

**SECTION 06 20 00**  
**FINISH CARPENTRY**

**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. This section specifies exterior and interior millwork.
- B. Items specified.
  - Counter Shelf
  - Counter or Work Tops
  - Wall Paneling
  - Mounting Strips, Shelves, and Rods
  - Solid Surface wall panels
  - Translucent resin panels

**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, INTERIOR WOOD DOORS.
- D. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- F. Other Countertops: Division 11, EQUIPMENT.
- G. 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:
  - Plastic laminate finished plywood or particleboard, 150 mm by 300 mm (six by twelve inches).
  - Solid surface samples, 150 mm (6 inches) square
  - Translucent resin panel samples, 150 mm (6 inches) square
- D. Certificates:
  - 1. Indicating preservative treatment, 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 Resident Engineer. 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
  - A53-07.....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
  - E84-09.....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
  - A156.11-04.....Cabinet Locks
  - A156.16-02.....Auxiliary Hardware
- E. Hardwood Plywood and Veneer Association (HPVA):
  - HP1-09.....Hardwood and Decorative Plywood
- F. National Particleboard Association (NPA):
  - A208.1-99.....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-99.....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):

PS20-05.....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 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.

**2.2 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 red oak unless specified otherwise.

### **2.3 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.

### **2.4 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 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. Post Forming Fabrication, Decorative Surfaces: Post forming, Type HGP.

#### **2.5 SOLID-SURFACING MATERIAL**

- A. Homogeneous solid sheets of filled plastic resin complying with ISSFA-2-01 or ANSI/ICPA SS1.
- B. Cove Corners: For solid-surfacing material wall panels, provide cove inside corners, radius to match that of ceramic tile base.
- C. Colors and Patterns: As indicated in Materials Schedule by manufacturer's designations.

#### **2.6 TRANSLUCENT RESIN PANELS**

- A. Supplier must be both ISO-14001 2004 Certified and ISO-9001 2008 Certified.
- B. Material must contain a minimum of 40% pre-consumer recycled content and be GREENGUARD Indoor Air Quality Certified.
- C. Material must be UL Registered and NSF 51 certified.
- D. Material must not be regarded as toxic as evidenced by UPITT test for combustion product toxicity.
- E. Gauge Material: As identified under Section 09 06 00, SCHEDULE FOR FINISHES.

#### **2.7 MEDIUM DENSITY FIBER BOARD (MDF) FINISHED PANELS**

- A. General: Pre-finished wood molding with a decorative and protective film surface 12 to 16 mil thick. PVC decorative surface film, in the specified finish, is factory applied with adhesive under heat and pressure to an MDF (medium density fiberboard) core that has been molded into the specified shape.
  - 1. Pre-finished Molding Corner and End Cap Protection made from Ven4ma Polymer sheet .050 inches thick, molded to fit over specified molding shape finished to match protective film used on molding.
  - 2. Touch-up material: Wax putty fill sticks and colored caulk to match each specified finish, provided by the approved manufacturer for installation touch-up and fill. Quantity sufficient to complete all specified work.
- B. Provide pre-finished trim pieces as shown on drawing profiles and Material Schedule for base moldings and wall trim, top rails. Sizes as identified on details and Material Schedule.

- C. Provide pre-finished panels in size, thickness and finish as identified in Material Schedule.

## **2.8 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 Solid-Surfacing Material: As recommended by manufacturer and compatible with Waterproofing Isolation Membrane specified in Section 09 30 13 CERAMIC TILING.

## **2.9 STAINLESS STEEL**

ASTM A167, Type 302 or 304.

## **2.10 ALUMINUM CAST**

ASTM B26

## **2.11 ALUMINUM EXTRUDED**

ASTM B221

## **2.12 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. Thru-Wall Counter Brackets:
  - a. Steel angles drilled for fasteners on 100 mm (4 inches) centers.
  - b. Baked enamel prime coat finish.
- 6. Edge Strips Moldings:
  - a. Driven type "T" shape with serrated retaining stem; vinyl plastic to match plastic laminate color, stainless steel, or 3 mm (1/8 inch) thick extruded aluminum.
  - b. Stainless steel or extruded aluminum channels.
  - c. Stainless steel, number 4 finish; aluminum, mechanical applied medium satin finish, clear anodized 0.1 mm (0.4 mils) thick.
- 7. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

### **2.13 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.

### **2.14 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.

#### **2.15 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.

#### **2.16 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. Plywood shall be not less than 13 mm (1/2 inch), unless otherwise shown or specified.
  - 4. Edges of members in contact with concrete or masonry shall have a square corner caulking rebate.
  - 5. Fabricate members less than 4 m (14 feet) in length from one piece of lumber, back channeled and molded as shown.
  - 6. 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.
  - 7. 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 including back splashes and end splashes of countertops.
  - d. Use backing sheet on concealed large panel surface when decorative face does not occur.
8. Solid-Surfacing-Material Wall Panels:
- a. Fabricate wall panels from 1/4 inch thick material. Provide butt joints with continuous polished seams in flat panels where required, and 1/8 inch sealant joints where indicated, except as otherwise recommended by manufacturer.
  - b. Fabricate inside wall corner cove to match radius of ceramic tile base.
  - c. Provide 1/8 inch radius edge at outside wall corners.
- B. 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.
- C. Wall Paneling:
1. Pre-finished wood molding with a decorative and protective film surface 12 to 16 mil thick. PVC decorative surface film, in the specified finish, is factory applied with adhesive under heat and pressure to an MDF (medium density fiberboard) core that has been molded into the specified shape.
  2. Hardwood plywood
    - a. Thickness: .45 inch unless shown otherwise.
    - b. Unfinished Prefinished, type of finish is specified in Section 09 06 00, SCHEDULE FOR FINISHES.
    - c. Use full height panels where possible without end joints.
- D. 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.
2. Fabricate wood counter for work benches as shown.

### **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. Wall Paneling:
  1. MDF paneling:
    - a. Inspect molding products prior to installing each length. Do not install defective or damaged lengths. Install all molding products

in accordance with manufacturer's printed installation instructions.

b. Cut molding to desired lengths using a power radial saw with a 64-tooth triple-chip carbide tipped blade. Cut miter joints, scarf joints, butt joints, etc. according with the standards of the Architectural Woodwork Institute, manufacturer's printed installation instructions and as field conditions require.

c. Install molding using a panel adhesive for use on wood moldings to adhere to wall surfaces, and an 18 gauge adjustable power nail gun to hold molding in place while adhesive cures. When conditions do not permit nailing, use trim screws to attach to wall framing. Pre-drill and Counter-Bore all screw heads for screw attachment.

d. Fill all fastener holes and open joints with matching wax putty sticks provided by the manufacturer. Wipe off excess wax putty with a clean rag and naphtha solvent. Wipe off excess caulk with a clean dampened rag.

e. Install securely, straight and level, plumb and true, in proper location.

f. Do not sand or apply any other finish to molding.

#### C. 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.

D. Solid Surface Material Wall Panels: Install components plumb and level, scribe to adjacent finishes, in accordance with approved shop drawings and manufacturer's installation instructions.

E. Translucent Resin Panels: Install plumb and level, scribe to adjacent finishes, in accordance with manufacturer's installation instructions.

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