

**SECTION 06 20 00  
FINISH CARPENTRY**

SPEC WRITER NOTES:

1. Use this section only for NCA projects.
2. Delete between //\_\_\_\_\_// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
3. Use terminology as listed and coordinate drawings to use the same term.
4. This section includes custom fabricated architectural woodwork or millwork.
5. List additional items required by the project.
6. See VA standard details, identified in list in parenthesis following item; delete detail reference from project specification.

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

- A. This section specifies exterior and interior millwork.

**1.2 RELATED WORK**

- A. Fabricated Metal brackets, bench supports and countertop legs: Section 05 50 00, METAL FABRICATIONS.
- B. Framing, furring and blocking: Section 06 10 00, ROUGH CARPENTRY.
- C. Wood doors: Section 08 14 00, WOOD DOORS.
- D. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- E. Stock Casework: Section 12 32 00, MANUFACTURED WOOD CASEWORK.
- F. Electrical light fixtures and duplex outlets: Division 26, ELECTRICAL.

**1.3 PERFORMANCE REQUIREMENTS**

- A. Sustainably Harvested Wood: Comply with requirements of Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS.
- B. Engineered Wood Products:
1. Provide products with no added urea formaldehyde; determine formaldehyde concentrations in air from wood products under test conditions of temperature and relative humidity in accordance with ASTM D6007 or E1333.
  2. Bio-based Content:
    - a. Interior Panels: Engineered products designed specifically for interior applications and providing a surface that is impact-,

scratch-, and wear-resistant and that does not absorb or retain moisture; provide minimum 55 percent bio-based content.

- b. Structural Interior Panels: Engineered products designed for use in structural construction applications; provide minimum 89 percent bio-based content.
  - c. Structural Wall Panels: Engineered products designed for use in structural walls, curtain walls, floors and roofs; provide minimum 94 percent bio-based content.
3. VOC Emissions:
- a. Provide low VOC products with Green Seal Certification to GS-36 and description of the basis for certification //; or // . //
    - SPEC WRITER NOTES:
    - 1. Select the paragraph a. or b. or both.
  - b. //Submit manufacturer's certification that products comply with SCAQMD Rule 1168 in areas where exposure to freeze/thaw conditions and direct exposure to moisture will not occur. In areas where freeze/thaw conditions do exist or direct exposure to moisture can occur, submit manufacturer's certification that products comply with Bay Area AQMD Reg. 8, Rule 51 for containers larger than 16 oz. and with California Air Resources Board (CARB) for containers 16 oz. or less. //

#### **1.4 SUSTAINABILITY REQUIREMENTS**

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // certified wood // \_\_\_\_\_// requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

#### **1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Provide documentation of conformance with performance requirements of this section.

## C. Shop Drawings:

1. Millwork: Half size scale for sections and details; 1:50 (1/4-inch) for elevations and plans.
2. Indicate materials and details of construction, methods of fastening, erection, and installation.

## D. Samples:

1. Plastic laminate, finished plywood or particleboard, 150 mm by 300 mm (6 by 12 inches).
2. Solid surface countertop material, 150 mm by 150 mm (6 inches by 6 inches).

## E. Certificates:

1. Indicate preservative treatment of materials meet the requirements specified.
2. Indicating moisture content of materials meet the requirements specified.

## F. List of acceptable sealers for fire retardant and preservative treated materials.

## G. Manufacturer's literature and data:

1. Finish hardware.
2. Sinks with fittings.
3. Electrical components.

**1.6 DELIVERY, STORAGE AND HANDLING**

- A. Protect lumber and millwork from dampness, maintaining moisture content specified both during and after delivery at site.
- B. Store finishing lumber and millwork in weathertight well ventilated structures or in space in existing buildings designated by RE/COR. Store at a minimum temperature of 21°C (70°F) for not less than 10 days before installation.
- C. Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

**1.7 FIELD CONDITIONS**

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet-work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
  - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

**1.8 APPLICABLE PUBLICATIONS**

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

SPEC WRITER NOTES:

- 1. Remove reference citations that do not remain in Part 2 or Part 3 of edited specification.
- 2. Verify and make dates indicated for remaining citations the most current at date of submittal; determine changes from date indicated on the TIL download of the section and modify requirements impacted by the changes.

B. American Society of Testing and Materials (ASTM):

A167-99(2009)	Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip
B26/B26M-18E01	Aluminum-Alloy Sand Castings
B221-14	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
D6007-22	Determining Formaldehyde Concentration in Air from Wood Products Using a Small Scale Chamber
E1333-22	Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber

C. American Hardboard Association (AHA):

A135.4-12	Basic Hardboard
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D. American Lumber Standard Committee, Incorporated (ALSC):

ALSC Board of Review

E. American National Standards Institute (ANSI):

NPA A208.1-2009	Particleboard (published by National Particleboard Association/Composite Panel Association)
Z124.3-05	Plastic Lavatories

- F. American Society of Mechanical Engineers (ASME):
- B18.2.1-2012 Square, Hex, Heavy Hex and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws
- B18.2.2-2010 Nuts for General Applications: Machine Screw Nuts, Hex, Square, Hex Flange, and Coupling Nuts (Inch Series)
- G. American Wood-Preservers' Association (AWPA)
- H. Architectural Woodwork Institute (AWI):  
Architectural Woodwork Standards and Quality Certification Program (2009)
- I. Builders Hardware Manufacturers Association (BHMA):
- A156.9-10 Concealed Cabinet Hardware
- A156.11-10 Cabinet Locks
- A156.16-02 Auxiliary Hardware
- A156.18-12 Exposed Cabinet Hardware
- J. Green Seal (GS):
- GS-36 (2013) Commercial Adhesives
- K. Hardwood Plywood and Veneer Association (HPVA):
- HP-1-2011 Hardwood Plywood Handbook
- L. National Electrical Manufacturers Association (NEMA):
- LD 3-05 High-Pressure Decorative Laminates
- M. National Hardwood Lumber Association (NHLA)
- N. South Coast Air Quality Management District (SCAQMD):
- SCAQMD Rule 1168 (1989; R2005) Adhesive and Sealant Applications
- O. U.S. Department of Commerce/National Institute of Science and Technology:
- PS1-09 Construction and Industrial Plywood
- PS20-10 American Softwood Lumber Standard

## **PART 2 - PRODUCTS**

### SPEC WRITER NOTES:

1. Review USDA Biopreferred Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.

## **2.1 LUMBER**

- A. Grading and Marking:
1. Lumber to bear the grade mark, stamp, or other identifying marks indicating grades of material.

2. Such identifying marks on a material to be in accordance with the rule or standard under which the material is produced, including requirements for qualifications and authority of the inspection organization, usage of authorized identification, and information included in the identification.
3. The inspection agency for lumber to be approved by the Board of Review, American Lumber Standards Committee, to grade species used.

B. Sizes:

1. Lumber size references, unless otherwise specified, are nominal sizes; actual sizes to be within manufacturing tolerances allowed by the standard under which product is produced.
2. Millwork, standing and running trim, and rails: Actual size as shown or specified.

C. Hardwood: FAS Grade of NHLA, species as specified for each item.

D. Softwood: PS-20, exposed to view appearance grades:

1. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
2. Use Prime for painted or opaque finish.

E. Use edge grain wood members exposed to weather.

SPEC WRITER NOTES:

1. Review USDA Biopreferred Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.

## 2.2 PLYWOOD

A. Softwood Plywood:

1. Prod. Std.
2. Grading and Marking:
  - a. Each sheet of plywood must bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood.
  - b. The mark must identify the plywood by species group or identification index, and show glue type, grade, and compliance with PS1.
3. Plywood, 13 mm (1/2 inch) and thicker; not less than five ply construction, except 32 mm (1-1/4 inch) thick plywood not less than seven ply.
4. Plastic Laminate Plywood Cores:
  - a. Exterior Type, any species group.

- b. Veneer Grade: A-C.
- 5. Shelving Plywood:
  - a. Interior Type, any species group.
  - b. Veneer Grade: A-B or B-C.
- 6. Other: As specified for item.
- B. Hardwood Plywood:
  - 1. HPVA: HP-1.
  - 2. Species of Face Veneer: // As shown or as specified in connection with each particular item. // \_\_\_\_\_ . //
  - 3. Inside of Building:
    - a. Use Type II (interior) A grade veneer for transparent finish.
    - b. Use Type II (interior) Sound Grade veneer for paint finish.
  - 4. On Outside of Building:
    - a. Use Type I, (exterior) A Grade veneer for natural or stained and varnish finish.
    - b. Use Type I, (exterior) Sound Grade veneer for paint finish.
  - 5. Use // plain sliced red oak // rotary cut white birch // unless specified otherwise.

## SPEC WRITER NOTES:

- 1. Review USDA Biopreferred Categories for listed materials within the scope of the following paragraph and include additional requirements, unless justification for non-use exists.

**2.3 PARTICLEBOARD**

- A. ANSI NPA A208.1
- B. Plastic Laminate Particleboard Cores:
  - 1. Use Type 1, Grade 1-M-3, or Type 2, Grade 2-M-2, unless otherwise specified.
  - 2. Use Type 2, Grade 2-M-2, exterior bond, for tops with sinks.
- C. General Use: Type 1, Grade 1-M-3 or Type 2, Grade 2-M-2.
- D. Do not use product with urea formaldayhyde.

**2.4 PLASTIC LAMINATE**

- A. NEMA LD-3.
- B. Exposed decorative surfaces including countertops, both sides of cabinet doors, and for items having plastic laminate finish; General Purpose, Type HGL.
- C. Cabinet Interiors including Shelving: Both of following options to comply with NEMA CLS Grade, as a minimum.
  - 1. Plastic laminate clad plywood or particle board.

2. Resin impregnated decorative paper thermally fused to particle board.
- D. Backing sheet on bottom of plastic laminate covered wood tops: Backer, Type HGP.
- E. Plastic Laminate Work:
1. Factory glued to a plywood or particle board core, thickness as shown or specified.
  2. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown or specified. Use plastic molded edge strips on 19 mm (3/4-inch) molded thick or thinner core material.
  3. Provide plastic backing sheet on underside of countertops, vanity tops, thru-wall counter // and sills // including back splashes and end splashes of countertops.
  4. Use backing sheet on concealed large panel surface when decorative face does not occur.
- F. Counter or Work Tops:
1. Fabrication with plastic laminate over 32 mm (1-1/4 inch) thick core unless shown otherwise.
    - a. Use decorative laminate for exposed edges of tops 38 mm (1-1/2 inches) wide and on back splash and end splash. Use plastic or metal edges for top edges less than 38 mm (1-1/2 inches) wide.
    - b. Assemble back splash and end splash to counter top.
    - c. Use one piece counters for straight runs.
    - d. Miter corners for field joints with overlapping blocking on underside of joint.

## SPEC WRITER NOTES:

1. Spec writer should consider solid surface countertops in areas subject to abuse.

**2.5 SOLID SURFACE COUNTERTOPS**

- A. Comply with AWI Section 400 and ANSI Z124.3 requirements for countertops.

**2.6 BUILDING BOARD (HARDBOARD)**

- A. ANSI/AHA A135.4.

**2.7 ADHESIVE**

- A. Product compliant with performance requirements.

**2.8 STAINLESS STEEL**

- A. ASTM A167, Type 302 or 304.

**2.9 ALUMINUM CAST**

A. ASTM B26.

**2.10 ALUMINUM EXTRUDED**

A. ASTM B221.

**2.11 HARDWARE**

A. Rough Hardware:

1. Furnish rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electric-galvanizing process. Provide galvanized where indicated.
2. Use galvanized coating on ferrous metal for exterior work unless non-ferrous metals or stainless is used.
3. Fasteners:
  - a. Bolts with Nuts: ASME B18.2.1 and ASME B18.2.2.
  - b. Screws: ASMC B18.6.1.

## SPEC WRITER NOTES:

1. Add additional finish hardware when required from ANSI A156.9, A156.16 and A156.18.

B. Finish Hardware:

1. Cabinet Hardware: ANSI A156.9.
  - a. Door/Drawer Pulls: B02011. Door in seismic zones: B03182.
  - b. Drawer Slides: B05051 for drawers over 150 mm (6 inches) deep, B05052 for drawers 75 mm to 150 mm (3 to 6 inches) deep, and B05053 for drawers less than 75 mm (3 inches) deep.
  - c. Sliding Door Tracks: B07063.
  - d. Adjustable Shelf Standards: B4061 with shelf rest B04083.
  - e. Concealed Hinges: B1601, minimum 110 degree opening.
  - f. Butt Hinges: B01361, for flush doors, B01381 for inset lipped doors, and B01521 for overlay doors.
  - g. Cabinet Door Catch: B0371 or B03172.
  - h. Vertical Slotted Shelf Standard: B04103 with shelf brackets B04113, sized for shelf depth.
2. Cabinet Locks: ANSI A156.11.
  - a. Drawers and Hinged Door: E07262.
  - b. Sliding Door: E07162.
3. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

**2.12 MOISTURE CONTENT**

A. Moisture content of lumber and millwork at time of delivery to site.

1. Moisture content of other materials to be in accordance with the standards under which the products are produced.

## SPEC WRITER NOTES:

1. Clearly identify in the text items or parts to receive fire retardant treatment. Verify species specified is possible to be treated; many cannot.

**2.13 WOOD-PRESERVATIVE-TREATED MATERIALS**

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category [**UC1**] [**UC2**].

1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 18 percent, respectively.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction[ **and containing no arsenic or chromium**].
3. For exposed items indicated to receive transparent finish, do not use chemical formulations that contain colorants or that bleed through or otherwise adversely affect finishes.
4. Do not use material that is warped or does not comply with requirements for untreated material.
5. Mark lumber with treatment-quality mark of an inspection agency approved by the ALSC's Board of Review.

**2.14 FIRE-RETARDANT TREATMENT**

A. Fire-retardant-treated wood products to be free of halogens, sulfates, ammonium phosphate and formaldehyde.

B. Fire retardant treatment of wood products to conform to the requirements of AWPA Standard U1, Commodity Specification H and AWPA Standard T1, Section H.

## SPEC WRITER NOTES:

1. Insure millwork items are detailed to show size, shape, and design, including standard stock moldings. See AWI publication "WOOD MOLDING, a guide for Interior Architectural Design." Detail moldings.

**2.15 FABRICATION**

A. General:

1. Provide interior woodwork complying with referenced quality standard.
2. Use AWI Custom Grade for architectural woodwork and interior millwork, except as otherwise indicated.

3. Finish woodwork must be free from pitch pockets.
4. Provide trim as standard stock molding and members of the same species, except where special profiles are shown.
5. Plywood cannot be less than 13 mm (1/2 inch), unless otherwise shown or specified.
6. Edges of members in contact with concrete or masonry to have a square corner caulking rebate.
7. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded as shown.
8. Plastic Laminate Work:
  - a. Factory glued to plywood or particle board core, thickness as shown or specified.
  - b. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown or specified. Use plastic molded edge strips on 19 mm (3/4-inch) molded thick or thinner core material.
  - c. Provide plastic backing sheet on underside of countertops, vanity tops, thru-wall counter // and sills // including back splashes and end splashes of countertops.
  - d. Use backing sheet on concealed large panel surface when decorative face does not occur.

### **PART 3 - EXECUTION**

#### **3.1 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain work areas and storage areas to a minimum temperature of 21°C (70°F) for not less than 10 days before and during installation of interior millwork.
- B. Do not install finish lumber or millwork in any room or space where wet process systems such as concrete, masonry, or plaster work are not complete and dry.

#### **3.2 INSTALLATION**

- A. General:
  1. Install to comply with AWI 1700.
  2. Millwork receiving transparent finish to be primed and back-painted on concealed surfaces; do not set millwork until primed and back-painted.
  3. Secure trim with fine finishing nails, screws, or glue as required.
  4. Set nails for putty stopping. Use washers under bolt heads where no other bearing plate occurs.

5. Seal cut edges of preservative and fire retardant treated wood materials with a certified acceptable sealer.
  6. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
  7. Plumb and level items unless shown otherwise.
  8. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.
  9. Exterior Work: Provide joints that are close fitted, mitered, tongue and grooved, rebated, or lapped to exclude water filled and sealed.
  10. Install woodwork plumb and level to a tolerance of 3 mm in 2400 mm (1/8 inch in 96 inches).
- B. Install with butt joints in straight runs and miter at corners.

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