

## SECTION 123210 - WOOD LABORATORY CASEWORK

### PART 1 - GENERAL

#### 1.1 M.S.U. ISSUES

1. Laboratory furniture shall be premium grade, conventional wall mounted units and floor mounted base units. All cabinetry shall be welded-steel flush or flush-overlap construction, with all parts die-formed to insure uniformity and interchangeability. If matching existing casework or other concerns make wood or plastic-laminate casework more appropriate, they may be used with the approval of M.S.U. The manufacturer must have an assured delivery program for the specified type of furniture and related equipment and accessories.
2. Assemble and install furniture and tops in accordance to the manufacturer's directions. When assembled each cabinet shall be a complete and secure unit that will fit into an assembly of cabinets, and will permit a reorganization of components in the future. The countertops, utility chases, reagent shelves, and splashes shall form a complete working surface with all joints sealed and all components securely attached for a smooth, level and tight fit.
3. Verify locations of all cutouts prior to installation; coordinate work with electrical and plumbing trades. All electrical and plumbing services and fixtures shall be installed in conformance with the manufacturer's instructions, appropriate State codes, standard trade practices, and the direction of the M.S.U. Project Representative for a complete job.
4. In order for cabinets other than those listed in this standard to be approved, sufficient time must be provided for appropriate M.S.U. staff to review cabinet specifications and view a local site where the proposed cabinets have been previously installed.

#### 1.2 SUMMARY

A. This Section includes the following:

1. Wood laboratory casework.
2. Laboratory countertops.

B. Related Sections include the following:

1. Division 11 Section LABORATORY FUME HOODS for fume hoods, including base cabinets and countertops under fume hoods.
2. Divisions 22 and 26 Sections for installing service fittings specified in this Section.
3. Division 12 Section METAL LABORATORY CASEWORK.
4. Division 12 Section PLASTIC LAMINATE LABORATORY CASEWORK.

### 1.3 DEFINITIONS

- A. Exposed Portions of Casework: Surfaces visible when doors and drawers are closed, including bottoms of cabinets more than 48 inches above floor, and visible surfaces in open cabinets or behind glass doors.
  - 1. Ends of cabinets, including those installed directly against walls or other cabinets shall be considered exposed.
- B. Semi-exposed 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 or more above floor are defined as semi-exposed.
- C. Concealed portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For wood laboratory casework. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Indicate locations of blocking and reinforcements required for installing laboratory casework.
  - 2. Indicate locations and types of service fittings, together with associated service supply connection required.
  - 3. Include details of utility spaces showing supports for conduits and piping.
- C. Samples for Verification: For factory-applied finishes, epoxy sinks, and epoxy countertops.
- D. Samples for Verification: On request, for each type of finish, including countertop material, in manufacturer's standard sizes.
- E. Qualification Data: For testing agency.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating compliance of laboratory casework finishes and countertops with requirements specified for chemical and physical resistance.

### 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain laboratory casework, including countertops, sinks, service fittings, and accessories, through one source from a single manufacturer.
- B. Product Standard: Comply with SEFA 8, "Laboratory Furniture--Casework, Shelving and Tables--Recommended Practices."

- C. Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with requirements of NFPA 30 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
  - 1. Cabinets that are not listed and labeled but are constructed according to NFPA 30, Paragraph 4-3.3(c) may be used if acceptable to authorities having jurisdiction.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect finished surfaces during handling and installation with protective covering of polyethylene film or other suitable material.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install wood laboratory casework until building is enclosed, wet work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

## 1.8 COORDINATION

- A. Coordinate installation of wood laboratory casework with installation of fume hoods and other laboratory equipment.

## 1.9 EXTRA MATERIALS

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

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Wood Laboratory Casework:
    - a. Applied Lab Concepts, Inc. (ALC)
    - b. Collegedale Casework, L.L.C.
    - c. Fisher Hamilton L.L.C.

- d. Kewaunee Scientific Corporation; Laboratory Division.
  - e. Leonard Peterson & Company, Inc.
  - f. Sheldon Laboratory Systems.
  - g. Wood-Metal Industries; Division of Wood-Mode, Inc.
  - h. Or as approved.
2. Epoxy Countertops, Sinks, and Troughs:
- a. Durcon Company, Inc. (The).
  - b. Epoxyn Products.
  - c. Laboratory Tops, Inc.
  - d. Prime Industries, Inc.
  - e. Or as approved.

## 2.2 CABINET MATERIALS

### A. General:

1. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
2. Hardwood Plywood: HPVA HP-1, either veneer core or particle core, unless otherwise indicated.
3. Particleboard: ANSI A208.1, Grade M-2.
4. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
5. Edge-banding for Wood-Veneered Construction: Minimum 1/8-inch- thick, solid wood of same species as face veneer.

### B. Exposed Materials:

1. General: Provide materials that are selected and arranged for compatible grain and color. Do not use materials adjacent to one another that are noticeably dissimilar in color, grain, figure, or natural character markings.
2. Wood Species and Veneer Cut: Red oak, plain sliced/sawn unless otherwise authorized or to match existing casework.
3. Solid Wood: Clear hardwood lumber.
4. Plywood: Hardwood plywood; Grade A exposed faces at least 1/50 inch thick, Grade J cross-bands, and backs of same species as faces.

### C. Semi-exposed Materials:

1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of any species similar in color and grain to exposed solid wood.
2. Plywood: Hardwood plywood of any species similar in color and grain to exposed plywood. Grade [B] [C] faces, Grade J cross-bands, and backs of same species as faces. Semi-exposed backs of plywood with exposed faces shall be same species as faces.
3. Plastic Laminate: Type VGS, matching adjacent exposed plastic laminate.

### D. Concealed Materials:

1. Solid Wood: Any hardwood or softwood species, with no defects affecting strength or utility.
  2. Plywood: Hardwood plywood. Concealed backs of plywood with exposed or semi-exposed faces shall be same species as faces.
  3. Particleboard.
  4. Medium-density fiberboard.
  5. Hardboard: AHA A135.4, Class 1 tempered.
- E. Acid Storage-Cabinet Lining: 1/4-inch- thick, polyethylene, polypropylene, epoxy, or phenolic-composite lining material.
- F. Glass for Glazed Doors: Clear laminated glass complying with ASTM C 1172, Kind LT, Condition A, Type I, Class I, Quality q<sup>3</sup>; with 2 lites not less than 3.0 mm thick and with clear, polyvinyl butyral interlayer.

### 2.3 CABINET FABRICATION

- A. Construction: Provide wood-faced laboratory casework of the following minimum construction:
1. Bottoms and Ends of Cabinets, Shelves, and Tops of Wall Cabinets and Tall Cabinets: 3/4-inch- thick plywood.
  2. Base Cabinet Top Frames: 3/4-by-2-inch solid wood with mortise and tenon or doweled connections, glued and pinned or screwed.
  3. Backs of Cabinets: 3/4-inch- thick plywood where exposed, 1/2-inch- thick plywood dadoed into sides, bottoms, and tops where not exposed.
  4. Drawer Fronts: 3/4-inch- thick plywood or solid hardwood.
  5. Drawer Sides and Backs: 1/2-inch- thick solid wood or plywood, with glued dovetail or multiple-dowel joints.
  6. Drawer Bottoms: 1/4-inch- thick plywood glued and dadoed into front, back, and sides of drawers. Use 1/2-inch- thick material for drawers more than 24 inches wide.
  7. Doors 48 Inches or Less in Height: 3/4 inch thick, with particleboard or medium-density fiberboard cores, solid hardwood stiles and rails, and hardwood face veneers and crossbands.
  8. Doors More Than 48 Inches in Height: 1-1/8 inches thick, with particleboard cores and hardwood face veneers and crossbands.
  9. Stiles and Rails of Glazed Doors: 3/4-inch- thick solid hardwood.
- B. Leg Shoes: Vinyl or rubber, black, open-bottom type.
- C. Utility-Space Framing: Laboratory casework manufacturer's standard steel framing units consisting of 2 steel slotted channels complying with MFMA-2, not less than 1-5/8 inches square by 0.0966 inch thick, and connected together at top and bottom by U-shaped brackets made from 1-1/4-by-1/4-inch steel flat bars. Framing units may be made by welding specified channel material into rectangular frames instead of using U-shaped brackets.
- D. Filler Strips and Utility-Space Closure Panels: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinet fronts.

## 2.4 WOOD FINISH

- A. Preparation: Sand lumber and plywood for laboratory casework construction before assembling. Sand edges of doors, 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 stain to exposed and semi-exposed surfaces as necessary to match approved Samples. Apply stain in a manner that will produce a consistent appearance. Apply wash-coat sealer before applying stain to closed-grain wood species.
- C. Chemical-Resistant Finish: Apply laboratory casework manufacturer's standard two or three-coat, chemical-resistant, transparent finish consisting of sealer and catalyzed topcoat(s). Sand and wipe clean between coats. Topcoat(s) may be omitted on concealed surfaces.
  - 1. Chemical and Physical Resistance of Finish System: Finish complies with acceptance levels of cabinet surface finish tests in SEFA 8. Acceptance level for chemical spot test shall be no more than four Level 3 conditions.

## 2.5 CABINET HARDWARE

- A. General: Provide laboratory casework manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware complying with requirements indicated for each type, unless another type of hardware is appropriate to match adjacent casework in an existing building.
- B. Hinges: Stainless steel, 5-knuckle hinges complying with BHMA A156.9, Grade 1, with antifriction bearings and rounded tips. Provide 2 for doors 48 inches or less in height and 3 for doors more than 48 inches in height.
- C. Pulls: Stainless steel, fastened from back with two screws. For sliding doors, provide stainless-steel recessed flush pulls. Provide 2 pulls for drawers more than 24 inches in width.
- D. Door Catches: Nylon-roller spring catch with stainless steel strike, and rubber stops. Provide 2 catches on doors more than 48 inches in height.
- E. Drawer Slides: Full suspension steel channels and runners, with minimum four ½ inch diameter nylon rollers; automatic positive cushioned stops; easy drawer removal, rebounding prevention springs; drawer front rubber bumpers.
- F. Locks: Manufacturer's standard lockset with Best core, or Best lockset.
- G. Sliding-Door Hardware Sets: Laboratory casework manufacturer's standard, to suit type and size of sliding-door units.

## 2.6 COUNTERTOPS AND SINKS

- A. Epoxy Countertops and Sinks: Factory molded of modified epoxy-resin formulation with smooth, nonspecular finish.
  - 1. Physical Properties:

- a. Flexural Strength: Not less than 10,000 psi.
  - b. Modulus of Elasticity: Not less than 2,000,000 psi.
  - c. Hardness (Rockwell M): Not less than 100.
  - d. Water Absorption (24 Hours): Not more than 0.02 percent.
  - e. Heat Distortion Point: Not less than 260 deg F.
2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
- a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
  - b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
3. Color: Black.
4. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and prefitted, concealed metal splines.
- a. Countertop Configuration: Flat, 1 inch thick, with rounded edge and corners.
5. Sink Fabrication: Molded in 1 piece with smooth surfaces, coved corners, and bottom sloped to outlet; 1/2-inch minimum thickness.
- a. Provide with polypropylene strainers and tailpieces.
  - b. Provide integral sinks in epoxy countertops, bonded to countertops with invisible joint line.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

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

### 3.2 INSTALLATION OF CABINETS

- A. Install level, plumb, and true; shim as required, using concealed shims. Where laboratory casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- B. Base Cabinets: Adjust top rails and subtops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches o.c. Fasten adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than 2 fasteners per side.
- C. Wall Cabinets: Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.
- D. Install hardware uniformly and precisely. Set hinges snug and flat in mortises.
- E. Adjust laboratory casework and hardware so doors and drawers align and operate smoothly without warp or bind and contact points meet accurately. Lubricate operating hardware as recommended by manufacturer.

### 3.3 INSTALLATION OF COUNTERTOPS

- A. Abut top and edge surfaces in one true plane with flush hairline joints and with internal supports placed to prevent deflection. Locate joints only where shown on Shop Drawings.
- B. 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.
  1. Use concealed clamping devices for field joints in plastic-laminate countertops. Locate clamping devices within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a uniform heavy pressure at joints.
- C. Fastening:
  1. Secure epoxy countertops to cabinets with epoxy cement, applied at each corner and along perimeter edges at not more than 48 inches o.c.
  2. Where necessary to penetrate countertops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to countertop in chemical resistance, hardness, and appearance.
- D. Provide required holes and cutouts for service fittings.
- E. Provide scribe moldings for closures at junctures of countertop, curb, and splash, with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.
- F. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

### 3.4 INSTALLATION OF SERVICE FITTINGS

- A. Comply with requirements in Divisions 22 and 26 Sections for installing water and laboratory gas service fittings, piping, electrical devices, and wiring.



3.5 CLEANING AND PROTECTING

- A. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- B. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION 123210