

SECTION 123200 - MANUFACTURED WOOD CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Wood-faced cabinets of stock design.
- 2. Plastic-laminate-faced wood cabinets of stock design.
- 3. Plastic-laminate countertops.
- 4. Solid-surfacing-material countertops, including integral sinks.
- 5. Wall shelving.

- B. Related Sections:

- 1. Division 06 Section Miscellaneous Rough Carpentry for wood blocking for anchoring manufactured wood casework.
- 2. Division 06 Section "Interior Architectural Woodwork."
- 3. Division 09 Section "Non-Structural Metal Framing" for reinforcements in metal-framed partitions for anchoring manufactured wood casework.
- 4. Division 09 Section "Resilient Base and Accessories" for resilient base applied to manufactured wood casework.

1.3 DEFINITIONS

- A. MDF: Medium-density fiberboard.
- B. Exposed Portions of Cabinets: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches (1220 mm) above floor, and surfaces visible in open cabinets.
- C. Semiexposed Portions of Cabinets: Surfaces behind opaque doors, such as interiors of cabinets, shelves, dividers, interiors and sides of drawers, and interior faces of doors. Tops of cases 78 inches (1980 mm) or more above floor are defined as semiexposed.
- D. Concealed Portions of Cabinets: Surfaces not usually visible after installation, including sleepers, web frames, dust panels, and ends and backs that are placed directly against walls or other cabinets.

- E. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, MDF core, joined with adhesive, and faced both front and back with hardwood veneers.

1.4 SUBMITTALS

- A. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.
- B. Samples for Initial Selection: For cabinet finishes and for each type of top material indicated.
- C. Samples for Verification: 8-by-10-inch (200 by 250mm) Samples for each type of finish, including top material and the following:
 - 1. One full-size finished base cabinet complete with hardware, doors, and drawers, but without countertop, if substitution is requested.
 - 2. If substitution is accepted, maintain full-size Samples at Project site during construction in an undisturbed condition as a standard for judging the completed Work. Unless otherwise indicated, approved sample units may become part of the completed Work if in undisturbed condition at time of Substantial Completion. Notify Architect of their exact locations.
- D. Qualification Data: For qualified Installer.
- E. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: For projects with LEED requirement only, A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.
- B. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- C. Source Limitations: Obtain manufactured wood casework from single source from single manufacturer, within 500 miles of College Park, MD.
- D. Quality Standard: Unless otherwise indicated, comply with requirements for modular cabinets in AWI's "Architectural Woodwork Quality Standards," for custom grade.
 - 1. Provide documentation indicating that manufactured wood casework complies with AWI requirements.
- E. Product Designations: Drawings indicate sizes, configurations, and finish material of manufactured wood casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish material and complying with the Specifications may be considered. Refer to Division 01 Section "Product Requirements."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver manufactured wood casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article, as directed by UM PM.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install manufactured wood casework until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with manufactured wood casework by field measurements before fabrication.

1.8 COORDINATION

- A. Coordinate layout and installation of framing and reinforcements in walls and partitions for support of manufactured wood casework. Provide blocking appropriate to site conditions, and as noted in drawings.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of manufactured wood casework that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of components or other failures of glue bond.
 - b. Warping of components.
 - c. Failure of operating hardware.
 - d. Deterioration of finishes.
 - 2. Warranty Period: Five years from date of Substantial Completion.

1.10 EXTRA MATERIALS

- A. Furnish complete touchup kit for each type and finish of manufactured wood casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on drawings. Only plywood or MDF core. Comparable product by one of the following will be considered for substitution:
1. Wood-Faced Manufactured Casework:
 - a. American Woodmark Corporation (VA)
 - b. Executive Kitchens, Inc. (SC)
 - c. Legacy Cabinets, Inc.(AL)
 - d. Thomasville Cabinetry (NC)
 2. Plastic-Laminate-Faced Manufactured Casework:
 - a. Architectural Cabinet Systems; a division of Windham Millwork, Inc. (ME)
 - b. Mastercraft Woodworking Co., Inc (PA) (MBE Certified)
 - c. Goelst USA, LLC. (NC)

2.2 MATERIALS, GENERAL

- A. Low-Emitting Materials: Provide manufactured wood casework, including countertops, made with adhesives and composite wood products containing no urea formaldehyde.
- B. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- C. Hardwood Plywood: HPVA HP-1, veneer core unless otherwise indicated.
- D. MDF: ANSI A208.2, Grade 130 Cabinet grade.
1. Recycled Content: Refer to drawings for requirement, if any.
- E. Hardboard: AHA A135.4, Class 1 Tempered.
1. Recycled Content: Refer to drawings for requirement, if any.
- F. Plastic Laminate: High-pressure decorative laminate complying with NEMA LD 3.
1. Manufacturers: Subject to compliance with requirements, provide products indicated on drawings. Comparable products by one of the following may be considered:
 - a. Formica Corporation.
 - b. Lamin-Art, Inc.
 - c. Nevamar Company, LLC; Decorative Products Div.
 - d. Panolam Industries International Incorporated.
 - e. Wilsonart International; Div. of Premark International, Inc.
 - f. Chemetal Company.

- G. Thermoset Decorative Panels: MDF finished with thermally fused, melamine-impregnated decorative paper complying with LMA SAT-1.
- H. Edgbanding for Plastic Laminate: Rigid PVC extrusions, through color with satin finish, 3mm thick at doors and drawer fronts, 1mm thick elsewhere or as noted on drawings.
- I. Edgbanding for Wood-Veneered Construction: Minimum 3/8-inch- (3mm) thick, solid wood of same species as face veneer, or as noted on drawings.
 - 1. Select wood edgbanding for grain and color compatible with face veneers.
- J. Edgbanding for Thermoset Decorative Panels: PVC or polyester edge banding complying with LMA EDG-1 and matching thermoset decorative panels.
- K. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.
 - 1. Manufacturers: Subject to compliance with requirements, provide products indicated on the drawings. Comparable products by one of the following may be considered:
 - a. Avonite Surfaces; Aristech Acrylics LLC.
 - b. Formica Corporation.
 - c. Meganite Inc.; a division of The Pyrochem Group.
 - d. Nevamar Company, LLC; Decorative Products Div.
 - e. Transolid, Inc.
 - f. Wilsonart International; Div. of Premark International, Inc.
 - g. Inpro.
 - h. Livingstone Surfaces.
 - 2. Type: Provide Standard type unless Special Purpose type is indicated.
 - 3. Integral Sink Bowls: Comply with ISSFA-2 and ANSI Z124.3, Type 5 or Type 6, without a precoated finish.

2.3 CABINET MATERIALS

A. Exposed Cabinet Materials:

- 1. Wood Species: Hard wood species as noted on drawings.
- 2. Plywood: Hardwood plywood with face veneer of species indicated, selected for compatible color and grain. Grade A exposed faces at least 1/50 inch (0.5 mm) thick, and Grade J crossbands. Provide backs of same species as faces.
 - a. Face Veneer Cut: Plain sliced or as noted on drawings.
- 3. Solid Wood: Clear hardwood lumber of species indicated, selected for compatible grain and color.
- 4. Plastic Laminate: as noted on drawings.
- 5. Unless otherwise indicated, provide specified edgbanding on all exposed edges.

B. Semiexposed Cabinet Materials:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.
2. Plywood: Hardwood plywood of same species as exposed wood. Grade B faces and Grade J crossbands. Provide backs of same species as faces.
3. Plastic Laminate:
 - a. Provide plastic laminate for semiexposed surfaces unless otherwise indicated.
 - b. Provide plastic laminate for interior faces of doors and drawer fronts and where indicated.
4. Thermoset Decorative Panels: Provide thermoset decorative panels for semiexposed surfaces unless otherwise indicated.
5. Unless otherwise indicated, provide specified edgbanding on all semiexposed edges.

C. Concealed Cabinet Materials:

1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
2. Plywood: Hardwood plywood. Provide backs of same species as faces.
3. Plastic Laminate: (For plastic laminate cabinets only) Grade BKL.

2.4 DESIGN, COLOR, AND FINISH

- A. Design: Provide manufactured wood casework of the design as indicated by manufacture's designations.
- B. Wood Colors and Finishes: As indicated by manufacturer's designations, match Architect's samples or as selected by Architect from casework manufacturer's full range.
- C. Thermoset Decorative Panel Colors, Patterns, and Finishes: As indicated by manufacturer's designations or as selected by Architect from casework manufacturer's full range.
- D. Plastic-Laminate Colors, Patterns, and Finishes: As indicated by manufacturer's designations or as selected by Architect from casework manufacturer's full range.
- E. PVC Edgbanding Color: As selected from casework manufacturer's full range.
- F. Solid-Surfacing Material Colors and Patterns: As indicated by manufacturer's designations or as selected by Architect from manufacturer's full range.

2.5 CABINET FABRICATION

- A. Wood-Faced Cabinet Construction: No particle board components will be accepted. As required by referenced quality standard, but not less than the following:
 1. Bottoms of Cabinets and Tops of Wall Cabinets: 3/4-inch (19-mm) hardwood plywood.
 2. Ends of Cabinets: 3/4-inch (19-mm) hardwood plywood.
 3. Shelves: 3/4-inch (19-mm) veneer-core hardwood plywood.

4. Base Cabinet Top Frames: 3/4-by-2-inch (19-by-51-mm) solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
 5. Base Cabinet Stretchers: 3/4-by-4-1/2-inch (19-by-114-mm) plywood, or MDF strips or solid-wood boards at front and back of cabinet, glued and pinned or screwed.
 6. Base Cabinet Subtops: 3/4-inch (19-mm) plywood or MDF glued and pinned or screwed.
 7. Backs of Cabinets: 3/4-inch (19-mm) plywood where exposed, 1/2-inch (12.7-mm) hardwood plywood dadoed into sides, bottoms, and tops where not exposed.
 8. Drawer Fronts: 3/4-inch (19-mm) plywood or solid hardwood.
 9. Drawer Sides and Backs: 1/2-inch (12.7-mm) solid-wood or hardwood plywood, with glued dovetail or multiple-dowel joints.
 10. Drawer Bottoms: 1/2-inch (6.4-mm) veneer-core hardwood plywood glued and dadoed into front, back, and sides of drawers
 11. Doors 48 Inches (1220 mm) or Less in Height: 3/4 inch (19 mm) thick, with solid hardwood stiles and rails, or MDF cores, and hardwood face veneers and crossbands.
 12. Doors More Than 48 Inches (1220 mm) in Height: 1-1/16 inches (27 mm) thick, with solid hardwood stiles and rails, and hardwood face veneers and crossbands.
- B. Plastic-Laminate-Faced Cabinet Construction: As required by referenced quality standard, but not less than the following:
1. Bottoms and Ends of Cabinets, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch (19-mm) MDF or Plywood, plastic-laminate faced on exposed surfaces, thermoset decorative panels on semiexposed surfaces.
 2. Shelves: 3/4-inch (19-mm) thermoset decorative panels.
 3. Shelves: 3/4-inch (19-mm) MDF, plastic-laminate faced on exposed surfaces, thermoset decorative panels on semiexposed surfaces.
 4. Shelves: 3/4-inch (19-mm) plywood, plastic-laminate faced.
 5. Backs of Cabinets: 1/2-inch (12.7-mm) MDF or plywood, plastic-laminate faced on exposed surfaces, thermoset decorative panels on semiexposed surfaces.
 6. Drawer Fronts: 3/4-inch (19-mm) MDF, plastic-laminate faced.
 7. Drawer Sides and Backs: 1/2-inch (12.7-mm) solid-wood or veneer-core hardwood plywood with glued dovetail or multiple-dowel joints.
 8. Drawer Bottoms: 1/4-inch (6.4-mm) hardwood plywood glued and dadoed into front, back, and sides of drawers. Use 1/2-inch (12.7-mm) material for drawers more than 24 inches (600 mm) wide.
 9. Doors: 3/4-inch (19-mm) MDF with wood stiles and rails, plastic-laminate faced.
- C. Leg Shoes: Rubber, black, open-bottom type, or as noted on drawings.
- D. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.

2.6 FINISH FOR WOOD-FACED MANUFACTURED CASEWORK

- A. Preparation: Sand lumber and plywood for manufactured wood casework construction before assembling. Sand edges of doors and drawer fronts and molded shapes with profile-edge sander. Sand casework after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.

- B. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semiexposed surfaces as required to provide uniform color and to match approved samples.
- C. Finishing Closed-Grain Woods: Apply manufacturer's standard two-coat, baked, clear finish consisting of a thermosetting catalyzed sealer and a thermosetting catalyzed conversion varnish. Sand and wipe clean between applications of sealer and topcoat. Topcoat may be omitted on concealed surfaces.
- D. Finishing Open-Grain Woods: Apply manufacturer's standard three-coat, baked, clear finish consisting of a thermosetting catalyzed sealer and two coats of a thermosetting catalyzed conversion varnish. Sand and wipe clean between applications of sealer and topcoat and between topcoats. Topcoats may be omitted on concealed surfaces.

2.7 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.
 - 1. Through-bolt from back side all handles and pull.
- B. Butt Hinges: Stainless-steel, semi concealed, 5-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide 2 hinges for doors less than 48 inches (1220 mm) high and 3 hinges for doors more than 48 inches (1220 mm) high.
- C. Frameless Concealed Hinges (European Type): BHMA A156.9, Type B01602, 170 degrees of opening, self-closing.
- D. Pulls: Solid aluminum or stainless-steel wire pulls, fastened from back with two screws, or as pulls noted on drawings. For sliding doors, provide recessed stainless-steel flush pulls or as noted on drawings. Provide 2 pulls for drawers more than 24 inches (600 mm) wide.
- E. Door Catches: Zinc-plated or Powder-coated, nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches (1220 mm) high. Refer to drawings for additional information.
- F. Drawer Slides: BHMA A156.9, Type B05091.
 - 1. Standard Duty (Grades 1, 2, and 3): Side mounted and extending under bottom edge of drawer; full extension type; zinc-plated steel with polymer rollers.
 - 2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-overtravel-extension type; zinc-plated, steel ball-bearing slides.
 - 3. Box Drawer Slides: Grade 1HD-100] for drawers not more than 6 inches (150 mm) high and 24 inches (600 mm) wide.
 - 4. File Drawer Slides: Grade 1HD-200, for drawers more than 6 inches (150 mm) high or 24 inches (600 mm) wide.
 - 5. Pencil Drawer Slides: Grade 1, for drawers not more than 3 inches (75 mm) high and 24 inches (600 mm) wide.
 - 6. Keyboard Slides: As noted on the drawings.
 - 7. Trash Bin Slides: Grade 1HD-200, for trash bins not more than 20 inches (500 mm) high and 16 inches (400 mm) wide.

- G. Label Holders: Stainless steel, sized to receive standard label cards approximately 1 by 2 inches (25 by 51 mm), attached with screws or brads.
 - 1. Provide label holders where indicated on all drawers.
- H. Drawer and Hinged Door Locks: Cylindrical cam complying with BHMA A156.11, Grade 1.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks where indicated.
- I. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door units.
- J. Adjustable Shelf Supports: Single-pin metal shelf rests complying with BHMA A156.9, Type B04013.
- K. Adjustable Shelf Supports: Mortise-type, zinc-plated steel standards and shelf rests complying with BHMA A156.9, Types B04071 and B04091.
- L. Grommets for Cable Passage through Countertops: Size and finish as noted on drawings. Aluminum grommets with internal caps with slot for wire passage.

2.8 COUNTERTOPS

- A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Provide front and end overhang of 1 inch (25 mm) over base cabinets, unless noted otherwise.
- B. Plastic-Laminate Tops: Plastic-laminate sheet, shop bonded to both sides of 3/4-inch (19-mm) plywood or MDF. Sand surfaces to which plastic laminate is to be bonded.
 - 1. Plastic Laminate for Flat Tops: as noted on drawings.
 - 2. Plastic Laminate for Formed Tops: Grade HGP.
 - 3. Plastic Laminate for Backing: Grade BKL.
 - 4. Provide 3-mm PVC edging as noted on drawings, on top edges of backsplashes and end splashes, and on ends of tops and splashes.
 - 5. Construct top and backsplash from one piece of plastic laminate with rolled edges and coved intersection. Where indicated, provide separate end splashes fitted to top.
 - 6. Use exterior plywood or moisture resistant MDF for countertops containing sinks.
- C. Solid-Surfacing-Material Tops: 1/2-inch- (12.7-mm-) minimum thick, solid-surfacing material laminated to 3/4 inch (19mm) thick particleboard with front edge built up with 1/2 inch (19mm) thick, solid surfacing material with front edge built up with same material. Refer to drawing for material thickness and edge detail.
 - 1. Front: Unless noted otherwise on drawings, slightly ease edge at top and bottom 1-1/2-inch apron.
 - 2. Backsplashes: Minimum 1/2-inch- (12.7-mm-) thick, solid-surfacing material; slightly eased at edge or as noted on drawings.

2.9 WALL SHELVING

- A. Plastic-Laminate Shelving: Plastic-laminate sheet, Grade HGL or HGP, shop bonded to both sides of plywood or MDF. Sand surfaces to which plastic laminate is to be bonded.
 - 1. Shelf Thickness: 3/4 inch (19 mm) or as indicated on drawings.
 - 2. Edge Treatment: Finish both edges with rigid PVC extrusion, through color with satin finish, 3 mm thick, or as indicated on drawings.
- B. Adjustable Shelf Supports: Steel standards and shelf brackets double slotted, complying with BHMA A156.9, Types B04102 and B04112, surface mounted, or as specified on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of manufactured wood casework.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 CASEWORK INSTALLATION

- A. Install level, plumb, and true; shim as required, using concealed shims. Where manufactured wood casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Set cabinet's straight, level, and plumb. Adjust subtops within 1/16 inch (1.5 mm) of a single plane. Fasten cabinets to masonry or framing, wood blocking, or reinforcements in walls and partitions with fasteners spaced 12 inches (300 mm) o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch (1.5 mm).
 - 1. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 16 inches (400 mm) o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than two fasteners.
- C. Wall Cabinets: Hang cabinet's straight, level, and plumb. Adjust fronts and bottoms within 1/16 inch (1.5 mm) of a single plane. Fasten to hanging strips, masonry, or framing, blocking, or reinforcements in walls or partitions. Align similar adjoining doors to a tolerance of 1/16 inch (1.5 mm).
 - 1. Fasten through back, near top and bottom, at ends, and not more than 16 inches o.c. or use continuous z clip hangers.
 - 2. Use toggle bolts at hollow masonry.
 - 3. Use expansion anchors at solid masonry.

4. Use No. 10 wafer-head screws sized for 1-inch (25-mm) penetration at wood hanging strips.
 5. Use No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish at metal-framed partitions.
 6. Use toggle bolts at plaster on metal lath.
- D. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- E. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.3 INSTALLATION OF TOPS

- A. Field Jointing: Where possible make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
1. Secure field joints in plastic-laminate countertops with concealed clamping devices located within 6 inches (150 mm) of front and back edges and at intervals not exceeding 24 inches (600 mm). Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- B. Secure tops to cabinets with Z- or L-type fasteners or equivalent, using two or more fasteners at each front, end, and back.
- C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection.
- D. Secure backsplashes and end splashes to tops with concealed metal brackets at 16 inches (400 mm) o.c. and walls with adhesive.
- E. Seal junctures of tops, splashes, and walls with mildew-resistant clear silicone sealant.

3.4 INSTALLATION OF SHELVING

- A. Securely fasten shelf standards to masonry, partition framing, wood blocking, or reinforcements in partitions.
1. Fasten shelf standards at ends and not more than 6 inches (150 mm) from end of shelf.
 2. Use toggle bolts at hollow masonry.
 3. Use expansion anchors at solid masonry.
 4. Use self-tapping sheet metal screws in metal framing or metal backing at metal-framed partitions. Do not use wall anchors in gypsum board.
 5. Use wood screws sized for 1-inch (25-mm) penetration into wood framing or blocking at wood-framed partitions.
 6. Use toggle bolts at plaster on metal lath.

- B. Install shelf standards plumb and at heights to align shelf brackets for level shelves. Space standards not more than 30 inches (750 mm) o.c.
- C. Install shelving level and straight, closely fitted to other work where indicated.

3.5 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protection: Provide 6-mil (0.15-mm) plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at a minimum of 48 inches (1220 mm) o.c. This is minimum protection required. If exposure to damage is expected, install appropriately robust protection. Remove protection at Substantial Completion.

END OF SECTION 123200