

**SECTION 06 20 00  
FINISH CARPENTRY**

SPEC WRITER NOTE:

1. Delete text between // // not applicable to project. Edit remaining text to suit project.
2. Use terminology as listed and coordinate drawings to use the same term.
3. This section includes custom fabricated architectural woodwork or millwork.
4. List additional items required by the project.

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section Includes:

1. Interior millwork for family prayer rooms (chapel) in hospitals.

B. Items specified:

1. //Seats and benches. //
2. //Communication Center Counter. //
3. //Folding Shelf: Dressing (Make-Up). //
4. //Counter Shelf. //
5. //Interview Booth. //
6. //Counter or Work Tops. //
7. //Wall Paneling. //
8. //Pegboard (Perforated Hardboard). //
9. //Mounting Strips, Shelves, and Rods. //

SPEC WRITER NOTE: The following items do not occur frequently and require specification paragraphs developed for project conditions.

10. //Chair Rail. //
11. //Moldings and Staff Beads. //
12. //Base. //
13. //Wood Bumpers. //

**1.2 RELATED REQUIREMENTS**

SPEC WRITER NOTE: Update and retain references only when specified elsewhere in this section.

- A. Adhesive, Paint, and Finish VOC Limits: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

- B. Woodwork Finish and Color: Section 09 06 00, SCHEDULE FOR FINISHES.
- C. Fabricated Metal brackets, bench supports and countertop legs: Section 05 50 00, METAL FABRICATIONS.
- D. Framing, furring and blocking: Section 06 10 00, ROUGH CARPENTRY.
- E. Wood doors: Section 08 14 00, WOOD DOORS.
- F. Color and texture of finish: Section 09 06 00, SCHEDULE FOR FINISHES.
- G. Stock Casework: Section 12 32 00, MANUFACTURED WOOD CASEWORK.
- H. Other Countertops: Division 11, EQUIPMENT and Division 12, FURNISHINGS.
- I. Electrical light fixtures and duplex outlets: Division 26, ELECTRICAL.

### 1.3 APPLICABLE PUBLICATIONS

- A. Comply with references to extent specified in this section.
- B. ASTM International:
  - A36/A36M-19.....Carbon Structural Steel.
  - A53/A53M-20.....Pipe, Steel, Black and Hot-Dipped Zinc Coated, Welded and Seamless.
  - A240/A240M-20.....Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
  - B26/B26M-18e1.....Aluminum-Alloy Sand Castings.
  - B221-14.....Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
  - E84-20.....Surface Burning Characteristics of Building Materials.
- C. American Hardboard Association (AHA):
  - A135.4-12.....Basic Hardboard.
- D. Architectural Woodwork Institute (AWI):
  - AWI-14.....Architectural Woodwork Standards, 2<sup>nd</sup> ed.
- E. Builders Hardware Manufacturers Association (BHMA):
  - A156.9-15.....Cabinet Hardware.
  - A156.11-14.....Cabinet Locks.
  - A156.16-18.....Auxiliary Hardware.
- F. Federal Specifications (Fed. Spec.):
  - A-A-1922A.....Shield Expansion (Calking Anchors, Single Lead).
  - A-A-1936A.....Adhesive, Contact, Neoprene Rubber.
  - FF-N-836E.....Nut: Square, Hexagon, Cap, Slotted, Castle, Knurled, Welding.
  - FF-S-111D(1).....Screw, Wood (Notice 1 inactive for new design).

- MM-L-736C(1).....Lumber, Hardwood.
- G. Hardwood Plywood and Veneer Association (HPVA):
  - HP1-16.....Hardwood and Decorative Plywood.
- H. Military Specification (Mil. Spec):
  - MIL-L-19140E.....Lumber and Plywood, Fire-Retardant Treated.
- I. National Particleboard Association (NPA):
  - A208.1-09.....Wood Particleboard.
- J. National Electrical Manufacturers Association (NEMA):
  - LD 3-05.....High-Pressure Decorative Laminates.
- K. U.S. Department of Commerce, Product Standard (PS):
  - PS1-07.....Construction and Industrial Plywood.
  - PS20-10.....American Softwood Lumber Standard.

**1.4 PREINSTALLATION MEETINGS**

- A. Conduct pre-installation meeting at project site minimum 30 days before beginning Work of this section.

SPEC WRITER NOTE: Edit participant list to ensure entities influencing outcome attend.

1. Required Participants:

- a. Contracting Officer's Representative.
- b. //Architect/Engineer. // and Interior Designer. //
- c. //VA Interior Designer. //
- d. Contractor.
- e. Installer.

SPEC WRITER NOTE: Edit meeting agenda to incorporate project specific topics.

2. Meeting Agenda: Distribute agenda to participants minimum 3 days before meeting.

- a. Installation schedule.
- b. Installation sequence.
- c. Preparatory work.
- d. Protection before, during, and after installation.
- e. Installation.
- f. Terminations.
- g. Transitions and connections to other work.
- h. Other items affecting successful completion.

3. Document and distribute meeting minutes to participants to record decisions affecting installation.

**1.5 SUBMITTALS**

- A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Submittal Drawings:
  - 1. Show size, configuration, and fabrication and installation details.
  - 2. Millwork items - Half full-size scale for sections and details 1: 50 (1/4 inch) for elevations and plans.
- C. Manufacturer's Literature and Data:
  - 1. Description of each product.
    - a. Finish hardware.
    - b. Sinks with fittings.
    - c. Electrical components.
  - 2. List of acceptable sealers for fire retardant materials.
  - 3. Installation instructions.
- D. Samples:
  - 1. Plastic Laminate Finished Plywood and Particleboard: 150 mm by 300 mm (6 by 12 inches) long, each type and color //.
    - a. Submit quantity required to show full color // and texture // range.
  - 2. Approved samples may be incorporated into work.
- E. Sustainable Construction Submittals:
  - SPEC WRITER NOTE: Retain sustainable construction submittals appropriate to product.
  - 1. Recycled Content: Identify post-consumer and pre-consumer recycled content percentage by weight.
  - 2. Low Pollutant-Emitting Materials:
    - a. Show volatile organic compound types and quantities.
    - b. Certify each // composite wood // and agrifiber // product contains no added urea formaldehyde.
- F. Certificates: Certify // each product complies // products comply // with specifications.
  - 1. Fire retardant treatment of materials.
  - 2. Moisture content of materials.
- G. Qualifications: Substantiate qualifications comply with specifications.
  - 1. Fabricator // with project experience list //.
  - 2. Installer // with project experience list //.

**1.6 QUALITY ASSURANCE**

## A. Fabricator Qualifications:

1. Regularly fabricates specified products.
2. Fabricated specified products with satisfactory service on five similar installations for minimum five years.
  - a. //Project Experience List: Provide contact names and addresses for completed projects. //

## B. Installer Qualifications:

1. Regularly installs specified products.
2. Installed specified products with satisfactory service on five similar installations for minimum five years.
  - a. //Project Experience List: Provide contact names and addresses for completed projects. //

**1.7 DELIVERY, STORAGE AND HANDLING**

- A. Deliver products in manufacturer's original sealed packaging.
- B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, // color, // production run number, and manufacture date.
- C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.
- D. Store products indoors in dry, weathertight // conditioned // facility.
- E. Protect products from damage during handling and construction operations.

**1.8 FIELD CONDITIONS**

## A. Environment:

1. Product Temperature: Minimum 21 degrees C (70 degrees F) for minimum 48 hours before installation.
2. Work Area Ambient Conditions: HVAC systems are complete, operational, and maintaining facility design operating conditions continuously, beginning 48 hours before installation until Government occupancy.
3. Install products when building is permanently enclosed and when wet construction is completed, dried, and cured.
4. 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.

- B. Field Measurements: Verify field conditions affecting // \_\_\_\_\_ // fabrication and installation. Show field measurements on Submittal Drawings.

1. Coordinate field measurement and fabrication schedule to avoid delay.

**1.9 WARRANTY**

SPEC WRITER NOTE: Always retain construction warranty. FAR includes Contractor's one year labor and material warranty.

- A. Construction Warranty: FAR clause 52.246-21, "Warranty of Construction."

**PART 2 - PRODUCTS**

**2.1 SYSTEM PERFORMANCE**

- A. Design acoustical panel complying with specified performance:
  1. Surface Burning Characteristics: When tested according to ASTM E84.

SPEC WRITER NOTE: Select flame spread rating to suit occupancy type, location within project, and sprinkler coverage.

    - a. Flame Spread Rating: // 25 // 75 // 200 // maximum.
    - b. Smoke Developed Rating: 450 maximum.

**2.2 MATERIALS**

- A. Grading and Marking: Factory mark with grade stamp lumber and plywood of inspection agency approved by the Board of Review, American Lumber Standard Committee.
- B. Lumber:
  1. Sizes:
    - a. Lumber Size references, unless otherwise specified, are nominal sizes, and actual sizes within manufacturing tolerances allowed by the standard under which product is produced.
    - b. Millwork, standing and running trim, and rails: Actual size as shown or specified.
  2. Hardwood: MM-L-736, species as specified for each item.
  3. Softwood: PS-20, exposed to view appearance grades:
    - a. Use C select or D select, vertical grain for transparent finish including stain transparent finish.
    - b. Use Prime for painted or opaque finish.
  4. Use edge grain Wood members exposed to weather.
  5. Moisture Content:
    - a. 32 mm (1-1/4 inches) or less nominal thickness: 12 percent on 85 percent of the pieces and 15 percent on the remainder.

- b. Other materials: According to standards under which the products are produced.

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

- 6. Fire Retardant Treatment: Mil. Spec. MIL-L-19140E.
  - a. Treatment and performance inspection by an independent and qualified testing agency that establishes performance ratings.
  - b. Each piece of treated material bear identification of the testing agency and indicate performance according to such rating of flame spread and smoke developed.
  - c. Treat wood for maximum flame spread of 25 and smoke developed of 25.
  - d. Fire Resistant Softwood Plywood:
    - 1) Grade A, Exterior, plywood for treatment.
    - 2) Surface Burning Characteristics: When tested according to ASTM E84.
      - a) Flame spread: 0 to 25.
      - b) Smoke developed: 100 maximum.
  - e. Fire Resistant Hardwood Plywood:
    - 1) Core: Fire retardant treated softwood plywood.
    - 2) Hardwood face and back veneers untreated.
    - 3) Factory seal panel edges.

C. Plywood:

- 1. Softwood Plywood: DOC PS1.
  - a. Plywood, 13 mm (1/2 inch) and thicker; minimum five ply construction, except 32 mm (1-1/4 inch) thick plywood minimum seven ply.
  - b. Plastic Laminate Plywood Cores:
    - 1) Exterior Type, and species group.
    - 2) Veneer Grade: A-C.
  - c. Shelving Plywood:
    - 1) Interior Type, any species group.
    - 2) Veneer Grade: A-B or B-C.
  - d. Other: As specified for item.
- 2. Hardwood Plywood: HPVA: HP.1.

- a. Species of Face Veneer: As shown or as specified with each particular item.
  - b. Grade:
    - 1) Transparent Finish: Type II (interior) A grade veneer.
    - 2) Paint Finish: Type II (interior) Sound Grade veneer.
  - c. Species and Cut: Plain sliced red oak // rotary cut white birch // unless specified otherwise.
- D. Particleboard: NPA A208.1, // Type 1, Grade 1-M-3 // Type 2, Grade 2-M-2 //.
- 1. Plastic Laminate Particleboard Cores:
    - a. // Type 1, Grade 1-M-3, // Type 2, Grade 2-M-2, // unless otherwise specified.
    - b. // Type 2, Grade 2-M-2, exterior bond, for tops with sinks. //
- E. Building Board (Hardboard):
- 1. ANSI/AHA A135.4, 6 mm (1/4 inch) thick unless specified otherwise.
  - 2. 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.
  - 3. // Wall paneling at gas chain rack: Type 1, tempered, Fire Retardant treated, smooth surface on side. //
- F. Plastic Laminate: NEMA LD-3.
- 1. Exposed Laminate Surfaces including Countertops, and Sides of Cabinet Doors: Grade HGL.
  - 2. Cabinet Interiors including Shelving: NEMA, CLS as a minimum, with the following:
    - a. Plastic laminate clad plywood or particle board.
    - b. Resin impregnated decorative paper thermally fused to particle board.
  - 3. Plastic Laminate Covered Wood Tops Backing: Grade HGP.
  - 4. Post-formed Surfaces: Grade HGP.
- G. Stainless Steel: ASTM A240, Type 302 or 304.
- H. Cast Aluminum: ASTM B26.
- I. Extruded Aluminum: ASTM B221.

### **2.3 PRODUCTS - GENERAL**

- A. Basis of Design: Section 09 06 00, SCHEDULE FOR FINISHES.
- B. Provide each product from one manufacturer // and from one production run //.
- C. Sustainable Construction Requirements:

SPEC WRITER NOTE: Insert product requiring recycled content.

1. // \_\_\_\_\_ // Recycled Content: // \_\_\_\_\_ // percent // post-consumer // total // recycled content, minimum. // Select products with recycled content to achieve overall Project recycled content requirement. //

SPEC WRITER NOTE:

1. Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS includes comprehensive product list setting VOC limits for low-emitting materials.
2. Retain subparagraphs applicable to products specified in this section.

2. Low Pollutant-Emitting Materials: Comply with VOC limits specified in Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS for the following products:
  - a. Non-flooring adhesives and sealants.
  - b. Aerosol adhesives.
  - c. Paints and coatings.
  - d. Wall base and accessories.
  - e. Composite wood and agrifiber.

D. Acoustical Panel: Fabric-covered glass fiber panel.

1. NRC 19 mm (3/4 inch) adhesive mounting direct to substrate.
2. Glass Fiber Panel: 25 mm (1 inch) thick minimum, self-supporting of density required for minimum NRC.
3. Fabric: Bonded directly to glass fiber panel face, flat wrinkle-free surface, stain and soil resistant.
4. Adhesive: As recommended by panel manufacturers.

SPEC WRITER NOTE: Detail millwork items on Drawings to show size, shape, and design, including standard stock moldings. See AWI publication "WOOD MOLDING, a guide for Interior Architectural Design." Detail moldings.

## 2.4 FABRICATION

A. General:

1. AWI Custom Grade for interior millwork.
2. Finish woodwork, free from pitch pockets.
3. Trim, standard stock molding and members of same species, except where special profiles are shown.

4. Plywood, minimum 13 mm (1/2 inch), unless otherwise shown on Drawings or specified.
  5. Edges of members in contact with concrete or masonry having 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. Fabricate interior trim and items of millwork to be painted 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 on Drawings or specified.
    - b. Cover exposed edges with plastic laminate, except where aluminum, stainless steel, or plastic molded edge strips are shown on drawings or specified. Use plastic molded edge strips on 19 mm (3/4 inch) 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.
  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 softwood stocks, 25 mm by 100 mm (1 by 4 inches), exposed edge slightly rounded.
  2. Cut wood shelf from softwood 1-inch stock, of width shown, exposed edge slightly rounded.
    - a. Option: Provide 19 mm (3/4 inch) thick plywood with 19 mm (3/4 inch) softwood edge nosing on exposed edge, slightly rounded.

3. Plastic laminate cover, 19 mm (3/4 inch) thick plywood or particle board core with plastic molded edge and end strips. Size, finish and number as shown on Drawings.
4. Rod or Closet Bar: L03131.
5. 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 on Drawings.
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. Cover exposed edge with 19 mm (3/4 inch) one quarter round edge trim and finish flush with hardboard surface. Glue to spacing strip and hard board.

E. Communications Center Counter:

1. Fabricate to AWI premium grade construction Section 10+, CASEWORK.
2. Structural Framing Members: Softwood, standard sizes, space maximum 400 mm (16 inches) on center.
3. Species: Red oak for exposed hardwood trim and edging.
4. Cabinet Exposed Surfaces: Decorative plastic laminate including interior of cupboard cabinet.
5. Frame: Overlay frame of apron with drawer and door face.
6. Hardware:
  - a. Drawer guides on drawers with pulls.
  - b. Pulls and concealed hinges on doors.
  - c. Adjustable shelf standards with shelf rests.
7. Provide cut outs for electrical devices and outlets.

F. Interview Booth:

1. Fabricate to AWI premium grade construction.
2. Provide softwood for framing, space members not over 600 mm (24 inches) on center. Provide softwood for counter concealed members and mounting strip for writing surface.
3. Red oak for exposed hardwood trim.
4. Red oak veneer plywood for exposed wood finish.
5. Glue acoustical panel to plywood substrate.

6. Provide decorative plastic laminate writing surface pattern on counter.
  7. Fasten writing surfaces to divided panels with screws, to center support with mounting strips screwed to panel, and top at underside.
- G. Folding Shelves: Dressing (Make-Up) Type B Counter and Counter Shelf Type A.
1. Red oak back stop and mounting strips.
  2. Fabricate fold down shelf with plastic laminate finish over core.
  3. Hardwood mounting strip at wall behind folding shelf bracket in thickness to permit shelf to fold down without interfering back stop. Secure to back stop.
- H. Thru-Wall Counter or Pass-Thru Counter.

SPEC WRITER NOTE: Do not use in fire rated walls.

1. Fabricate counter as shown on Drawings. 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. Provide angle and fabricated shelf bracket supports.
- I. Receiving shelf in Agent Cashier:
1. Fabricate shelf as shown on Drawings over 19 mm (3/4 inch) thick core.
  2. Shelf Bracket: B04041.

SPEC WRITER NOTE: Identify other spaces where wall paneling is used, and conditions other than specified.

- J. Wall Paneling in Rehabilitation Medicine Corrective Therapy Main Clinic:
1. Fire-retardant treated.
  2. Hardwood Plywood:
    - a. Vertical V-grooved planked // V-groove random planked // flush ungrooved.
    - b. Thickness: 19 mm (3/4 inch) unless shown otherwise.
    - c. //Unfinished // Prefinished, type of finish is specified in Section 09 06 00, SCHEDULE FOR FINISHES.
    - d. Use full height panels where possible without end joints.
  3. Solid Hardwood:

- a. White oak or red oak, number one common grade.
  - b. Tongue and groove, including end matched.
  - c. Thickness: Minimum 19 mm (3/4 inch).
  - d. Random Lengths minimum 600 mm (24 inches), 57 mm (2-1/4 inches) wide.
4. Trim and Base:
- a. Quarter round at ceiling and vertical edge.
  - b. Two-member base as shown on Drawings.
5. Furring Strips: Nominal 25 mm by 100 mm (1 inch by 4 inch) softwood.

SPEC WRITER NOTE: Coordinate with Section 05 50 00, METAL FABRICATIONS, to specify steel top support.

K. Desk in Credit Union:

- 1. Fabricate to AWI premium grade construction top with compartment as shown on Drawings.
- 2. Assemble compartment to counter top with one screw in each compartment.

L. Plastic Laminate Counter or Work Tops:

- 1. Thickness: 32 mm (1-1/4 inch) thick core unless shown otherwise.
  - a. Edges:
    - 1) Decorative laminate for exposed edges of tops, back, and endsplash, 38 mm (1-1/2 inches) wide.
    - 2) Plastic or metal edges for top edges less than 38 mm (1-1/2 inches) wide.
  - b. Assemble backsplash 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 on Drawings.

M. Wood Handrails:

- 1. AWI Premium Grade.
- 2. Species: Maple or Birch.
- 3. Fabricate in one piece and one length when practical.
- 4. Fabricate curved sections for ends of rails to return to wall and where rails change slope or direction.
- 5. Joints are permitted only where rail changes direction or slope, or where necessary for field erection or shipping.

6. Scarf or dowel all joints to provide a smooth and rigid connection.  
Glue all joints.
7. Fit joints, to produce a hair-line crack.
8. Completely shop fabricated according to approved shop drawings.

## 2.5 ACCESSORIES

### A. Hardware:

#### 1. Rough Hardware:

- a. Provide 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.

#### b. Fasteners:

- 1) Bolts with Nuts: FF-N-836.
- 2) Expansion Bolts: A-A-1922A.
- 3) Screws: Fed. Spec. FF-S-111.

SPEC WRITER NOTE: Add additional finish hardware when required from ANSI A156.9 and A156.16.

#### 2. Finish Hardware:

##### a. Cabinet Hardware: ANSI A156.9.

- 1) Door/Drawer Pulls: B02011. Door in seismic zones: B03182.
- 2) 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.
- 3) Sliding Door Tracks: B07063.
- 4) Adjustable Shelf Standards: B4061 with shelf rest B04083.
- 5) Concealed Hinges: B1601, minimum 110 degree opening.
- 6) Butt Hinges: B01361, for flush doors, B01381 for inset lipped doors, and B01521 for overlay doors.
- 7) Cabinet Door Catch: B0371 or B03172.
- 8) Vertical Slotted Shelf Standard: B04103 with shelf brackets B04113, sized for shelf depth.

##### b. Cabinet Locks: ANSI A156.11.

- 1) Drawers and Hinged Door: E07262.
- 2) Sliding Door: E07162.

##### c. Auxiliary Hardware: ANSI A156.16.

- 1) Shelf Bracket: B04041, japanned or enameled finish.

- 2) Combination Garment rod and Shelf Support: B04051 japanned or enamel finish.
- 3) Closet Bar: L03131 chrome finish of required length.
- 4) Handrail Brackets: L03081 or L03101.
  - a) Cast Aluminum, satin polished finish.
  - b) Cast Malleable Iron, japanned or enamel finish.
- d. Steel Channel Frame and Leg supports for countertop. Fabricated under Section 05 50 00, METAL FABRICATIONS.
- e. Pipe Bench Supports:
  - 1) Pipe: ASTM A53.
- f. Fabricated Wall Bench Supports:
  - 1) 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.
  - 2) 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, maximum 200 mm (8 inches) on center between ends or corners.
  - 3) Stainless Steel Bars Brackets: ASTM A167, fabricated to shapes shown on Drawings, Number 4 finish. Provide 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 minimum two 13 mm (1/4 inch) hole for anchors on vertical member.
- g. Thru-Wall Counter Brackets:
  - 1) Steel angles drilled for fasteners on 100 mm (4 inches) centers.
  - 2) Baked enamel prime coat finish.
- h. Folding Shelf Bracket:
  - 1) Steel Shelf bracket, approximately 400 mm by 400 mm (16 by 16 inches), folding type, baked gray enamel finish or chrome plated finish.
  - 2) Bracket legs nominal 28 mm (1-1/8 inches) wide.
  - 3) Distance from center line of hinge pin to back of vertical leg to be 44 mm (1-3/4 inches) or provide for wood spacer when hinge line is at joint of vertical and horizontal leg.

- 4) Distance from face to face of bracket when closed: 50 mm (2 inches).
  - 5) Brackets shall automatically lock when counter is raised parallel to floor and unlock manually.
  - 6) Each bracket capable of supporting a minimum of 68 kg (150 pounds), evenly distributed.
- i. Edge Strips Moldings:
- 1) 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.
  - 2) Stainless steel or extruded aluminum channels.
  - 3) Stainless steel, number 4 finish; aluminum, mechanical applied medium satin finish, clear anodized 0.1 mm (0.4 mils) thick.
- j. Rubber or Vinyl molding:
- 1) Rubber or vinyl standard stock and in longest lengths practicable.
  - 2) Design for closures at joints with walls and adhesive anchorage.
  - 3) Adhesive as recommended by molding manufacturer.
- k. Primers: Manufacturer's standard primer for steel providing baked enamel finish.

B. Adhesive:

1. Plastic Laminate: Fed. Spec. A-A-1936.
2. Interior Millwork: Unextended urea resin, unextended melamine resin, phenol resin, or resorcinol resin.

**PART 3 - EXECUTION**

**3.1 PREPARATION**

- A. Examine and verify substrate suitability for product installation.
- B. Protect existing construction and completed work from damage.
- C. Remove existing // // to permit new installation.
  1. Retain existing // // for reuse.
  2. Dispose of // other // removed materials.
- D. Clean substrates. Remove contaminants capable of affecting subsequently installed product's performance.

**3.2 INSTALLATION**

- A. Installation:
  1. Prime millwork receiving transparent finish and back-paint concealed surfaces.

2. Fasten trim with fine finishing nails, screws, or glue as required.
3. Set nails for putty stopping. Provide washers under bolt heads where no other bearing plate occurs.
4. Seal cut edges of 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. Apply adhesive uniformly for full contact between // // and substrate.

B. Seats and Benches:

1. Provide stainless steel countersunk screws to secure wood seats to brackets, angle, or pipe supports.
2. Provide 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: Fasten wall benches on stainless steel bar brackets, 150 mm (6 inches) near ends and maximum 900 mm (3 feet) on centers.
4. Corner Seats: Support on continuous angles secured to seat and walls.
5. Freestanding Benches: Provide pipe bench support within 200 mm (8 inches) of ends and maximum 900 mm (3 feet) on centers.

C. Communication Center Counters and Interview Booths:

1. Secure framing to floor with expansion bolts.
2. Secure counter top to support with wood cleats or metal angles screwed on 150 mm (6 inch) centers.
3. Conceal fasteners on corridor side. Exposed fasteners permitted under counter top and in knee spaces on staff side.

D. 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/square meter (25 psf) of board.
2. Install board with spacers to allow insertion and removal of hooks and accessories.

3. Install round trim, 6 mm (1/4 inch) at perimeter to finish flush with face of board and close space between wall and hardboard.

E. Wall Paneling:

1. Solid Hardwood Boards:

- a. Install furring strips, 25 by 75 mm (1 by 3 inch) at 400 mm (16 inch) centers horizontally between top and bottom strips. Fasten each stud with two screws.
- b. Install paneling laid vertically with end joints staggered between adjacent boards.
- c. Tightly butt joints and blind nail each board at each furring strip.

2. Plywood Paneling:

- a. Install furring strips horizontally, 25 by 75 mm (1 by 3 inch) under end joints of plywood and 300 mm (16 inches) on center between end strips. Install cross furring strips centered vertically at side joints of plywood paneling less than 13 mm (1/2 inch) thick. Fasten each stud with two screws.
- b. Install panels with long edge vertically and end joints aligned where exposed to view.
- c. Align V-grooves where end joints meet and maintain continuity of pattern.
- d. Apply continuous bead of adhesive to each furring strip to securely bond panel according to adhesive manufacturer's specifications.

e. Nailing:

- 1) Nail in V-grooves to horizontal furring strips and at panel edges and within 25 mm (1 inch) of ends except within 50 mm (2 inches) of end when panel end abutts other surfaces. Do not space nails in V-grooves over 150 mm (6 inches), on center.
- 2) Nail ungrooved panels at 400 mm (16 inches) centers to horizontal furring strips between end or edge nails. Set nails and fill hole with filler to match wood panel for panels thicker than 13 mm (1/2 inch). // Set nails flush with surface of panel thinner than 13 mm (1/2 inch). //
- 3) Use colored nails matching panel finish for prefinished panels or panels less than 13 mm (1/2 inch) thick.

3. Edge Trim and Base: Install solid wood as shown on Drawings, species same as wall paneling.

## F. Shelves:

1. Install mounting strip at back wall and end wall for shelves in closets where shown secured with toggle bolts at each end, 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 to studs with toggle bolts through each fastener opening. Double slotted shelf standards is acceptable where adjacent shelves terminate.
  - a. Install brackets 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.

## G. Interview Booths:

1. Anchor divider panel floor plates to floor with expansion bolts at ends and not over 900 mm (36 inch) centers.
2. Install writing surface on mounting strips secured to divider panels and center support with screws if not shop assembled. Field assemble according to shop drawings.

## H. Handrails:

1. Install in one piece and one length when practical.
2. Where rails change slope or direction, install special curved sections and ends of rails to return to wall, glue all field joints.
3. // Secure rails with wood screws at 450 mm (18 inches) on centers to metal balustrades top rail. //
4. Install brackets within 300 mm (12 inches) of ends of handrails and at every spaced intervals between not exceeding 1500 mm (5 feet) on centers at intervals between as shown. Anchor brackets as detailed and rails to brackets with screws.

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

**3.3 CLEANING**

- A. Remove excess adhesive before adhesive sets.
- B. Clean exposed surfaces. Remove contaminants and stains.
- C. Touch up damaged factory finishes.
  - 1. Repair painted surfaces with touch up primer.

**3.4 PROTECTION**

- A. Protect finish carpentry from // traffic and // construction operations.
- B. Cover finish carpentry with reinforced kraft paper, and plywood or hardboard.
- C. Remove protective materials immediately before acceptance.
- D. Repair damage.

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