

SECTION 06400

ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Wood science cabinets (casework).
- B. Custom wood casework.
- C. Plastic laminate countertops.
- D. Epoxy countertops.
- E. Science epoxy sinks, faucets, strainers, tailpieces, valves, adapters, and gas fittings.
- F. Shop finishing casework.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Blocking, and other carpentry work concealed in the wall.
- B. Section 09650 - Resilient Flooring: Rubber base.
- C. Section 15400 - Plumbing - General Purpose: Connections to sanitary, cold water, hot water and natural gas for fixtures and equipment provided in this Section.

1.03 REFERENCES

- A. ANSI/BHMA A156.9 - Cabinet Hardware.
- B. ASTM C1048 - Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.
- C. ASTM D523 - Standard Test Method for Specular Gloss.
- D. FGMA - Glazing Manual.
- E. HPVA HP-1 - Voluntary Standard for Hardwood and Decorative Plywood; Hardwood Plywood Manufacturer's Association.
- F. AWI - Quality Standards
- G. PS 1 - Construction and Industrial plywood.
- H. PS 20 - American Softwood Lumber Standard.

1.04 DEFINITIONS

- A. Exposed Portions of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches (1200 mm) above floor, and visible surfaces in open cabinets or behind glass doors.
 - 1. Ends of cabinets indicated to be installed directly against and completely concealed by walls or

other cabinets after installation shall not be considered exposed.

- B. Semiexposed Portions of Casework: 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.
- C. Concealed portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

1.05 SUBMITTALS

- A. General: Submit in accordance with Section 01300.
- B. Product Data: Submit for each type of product and process specified and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
- C. Shop Drawings: Show locations of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show details full size.
 - 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcing specified in other Sections.
 - 3. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, and other items installed in architectural woodwork and tops.
 - 4. Show adjacent walls, doors, windows, other building components, and other laboratory equipment. Indicate clearances from above items.
- D. Samples:
 - 1. Shop-applied transparent finishes.
 - 2. Epoxy top.
 - 3. Plastic laminate.
 - 4. Exposed cabinet hardware, one unit for each type and finish.
- E. Product Certificates: By woodwork fabricator certifying that products and construction comply with specified requirements.

1.06 QUALITY ASSURANCE

- A. Fabricator Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.
- B. Single-Source Responsibility for Fabrication and Installation: Engage a qualified woodworking firm to assume undivided responsibility for fabricating, finishing, and installing woodwork specified in this Section.
- C. Quality Standard: Except as otherwise indicated, comply with the following standard:
 - 1. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute for grades of interior architectural woodwork, construction, finishes, and other requirements.
 - a. Provide AWI Certification Labels or Certificates of Compliance indicating that woodwork meets requirements of grades specified.
 - 2. The Contract Documents contain selections chosen from options in the Quality Standard as well as additional requirements beyond those of the Quality Standard. Comply with such selections and requirements in addition to the Quality Standard.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect woodwork during transit, delivery, storage, and handling to prevent damage, soilage, and deterioration.
- B. Do not deliver woodwork until painting and similar operations that could damage, soil, or deteriorate woodwork have been completed in installation areas. If woodwork must be stored in other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions."

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet-work is completed, and provisions to maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Environmental Limitations: Obtain and comply with woodwork fabricator's and Installer's coordinated advice for optimum temperature and humidity conditions for woodwork during its storage and installation.
- C. Field Measurements: Where woodwork is indicated to be fitted to other construction, check actual dimensions of other construction by accurate field measurements before fabrication, and show recorded measurements on final Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Verify locations of concealed framing, blocking, reinforcements, and furring that support woodwork by accurate field measurements before being enclosed. Record measurements on final Shop Drawings.

1.09 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that interior architectural woodwork can be supported and installed as indicated.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Provide materials that comply with requirements of the AWI quality standard for each type of woodwork and quality grade indicated and, where the following products are part of interior woodwork, with requirements of the referenced product standards that apply to product characteristics indicated.
- B. Exposed Materials: Comply with the following:
 - 1. Exposed Wood: Do not use 2 adjacent exposed faces that are noticeably dissimilar in color, grain, figure, or natural character markings.
 - a. Wood Species: As follows:
 - (1) Trainer's Room and Science Labs: Red Oak, plain sliced.
 - (2) Display Cabinets: Maple, plain sliced.
 - 2. Solid Wood: Clear hardwood lumber matching selected species, free of defects, selected for compatible grain and color and kiln dried to 7 percent moisture content.
 - 3. Plywood: Hardwood plywood, selected for compatible color and grain. HPVA HP-1, Grade A faces at least 1/50 inch (0.5 mm) thick and Grade J crossbands. Edgeband exposed edges with minimum 1/4-inch- (6-mm-) thick, solid-wood edging of the same species as face veneer. Species as follows:
 - a. Trainer's Room and Science Labs: Red Oak, plain sliced.

- b. Display Cabinets: Maple, plain sliced.
 - 4. High-Pressure Decorative Laminate: NEMA LD 3, GP50 for countertops.
 - a. Laminate Attachment: Bond laminate materials to core material with catalyzed PVA glue with a minimum average pressure of 90 PSI and average 180 degree temperature.
 - b. Colors, Patterns, and Finishes: Provide Architect's selections for colors and finishes indicated.
- C. Semiexposed Materials: Comply with the following:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects and kiln dried to 7 percent moisture content. Any hardwood species similar in color and grain to exposed portions.
 - 2. Plywood: Hardwood plywood of any species similar in color and grain to exposed portions. HPVA HP-1, Grade C faces and Grade J crossbands. Semiexposed backs of plywood with exposed faces shall be the same species as faces.
 - 3. Metal: Commercial-quality, cold-rolled, carbon-steel sheet, complying with ASTM A 366 (ASTM A 366M); matte finish; suitable for exposed applications.
- D. Concealed Materials: Comply with the following:
 - 1. Solid Wood or Plywood: Any hardwood or softwood species, with no defects affecting strength or utility. Hardwood and softwood lumber kiln dried to 7 and 12 percent moisture content, respectively. Concealed backs of plywood with exposed or semiexposed faces shall be the same species as faces.
 - 2. Medium-Density Fiberboard: ANSI A208.2.
 - 3. Hardboard: AHA A135.4, Class 1 Tempered.

2.02 CABINET HARDWARE

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8 Section "Door Hardware."
- B. Hardware Standard: Comply with BHMA A156.9 for items indicated by reference to BHMA numbers or referenced to this standard.
- C. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA code number indicated.
 - 1. Satin Chromium Plated: BHMA 626 for brass or bronze base.
 - 2. Satin Stainless Steel, Stainless-Steel Base: BHMA 630.
- D. For concealed hardware provide manufacturer's standard finish that complies with product class requirements of BHMA A156.9.
- E. Hinges: Stainless-steel, 5-knuckle hinges complying with BHMA 156.9, Grade 1, with antifriction bearings and rounded tips. Provide 2 for doors less than 48 inches (1200 mm) high and 3 for doors 48 to 62 inches (1200 mm) high, and 4 hinges for doors more than 62 inches high.
- F. Drawer Slides: Telescoping full extension ball bearing slide, 100 pound capacity, almond baked-on epoxy finish.
- G. Door and Drawer Pulls: 1-5/16 inch projection by 4 inches screw hole spacing. Solid with satin chromium or stainless finish. Provide 2 pulls for drawers more than 24 inches (600 mm) wide.
- H. Door Catches: Adjustable nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches (1200 mm) high.
- I. Shelf Standards: Knape & Vogt Mfg. Co.
 - 1. Training Room and Science Casework: Double pin shelf rests, plastic with shelf clip retainer.
 - 2. Display Case: No. 187 heavy-duty brackets, No. 87 Standards, with No. 211 and 212 shelf rests.

- J. Display Case Door Tracks: Knapé & Vogt Mfg. Co.
 - 1. Sheave: Nylon round groove wheel for heavy doors, 1-3/16 inch diameter; No. 594 Nylon.
 - 2. Upper Guide: Precoated steel upper T guide to separate sliding doors at top; No. 953 ZC.
 - 3. Track: Stainless steel, with fasteners included; No. 455 SS.

- K. Drawer and Cupboard Locks: Cylindrical type, 5-pin tumbler and cam, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1.
 - 1. Timberline; CompX deadbolt door locks; tall cabinets System 260.
 - 2. Provide minimum of 2 keys per lock and 6 master keys.
 - 3. Each room shall be keyed according to Owner's instructions. Provide on all drawers and doors.

- L. Sliding Glass Door Locks for Display Cases: Knapé & Vogt #963 CHR, or approved equal, ratchet lock for 1/4-inch glass, lapping 3/4- to 3-3/8-inch; keyed alike; polished chrome finish.

2.03 ACCESSORY MATERIALS

- A. Leg Shoes: Vinyl or rubber, black, open-bottom type.

- B. Table Leg Floor Protectors: Large diameter plastic buttons with recessed center nail attachment.

- C. Upright Rod Assembly: Lab apparatus support rods, 3/4 inch diameter aluminum, two 39 inch (99.1cm) long uprights with tapered end adapter, one 39 inch (99.1cm) long cross arm with crossbar clamps, and support rod receptacles for flush mounting in tops.

- D. Clear Float Glass for Shelves: ASTM C 1036, Type I, Class 1, Quality q3, 3/8-inch (9.5 mm) thick, unless otherwise indicated, polished edges.

- E. Clear, Tempered Float Glass for Doors: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3; manufactured by horizontal (roller hearth) process, with exposed edges seamed before tempering, 6 mm thick, unless otherwise indicated.

- F. Display Case Lens: White acrylic translucent panel.

- G. Fabric Covered, Tackable Wall Panel for Display Cases: Interior tackable panels composed of fire retardant fabric laminated to structural wood fiberboard, fire retardant, asbestos and formaldehyde free, nominal 1/2-inch (13 mm) thick.
 - 1. Product: Homosote Co.; Design Wall.

- H. Base Molding: Provided in Section 09650.

2.04 TOPS FOR SCIENCE CASEWORK

- A. Tops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Make exposed edges and corners uniformly beveled. Provide front and end overhang of 1 inch (25 mm) over base cabinets, formed with continuous drip groove on underside 1/2 inch (13 mm) from edge.

- B. Epoxy Counter and Table Tops: Factory molded of modified epoxy-resin formulation, uniform mixture throughout full thickness with smooth, nonspecular finish.
 - 1. Physical Properties: Comply with the following minimum requirements:
 - a. Flexural strength: 15,000 psi (100 MPa).
 - b. Compressive strength: 30,000 psi (200 MPa).
 - c. Hardness (Rockwell M): 100.

- d. Water absorption (24 hours): 0.02 percent (maximum).
 - e. Heat distortion point: 350°F (177°C).
 - f. Thermal-shock resistance: Highly resistant.
2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, test procedure 3.9.5:
- a. Acetone: Moderate effect.
 - b. Acetic acid (98 percent): No effect.
 - c. Hydrochloric acid (37 percent): No effect.
 - d. Nitric acid (70 percent): No effect.
 - e. Phosphoric acid (85 percent): No effect.
 - f. Sulfuric acid (33 percent): No effect.
 - g. Benzene: No effect.
 - h. Butyl alcohol: No effect.
 - i. Carbon tetrachloride: No effect.
 - j. Ethyl acetate: No effect.
 - k. Ethyl ether: No effect.
 - l. Formaldehyde: No effect.
 - m. Phenol (85 percent): No effect.
 - n. Xylene: No effect.
 - o. Ammonium hydroxide (28 percent): No effect.
 - p. Sodium hydroxide (50 percent): Moderate effect.
 - q. Zinc chloride: No effect.
3. Colors: Provide products that result in colors complying with the following requirements:
- a. Color: Black.
4. Top Fabrication: Cast surfaces very smooth, with factory cutouts for sinks. Fabricate plain butt-type joints assembled with epoxy adhesive and prefitted, concealed metal splines.
- a. Top Configuration: Square edge with drip groove and applied backsplash. Provide end splash where top end stops against a vertical surface.
 - b. Top Thickness: 3/4 inch (19 mm) minimum.
5. Drill holes in countertops for sinks and plumbing fittings in shop.

2.05 LABORATORY SINKS AND SERVICE FITTINGS, GENERAL

- A. Service Fittings: Provide units that comply with SEFA 7, "Laboratory and Hospital Fixtures--Recommended Practices." Provide fittings complete with washers, locknuts, nipples, and other installation accessories. Include wall and deck flanges, escutcheons, handle extension rods, and similar items.
 - 1. Provide units that comply with recommendations in SEFA 7, Section 11, "Vandal-Resistant Faucets and Fixtures."
 - 2. Product: Provide Chicago; no substitution.
- B. Materials: Fabricated from cast or forged red brass, unless otherwise indicated.
- C. Finish: Chromium plated.
- D. Water Valves and Faucets: Provide units complying with ASME A112.18.1, with renewable seats, designed for working pressure up to 80 psig (550 kPa).
 - 1. Vacuum Breakers: Provide ASSE 1035 vacuum breakers on water fittings with serrated outlets.
 - 2. Aerators: Provide aerators on water fittings that do not have serrated outlets.
- E. Ground-Key Cocks: Tapered core and handle of one-piece forged brass, ground and lapped, and held in place under constant spring pressure. Provide units designed for working pressure up to 40 psig (280 kPa), with serrated outlets.
- F. Ball Valves: Chrome-plated ball and PTFE seals. Handle requires no more than 5 lbf (22 N) to operate.

Provide units designed for working pressure up to 75 psig (520 kPa), with serrated outlets.

- G. Service-Outlet Identification: Provide color-coded plastic discs with embossed identification, secured to each service-fitting handle to be tamper resistant.

2.06 LABORATORY SINKS AND SERVICE FITTINGS

- A. Laboratory Sinks: Provide integral sinks in epoxy countertops, bonded to countertops with invisible joint line. Sinks shall be one-piece molded modified epoxy resin; 1/2-inch (13-mm) minimum thickness; all inside corners shall be 1-1/2" cove radius and bottom shall be sloped to outlet; black in color. Provide a polypropylene 1-1/2" outlet, strainer and tail piece assembly. Provide mounting bracket assemblies per the manufacturers recommendations.

1. LSK-1: Model 52L462, 14" by 18" by 10-1/2" deep with a center drain. Faucet shall be a Model 930-317-E32-XK, washerless ceramic disc, quarter turn, cartridge design, chrome plated brass finish with brass and copper waterways, quatern ceramic cartridges, dual lever faucet shall have a maximum 90 degree handle rotation with positive on and off stops, color coded 4" wrist blade handles, gooseneck swing spout, Model E32 2.0 GPM laminar flow outlet and hand spray.
2. LSK-2: Model 52L479, 10" by 14" by 6" deep with an center drain. Faucet shall be a Model 928-317-E32-XK, washerless ceramic disc, quarter turn, cartridge design, chrome plated brass finish with brass and copper waterways, quatern ceramic cartridges, single service faucet shall have a maximum 90 degree handle rotation with positive on and off stops, color coded 4" wrist blade handles, gooseneck swing spout, Model E32 2.0 GPM laminar flow outlet and hand spray.
 - a. Provide a Model 980-907B single outlet gas turret with a ground key stop at sinks in Chemistry Lab No. 34, Room E010.

2.07 PLASTIC LAMINATE COUNTERTOPS

- A. Quality Standard: Comply with AWI Section 400C requirements for countertops.
 1. Grade: Premium.
- B. Type of Top: High-pressure decorative laminate complying with the following:
 1. Grade: GP-50, 0.050 inch (1.270 mm) nominal thickness.
 2. Grain Direction: Parallel to cabinet fronts.
 3. Edge Treatment: Same as laminate cladding on horizontal surfaces or wood as indicated.
 4. Core Material: Medium-density particleboard.
 5. Core Material: Exterior-grade plywood for applications for sinks and wet areas.

2.08 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Screws: Select material, type, size, and finish required for each use. Comply with ASME B18.6.1 for applicable requirements.
 1. For metal framing supports, provide screws as recommended by metal-framing manufacturer.
- C. Nails: Select material, type, size, and finish required for each use. Comply with FS FF-N-105 for applicable requirements.
- D. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors.
- E. Glue: Aliphatic- or phenolic-resin wood glue recommended by manufacturer for general carpentry use.

2.09 DESIGN, COLOR, AND FINISH

- A. Design: Provide wood casework of the following design:
 - 1. Flush overlay.

- B. Colors and Finishes: Comply with the following requirements for colors and finishes of wood laboratory casework:
 - 1. Colors and Finishes: Provide light stain to unify color of casework parts and individual units. Submit samples of color and finish to Architect for approval.

2.10 FABRICATION

- A. Casework Construction: Provide wood-faced casework meeting AWI Section 400, custom grade and the additional following minimum construction requirements:
 - 1. Bottoms and ends of cabinets, shelves, and tops of wall cabinets and tall cabinets: 3/4-inch (19-mm) veneer core plywood.
 - 2. Top frames of base cabinets: 3/4-by-2-inch (19-by-51-mm) solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
 - 3. Backs of base cabinets: 3/4-inch (19-mm) plywood where exposed, 3/16-inch (4.8-mm) welded hardboard dadoed into sides, bottoms, and tops where not exposed. Shall be removable where chases occur behind cabinets.
 - 4. Backs of wall cabinets: 1/4 inch (6.3-mm) plywood.
 - 5. Drawer fronts: 3/4-inch (19-mm) solid hardwood.
 - 6. Drawer sides and backs: 1/2-inch (13-mm) solid wood with glued dovetail joints.
 - 7. Drawer bottoms: 1/4-inch (6.3-mm) PVC-clad welded hardboard glued and dadoed into front, back, and sides of drawers with continuous glue line.
 - 8. Doors 48 inches (1220 mm) or less in height: 3/4 inch (19 mm) thick with solid hardwood stiles and rails, medium-density fiberboard cores, and hardwood face veneers and crossbands.
 - 9. Doors more than 48 inches (1220 mm) in height: 1-1/16 inch (27 mm) thick with solid hardwood stiles and rails, honeycomb cores, and hardwood face veneers and crossbands.
 - 10. Stiles and rails of glazed doors: 1-1/16-by-3-inch (27-by-76-mm) solid hardwood with mortise and tenon or doweled connections, glued and screwed.
 - 11. Plywood banded with 6 mm hardwood edge banding.
 - 12. Base Toe Kick: Hardwood plywood; rubber base specified in Section 09650, Resilient Flooring.
 - 13. Table Frames: 3/4 inch by 4-5/16 inch solid hardwood rails. 3/4 inch by 4-5/16 inch plywood reinforcing cross rails. Adjustable table legs with protective floor finish bottoms for floor flatness variation. Provide narrower rails to facilitate wheelchair access at two tables per science lab.
 - 14. Glass Shelving on Brackets and Standards: Standards shall not be greater than 24 inches o.c. and end standards shall be not more than 6 inches from end of shelf.
 - 15. Install glass in cabinet doors to comply with applicable requirements of Division 8 Section "Glazing" and of FGMA "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.11 FINISH FOR WOOD LABORATORY CASEWORK

- A. Preparation: Machine sand lumber and plywood for casework construction before assembling. Sand edges of doors and drawer fronts and molded shapes with profile-edge sander. Hand 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. Chemical-Resistant Finish: Apply premium grade AWI 1500-S-4, TR-5 chemical-resistant, clear finish

consisting of a stain, catalyzed vinyl sealer and a two top coats of catalyzed finish, meeting the chemical properties specified. Hand sand and wipe clean between applying sealer and topcoats. Topcoat may be omitted on fully concealed surfaces.

- C. Chemical and Physical Resistance of Finish System: Provide wood laboratory casework with finish system complying with the following requirements for chemical and physical resistance:
1. Chemical Resistance: Capable of withstanding application of not less than 5 drops (0.25 mL) of the following reagents applied to finish surface; covered with a watch glass for 60 minutes, rinsed, and dried; with no permanent change in gloss, color, film hardness, adhesion, or film protection.
 - a. Acetic acid (98 percent).
 - b. Hydrochloric acid (37 percent).
 - c. Nitric acid (10 percent).
 - d. Phosphoric acid (75 percent).
 - e. Sulfuric acid (25 percent).
 - f. Acetone.
 - g. Benzene.
 - h. Carbon tetrachloride.
 - i. Ethyl acetate.
 - j. Ethyl alcohol.
 - k. Ethyl ether.
 - l. Formaldehyde (37 percent).
 - m. Methyl ethyl ketone.
 - n. Toluene.
 - o. Xylene.
 - p. Ammonium hydroxide (28 percent).
 - q. Potassium hydroxide (40 percent).
 - r. Sodium carbonate (saturated).
 - s. Sodium chloride (saturated).
 - t. Sodium hydroxide (25 percent)
 2. Moisture Resistance: No visible effect when exposed to the following:
 - a. Hot water at a temperature of 190 to 205°F (88 to 96°C), trickled down the surface at a 45-degree angle for 5 minutes.
 - b. Constant moisture using a 2-by-3-by-1-inch (51-by-76-by-25-mm) cellulose sponge, soaked with water, in contact with surface for 100 hours.

2.12 FINISH FOR WOOD DISPLAY CASE AND TRAINERS ROOM CASEWORK

- A. Quality Standard: Comply with AWI Section 1500, unless otherwise indicated.
1. Grade: Custom.
- B. Shop Finishing: To the greatest extent possible, finish architectural woodwork at the fabrication shop. Defer only final touch up, cleaning, and polishing until after installation.
- C. Transparent Finish: Comply with requirements indicated below for grade, finish system, staining, and sheen, with sheen measured on 60-degree gloss meter per ASTM D 523:
1. AWI Finish System TR-6: Catalyzed polyurethane.
 2. Staining: Provide light stain as selected by Architect to unify color of casework parts and individual units.
 3. Sheen: Satin, 30-50 gloss units.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Condition woodwork to average prevailing humidity conditions in installation areas before installing.
- B. Before installing architectural woodwork, examine shop-fabricated work for completion and complete work as required, including back priming and removal of packing.

3.02 INSTALLATION

- A. Quality Standard: Install woodwork to comply with AWI Section 1700 for the same grade specified in Part 2 of this Section for type of woodwork involved.
- B. Install woodwork plumb, level, true, and straight with no distortions. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches (3 mm in 2400 mm) for plumb and level (including tops).
- C. Scribe and cut woodwork to fit adjoining work and refinish cut surfaces or repair damaged finish at cuts.
- D. Anchor woodwork to anchors or blocking built in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for complete installation. Use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork and matching final finish where transparent finish is indicated.
- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Fasten cabinets to partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24 inches (600 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). Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96 inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches (600 mm) o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than 2 fasteners.

3.03 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 approved Shop Drawings.
- B. Fastenings: Secure epoxy tops to cabinets with epoxy cement, applied at each corner and along perimeter edges of not more than 48 inches (1200 mm) o.c.
- C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection.
 - 1. Install countertops with no more than 1/8 inch in 96-inch (3 mm in 2400-mm) sag, bow, or other variation from a straight line.
- D. Provide required holes and cutouts for service fittings and sinks. Modify cabinets as required for sink hangers.
 - 1. Seal surfaces of cutout edges in plastic laminate countertops.
- E. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

- F. Provide scribe moldings for closures at junctures of top, curb, and splash, with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent casework.
 - 1. Use chemical-resistant, permanently elastic sealing compound for science casework where recommended by manufacturer.

3.04 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork where possible to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean woodwork on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.05 PROTECTION

- A. Provide final protection and maintain conditions in a manner acceptable to fabricator and Installer that ensures that woodwork is without damage or deterioration at the time of Substantial Completion.

END OF SECTION

