

**SECTION 06 20 00  
FINISH CARPENTRY****PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section specifies exterior and interior millwork.
- B. Items specified.
  - Seats and benches
  - Counter Shelf
  - Pegboard (Perforated Hardboard)
  - Mounting Strips, Shelves, and Rods
  - Chair Rail

**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. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- D. Other Countertops: Division 11, EQUIPMENT and Division 12, FURNISHINGS.
- E. Electrical light fixtures and duplex outlets: Division 26, ELECTRICAL.

**1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
  - 1. Millwork items - Half full size scale for sections and details 1:50 (1/4-inch) for elevations and plans.
  - 2. Show construction and installation.
- C. Samples:
- D. Certificates:
  - 1. Indicating preservative treatment and/or fire retardant treatment of materials meet the requirements specified.
  - 2. Indicating moisture content of materials meet the requirements specified.
- E. List of acceptable sealers for fire retardant and preservative treated materials.
- F. Manufacturer's literature and data:
  - 1. Finish hardware
  - 2. Sinks with fittings
  - 3. Electrical components

**1.4 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 COR. Store at a minimum temperature of 21<sup>0</sup>C (70<sup>0</sup>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.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. American Society of Testing and Materials (ASTM):
  - A36/A36M-08.....Structural Steel
  - A53-12.....Pipe, Steel, Black and Hot-Dipped Zinc Coated,  
Welded and Seamless
  - A167-99 (R2009).....Stainless and Heat-Resisting Chromium-Nickel  
Steel Plate, Sheet, and Strip
  - B26/B26M-09.....Aluminum-Alloy Sand Castings
  - B221-08.....Aluminum and Aluminum-Alloy Extruded Bars,  
Rods, Wire, Profiles, and Tubes
  - E84-10.....Surface Burning Characteristics of Building  
Materials
- C. American Hardboard Association (AHA):
  - A135.4-04.....Basic Hardboard
- D. Builders Hardware Manufacturers Association (BHMA):
  - A156.9-03.....Cabinet Hardware
  - A156.11-10.....Cabinet Locks
  - A156.16-08.....Auxiliary Hardware
- E. Hardwood Plywood and Veneer Association (HPVA):
  - HP1-09.....Hardwood and Decorative Plywood
- F. National Particleboard Association (NPA):
  - A208.1-09.....Wood Particleboard
- G. American Wood-Preservers' Association (AWPA):
  - AWPA C1-03.....All Timber Products - Preservative Treatment by  
Pressure Processes
- H. Architectural Woodwork Institute (AWI):

AWI-09.....Architectural Woodwork Quality Standards and  
Quality Certification Program

- I. National Electrical Manufacturers Association (NEMA):  
LD 3-05.....High-Pressure Decorative Laminates
- J. U.S. Department of Commerce, Product Standard (PS):  
PS20-10.....American Softwood Lumber Standard
- K. Military Specification (Mil. Spec):  
MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated
- L. Federal Specifications (Fed. Spec.):  
A-A-1922A.....Shield Expansion  
A-A-1936.....Contact Adhesive  
FF-N-836D.....Nut, Square, Hexagon Cap, Slotted, Castle  
FF-S-111D(1).....Screw, Wood  
MM-L-736(C).....Lumber, Hardwood

## **PART 2 - PRODUCTS**

### **2.1 BIO-BASED MATERIAL:**

Bio-based Materials: For products designated by the USDA's Bio-Preferred program, provide products that meet or exceed USDA recommendations for bio-based content, so long as products meet all performance requirements in this specification section. For more information regarding the product categories covered by the Bio-Preferred program, visit <http://www.bio-preferred.gov>

### **2.2 LUMBER**

- A. Grading and Marking:
1. Lumber shall bear the grade mark, stamp, or other identifying marks indicating grades of material.
  2. Such identifying marks on a material shall 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 shall 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, and actual sizes shall 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: MM-L-736, 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.

### 2.3 PLYWOOD

- A. Softwood Plywood:
  1. Prod. Std.
  2. Grading and Marking:
    - a. Each sheet of plywood shall bear the mark of a recognized association or independent inspection agency that maintains continuing control over the quality of the plywood.
    - b. The mark shall identify the plywood by species group or identification index, and shall 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, and 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 shall be 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 rotary cut white birch unless specified otherwise.

**2.4 PARTICLEBOARD**

- A. 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.

**2.5 BUILDING BOARD (HARDBOARD)**

- A. ANSI/AHA A135.4, 6 mm (1/4 inch) thick unless specified otherwise.
- B. Perforated hardboard (Pegboard): Type 1, Tempered perforated 6 mm (1/4 inch) diameter holes, on 25 mm (1 inch) centers each way, smooth surface one side.
- C. Wall paneling at gas chain rack: Type 1, tempered, Fire Retardant treated, smooth surface on side.

**2.6 ADHESIVE**

- A. For Plastic Laminate: Fed. Spec. A-A-1936.
- B. For Interior Millwork: Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.
- C. For Exterior Millwork: Unextended melamine resin, phenol resin, or resorcinol resin.

**2.7 STAINLESS STEEL**

ASTM A167, Type 302 or 304.

**2.8 ALUMINUM CAST**

ASTM B26

**2.9 ALUMINUM EXTRUDED**

ASTM B221

**2.10 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. Galvanized where specified.
  - 2. Use galvanized coating on ferrous metal for exterior work unless non-ferrous metals or stainless is used.
  - 3. Fasteners:
    - a. Bolts with Nuts: FF-N-836.

- b. Expansion Bolts: A-A-1922A.
- c. Screws: Fed. Spec. FF-S-111.

## 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. Auxiliary Hardware: ANSI A156.16.
  - a. Shelf Bracket: B04041, japanned or enameled finish.
  - b. Combination Garment rod and Shelf Support: B04051 japanned or enamel finish.
  - c. Closet Bar: L03131 chrome finish of required length.
  - d. Handrail Brackets: L03081 or L03101.
    - 1) Cast Aluminum, satin polished finish.
    - 2) Cast Malleable Iron, japanned or enamel finish.
4. Steel Channel Frame and Leg supports for Counter top. Fabricated under Section 05 50 00, METAL FABRICATIONS.
5. Pipe Bench Supports:
  - a. Pipe: ASTM A53.
6. Fabricated Wall Bench Supports:
  - a. Steel Angles: ASTM A36 steel with chrome finish, or ASTM A167, stainless steel with countersunk wood screws, holes at 64 mm (2-1/2 inches) on center on horizontal member.
  - b. Use 38 mm by 38 mm by 5 mm (1-1/2 by 1-1/2 by 3/16 inch) angle thick drilled for screw and bolt holes unless shown otherwise.

Drill 6 mm (1/4 inch) holes for anchors on vertical member, not more than 200 mm (8 inches) on center between ends or corners.

- c. Stainless steel bars brackets: ASTM A167, fabricated to shapes shown, Number 4 finish. Use 50 mm by 5 mm (2 inch by 3/16 inch) bars unless shown otherwise. Drill for anchors and screws. Drill countersunk wood screw holes at 64 mm (2-1/2 inches) on center on horizontal members and not less than two 13 mm (1/4 inch) hole for anchors on vertical member.

7. Thru-Wall Counter Brackets:

- a. Steel angles drilled for fasteners on 100 mm (4 inches) centers.
- b. Baked enamel prime coat finish.

8. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

### **2.11 MOISTURE CONTENT**

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

1. Interior finish lumber, trim, and millwork 32 mm (1-1/4 inches) or less in nominal thickness: 12 percent on 85 percent of the pieces and 15 percent on the remainder.
2. Exterior treated or untreated finish lumber and trim 100 mm (4 inches) or less in nominal thickness: 15 percent.
3. Moisture content of other materials shall be in accordance with the standards under which the products are produced.

### **2.12 FIRE RETARDANT TREATMENT**

A. Where wood members and plywood are specified to be fire retardant treated, the treatment shall be in accordance with Mil. Spec. MIL-L19140.

B. Treatment and performance inspection shall be by an independent and qualified testing agency that establishes performance ratings.

C. Each piece of treated material shall bear identification of the testing agency and shall indicate performance in accordance with such rating of flame spread and smoke developed.

D. Treat wood for maximum flame spread of 25 and smoke developed of 25.

E. Fire Resistant Softwood Plywood:

1. Use Grade A, Exterior, plywood for treatment.
2. Meet the following requirements when tested in accordance with ASTM E84.
  - a. Flame spread: 0 to 25.

b. Smoke developed: 100 maximum

F. Fire Resistant Hardwood Plywood:

1. Core: Fire retardant treated softwood plywood.
2. Hardwood face and back veneers untreated,
3. Factory seal panel edges, to prevent loss of fire retardant salts.

**2.13 PRESERVATIVE TREATMENT**

Wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including wood members used for rough framing of millwork items except heart-wood Redwood and Western Red Cedar shall be preservative treated in accordance with AWPA Standards.

B. Use Grade A, exterior plywood for treatment.

**2.14 FABRICATION**

A. General:

1. Except as otherwise specified, use AWI Custom Grade for architectural woodwork and interior millwork.
2. Finish woodwork shall be free from pitch pockets.
3. Except where special profiles are shown, trim shall be standard stock molding and members of the same species.
4. Plywood shall be not less than 13 mm (1/2 inch), unless otherwise shown or specified.
5. Edges of members in contact with concrete or masonry shall have a square corner caulking rebate.
6. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded as shown.
7. Interior trim and items of millwork to be painted may be fabricated from jointed, built-up, or laminated members, unless otherwise shown on drawings or specified.
8. Plastic Laminate Work:
  - a. Factory glued to either a plywood or a 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.
- B. Seats and Benches:
1. Fabricate from 50 mm (2 inch) stock strips of plain-sawed White Oak, or Maple. Use preservative treated softwood for exterior seats.
  2. Solid seats securely glued together of spliced, doweled, or double tongued and grooved wood pieces. Where open joints are indicated, work each wood piece from solid stock.
  3. Round top edges and corners where exposed.
- C. Mounting Strips, Shelves and Rods:
1. Cut mounting strips from 25 mm by 100 mm (1 by 4 inches) softwood stock, with exposed edge slightly rounded.
  2. Cut wood shelf from softwood 1 inch stock, of width shown, exposed edge slightly rounded. Option: Use 19 mm (3/4 inch) thick plywood with 19 mm (3/4 inch) softwood edge nosing on exposed edge, slightly rounded.
  3. Plastic laminate covered, 19 mm (3/4 inch) thick plywood or particle board core with edges and ends having plastic molded edge strips. Size, finish and number as shown.
  4. Rod or Closet Bar: L03131. Combination Garment and Shelf Support, intermediate support for closet bar: B04051 for rods over 1800 mm (6 feet) long.
- D. Pegboard:
1. Perforated hardboard sheet size as shown.
  2. Spacing strip: 13 mm by 13 mm (1/2 by 1/2 inch); glued to hardboard sheet.
    - a. Locate at perimeter of sheet edge.
    - b. Locate material intermediate spacing strips at 800 mm (32 inches) o.c.
  3. Use 19 mm (3/4 inch) one quarter round edge trim to cover exposed edge and finish flush with hardboard surface. Glue to spacing strip and hard board.
- E. Thru-Wall Counter or Pass Thru Counter.
1. Fabricate counter as shown. Return hardwood edge to metal frame at ends. Fabricate to join other counters where shown.
  2. Cut to fit metal frame profile.

3. Fabricate to receive sliding pass window track when shown; specified in Section 08 56 19, PASS WINDOWS.
  4. Use angle and fabricated shelf bracket supports.
- F. Receiving shelf in Agent Cashier:
1. Fabricate shelf as shown over 19 mm (3/4 inch) thick core.
  2. Use B04041 shelf bracket.

### **PART 3 - EXECUTION**

#### **3.1 ENVIRONMENTAL REQUIREMENTS**

- A. Maintain work areas and storage areas to a minimum temperature of 21<sup>0</sup>C (70<sup>0</sup>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 is not complete and dry.

#### **3.2 INSTALLATION**

- A. General:
1. Millwork receiving transparent finish shall be primed and back-painted on concealed surfaces. Set no millwork until primed and back-painted.
  2. Secure trim with fine finishing nails, screws, or glue as required.
  3. Set nails for putty stopping. Use washers under bolt heads where no other bearing plate occurs.
  4. Seal cut edges of preservative and fire retardant treated wood materials with a certified acceptable sealer.
  5. Coordinate with plumbing and electrical work for installation of fixtures and service connections in millwork items.
  6. Plumb and level items unless shown otherwise.
  7. Nail finish at each blocking, lookout, or other nailer and intermediate points; toggle or expansion bolt in place where nails are not suitable.
  8. Exterior Work: Joints shall be close fitted, metered, tongue and grooved, rebated, or lapped to exclude water and made up in thick white lead paste in oil.
- B. Seats and Benches:
1. Use stainless steel countersunk screws to secure wood seats to brackets, angle, or pipe supports.
  2. Use stainless steel or chrome plated steel bolts for anchorage to walls. Use 6 mm (1/4 inch) toggle bolts in steel stud walls and

- hollow masonry. Use 6 mm (1/4 inch) expansion bolts in solid masonry or concrete.
3. Wall Benches: Support within 150 mm (6 inches) near ends and not over 900 mm (3 feet) on centers with stainless steel bar brackets under bench secured to seat and wall.
  4. Corner Seats: Support on continuous angles secured to seat and walls.
  5. Freestanding Benches: Support within 200 mm (8 inches) of ends and not over 900 mm (3 feet) on centers with pipe bench supports.
- C. Pegboard or Perforated Hardboard:
1. Install board with chromium plated steel round-head toggle bolts or other fasteners capable of supporting board when loaded at 122 kg/m<sup>2</sup> (25 psf) of board.
  2. Install board with spacers to allow hooks and accessories to be inserted and removed.
  3. Install 6 mm (1/4 inch) round trim at perimeter to finish flush with face of board and close space between wall and hardboard.
- D. Shelves:
1. Install mounting strip at back wall and end wall for shelves in closets where shown secured with toggle bolts at each end and not over 600 mm (24 inch) centers between ends.
    - a. Nail Shelf to mounting strip at ends and to back wall strip at not over 900 mm (36 inches) on center.
    - b. Install metal bracket, ANSI A156.16, B04041, not over 1200 mm (4 feet) centers when shelves exceed 1800 mm (6 feet) in length.
    - c. Install metal bracket, ANSI A156.16, B04051, not over 1200 mm (4 feet) on centers where shelf length exceeds 1800 mm (6 feet) in length with metal rods, clothes hanger bars ANSI A156.16, L03131, of required length, full length of shelf.
  2. Install vertical slotted shelf standards, ANSI A156.9, B04103 to studs with toggle bolts through each fastener opening. Double slotted shelf standards may be used where adjacent shelves terminate.
    - a. Install brackets ANSI A156.9, B04113, providing supports for shelf not over 900 mm (36 inches) on center and within 13 mm (1/2 inch) of shelf end unless shown otherwise.
    - b. Install shelves on brackets so front edge is restrained by bracket.

E. Install with butt joints in straight runs and miter at corners.

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