the slope of the stairs and have smooth curved turns. Return railing profile at ends and secure joints with bolts and nuts in accordance with structural load requirements for railings. Secure railing to posts and newels with concealed anchors. Support wall rails on metal brackets spaced near ends and at not more than 1500 mm 5 feet on center.

3.2 SHELVING

Support 25 mm 1 inch nominal thick wood shelf material or 19 or 20 mm 3/4 or 23/32 inch thick plywood shelf material with end and intermediate supports arranged to prevent buckling and sagging.[Provide hook strips25 mm by 100 mm 1 by 4 inches nominal and cleats25 mm by 50 mm 1 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 on center.]

3.2.1 Linen Closets

Unless indicated otherwise, provide linen closets with 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

Unless otherwise indicated, provide storage rooms with shelves 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 intermediate brackets spaced not more than 1200 mm 4 feet on center.

3.4 MISCELLANEOUS

3.4.1 Countertops

Conceal fastenings where practicable. Fit counters tight to adjoining surfaces and scribe where necessary. Provide scribed joints neat and flush. Provide counter sections in longest lengths practicable with a minimum number of joints. Where joints are necessary, provide tight joints drawn up with concealed type heavy pull-up bolts. Glue joints with water resistant glue and make rigid with screws, bolts, or other approved fastenings.

3.4.2 Cabinets

Provide cabinets level, plumb, true, and tight to adjacent walls. Secure cabinets to walls with concealed toggle bolts. Secure top to cabinet with concealed screws.[Make cutouts for fixtures from templates supplied by fixture manufacturer. Locate cutouts for pipes so that edges of holes are covered by escutcheons after installation.]

3.4.3 Workbenches

Provide level, plumb, and tight to adjacent construction. Fasten workbenches 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]. 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 wood bumpers in place where indicated.

3.4.6 Catwalks in Attic Spaces

Lay boards with 25 mm 1 inch spaces between. Stagger end joints, with each joint on a support.

3.5 SIDING

3.5.1 Installation of Siding

Fit and position siding without springing or otherwise forcing panels 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.
****

Locate end joints over framing members and alternate such that there are a minimum of two boards between joints on the same support. Evenly distribute shorter pieces throughout the installation. Provide starter strips to establish proper cant for siding. Predrill ends of siding as 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 of space between boards. 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. Provide shiplapped edges or square edges that will be covered by battens in a [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. Locate edge nailing 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.

3.5.6 Epoxy Coated Panels

Provide panels where indicated and install in accordance with panel manufacturer's written installation instructions.

3.6 SOFFITS

3.6.1 Wood

Provide panels with edges at joints spaced in accordance with manufacturer's written instructions and with all edges backed by framing members. Nail panels 10 mm 3/8 inch from edges at 150 mm 6 inches on center and at intermediate supports at 300 mm 12 inches on center. Provide panels in maximum practicable lengths.

3.7 FASCIA AND EXTERIOR TRIM

Construct, caulk, and machine sand exposed surfaces and edges to exclude water. In addition to nailing, glue joints as necessary for weather resistance. Evenly distribute end joints in built-up members. Shoulder joints in flat work. Reinforce backs of wide-faced miters with metal rings and glue. Provide fascia and other flat members in maximum practicable lengths. Braced, block, and rigidly anchor cornices for support and protection of vertical joints.

3.8 MOULDING AND INTERIOR TRIM

Install mouldings and interior trim straight, plumb, level and with closely fitted joints. Provide exposed surfaces machine sanded at the shop. Cope returns and interior angles at moulded items and miter external corners. Shoulder intersections of flatwork to ease any inherent changes in plane. Provide window and door trim in single lengths. Blind nail to the extent practicable. Set and stop face nailing with a nonstaining putty to match the applied finish. Use screws for attachment to metal; set and stop screws in accordance with the same quality requirements for nails.

-- End of Section --