

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE	PAGE OF PAGES	
2. AMENDMENT/MODIFICATION NO. 0001			J	1	2
3. EFFECTIVE DATE 09-Aug-2004		4. REQUISITION/PURCHASE REQ. NO. W81EWF-4174-9374		5. PROJECT NO.(If applicable)	
6. ISSUED BY VBURG CONSOLIDATED CONTRACTING VICKSBURG OFFICE 4155 CLAY STREET VICKSBURG MS 39183-3435		CODE W912HZ	7. ADMINISTERED BY (If other than item 6) <b>See Item 6</b>		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			X	9A. AMENDMENT OF SOLICITATION NO. W912HZ-04-B-0001	
			X	9B. DATED (SEE ITEM 11) 21-Jul-2004	
				10A. MOD. OF CONTRACT/ORDER NO.	
				10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE			
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.					
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).					
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:					
D. OTHER (Specify type of modification and authority)					
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Reference Solicitation No. W912HZ-04-B-0001 for Laboratory Renovation of Building 3297 located on the Engineering Research and Development Center, Waterways Experiment Station, Vicksburg, Mississippi, scheduled to open 19 August 2004 at 1400 hrs CST. The subject solicitation is amended as follows:  SEE PAGE 2 FOR CONTINUATION					
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
			TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR  _____ (Signature of person authorized to sign)		15C. DATE SIGNED	16B. UNITED STATES OF AMERICA  BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED  06-Aug-2004

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

W912HZ-04-B-0001

Laboratory Renovation of Building 3297  
Located on the Engineering Research and  
Development Center, Waterways Experiment  
Station, Vicksburg, Mississippi  
Amendment 0001, Continuation

TECHNICAL SPECIFICATIONS

Section 12350, Wood Laboratory Casework, has been replaced in its entirety. Pages revised by this amendment have the notation "Revised by Amendment 0001" at the bottom of the page. Text added or revised by this amendment is shown as bold and underlined.

The plans for this project are included on this CD along with Amendment 0001 because of a possible problem with viewing the plans that were issued with the original CD, dated 21 July 2004. There have been NO changes made to the original plans.

## SECTION 12350

WOOD LABORATORY CASEWORK  
**04/99**

## PART 1 GENERAL

## 1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

Approved Detail Drawings; G, G

Drawings showing each type of cabinet and related item. The drawings shall clearly indicate the complete plan and elevations of the cabinets and accessories and pertinent details of construction, fabrication, and attachments.

## SD-03 Product Data

Casework; G, G

Manufacturer's printed data, catalog cuts, and instructions for installation and cleaning.

## SD-04 Samples

Casework; G, G

- a. Stain/color samples shall be approximately 2 x 3 inch size.

## 1.2 DELIVERY AND STORAGE

Casework shall be delivered to the jobsite wrapped in a protective covering. Casework shall be stored in an adequately ventilated, dry location that is free of dust, water, or other contaminants and in a manner to permit access for inspection and handling. Casework shall be handled carefully to prevent damage to the surfaces. Damaged items that cannot be restored to like-new condition shall be replaced.

**1.3 QUALITY ASSURANCE****1.3.1 Single Source**

**Casework and fume hoods to be manufactured and furnished by a single**

laboratory furniture company.

1.3.2. Manufacturer's Qualifications:

Modern plant with proper tools, dies, fixtures and skilled production staff to produce high quality laboratory casework and fume hoods, and shall meet the following minimum requirements:

a. Minimum of ten years experience in manufacture of wood laboratory casework and fume hoods.

b. Minimum of ten installations of equal or larger size.

1.3.3 Installer Qualifications:

The installer shall be certified by the manufacturer.

1.3.4. Test Results

The manufacturer shall provide load test results certified by an independent testing laboratory for drawers, doors, suspension slides and unit shelving.

1.4 Summary

All lab casework to be wood. Contractor shall verify existing conditions in the field before ordering casework. Any errors or discrepancies in the contract drawings will be resolved.

1.5 DEFINITIONS

1.5.1 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. Ends of cabinets indicated to be installed directly against and completely concealed by walls or other cabinets after installation shall not be considered exposed.

1.5.2 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 or more above floor are defined as semiexposed.

1.5.3 Concealed Portions of Casework

Includes sleepers, web frames, dust panels, and other surfaces not usually visible after installation.

1.6 Flammable Liquid Storage

Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with the requirements of NFPA 30 for design, construction and capacity of storage cabinets by UL, Warnock Hersey, or another testing and inspection agency

acceptable to authorities having jurisdiction. **cabinets shall be Factory Mutual (FM) approved and underwriters (UL) listed with UL/FM approval label affixed to inside of cabinet door.**

#### 1.7 PROJECT CONDITIONS

Environmental Limitations: Do not deliver or install laboratory casework until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels through remainder of construction period.

#### 1.8 COORDINATION

Coordinate layout and installation of metal framing and reinforcement in gypsum board assemblies for support of wood laboratory casework.

#### 1.9 EXTRA MATERIALS

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

### PART 2 PRODUCTS

#### 2.1 MATERIALS

##### 2.1.1 Exposed Materials

Comply with the following:

##### 2.1.1.1 Exposed Wood

Do not use 2 adjacent exposed faces that are noticeably dissimilar in color, grain, figure, or natural character markings.

##### 2.1.1.1.1 Wood Species: Red Oak

##### 2.1.1.2 Solid Wood

Clear **plain-sawn** hardwood lumber matching selected species, free of defects, selected for compatible grain and color and kiln dried to 7 percent moisture content.

##### 2.1.1.3 Plywood

**Plywood shall be 7-ply (3/4" thick) and 9-ply (1"thick) veneer core plywood with cross and face plies bonded with type II water-resistant glue; drawers shall be 9-ply 1/2" thick.**

##### 2.1.2 Semiexposed Materials

Comply with the following:

##### 2.1.2.1 Plywood

**Plywood shall the same species as specified for exposed face veneer, grade 2.**

2.1.2.2 **Solid Wood**

**Select hardwood.**

2.1.3 Concealed Materials

Comply with the following:

2.1.3.1 Solid Wood or Plywood

**Solid wood shall be sound hardwood of species suitable for the intended purpose. Plywood shall be same species as specified for exposed and semi-exposed veneer, grade at option of manufacture. Birch, poplar or other hardwoods or softwoods are not acceptable.**

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.

2.1.3.2 Particleboard

ANSI A208.1, Grade M?2.

2.1.3.3 Medium-Density Fiberboard

ANSI A208.2.

2.1.3.4 Hardboard

AHA A135.4, Class 1 Tempered.

2.1.4 Acid Storage-Cabinet Lining

1/4 inch thick, polypropylene, epoxy, or phenolic-composite lining material.

2.1.5 Clear Float Glass for Glazed Doors

ASTM C 1036, Type I, Class 1, Quality q3, 5.5 mm thick.

2.1.6 Clear Tempered Glass for Glazed Doors

(Where required) ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 5.5 mm thick.

2.2 DESIGN, COLOR AND FINISH

2.2.1 Design

Reveal overlay.

2.2.2 Colors and Finishes

Comply with the following requirements for colors and finishes of wood laboratory casework: As indicated by manufacturer's designations for color and finish.

## 2.3 FABRICATION

### 2.3.1 Construction

Provide wood-faced laboratory casework of the following minimum construction:

#### 2.3.1.1 Bottoms and Ends

Bottoms of base cabinets shall be 3/4" thick plywood, set flush and joined to cabinet end panels with glued minimum 8mm dowels at a maximum spacing of 96mm and metal fasteners. Front edge to be banded with 3mm hardwood banding. removable bottoms are not acceptable. Ends of base cabinets shall be 3/4" thick plywood (for both exposed and unexposed ends) with 3mm hardwood banding on front edges. Bore interior faces, as appropriate, for security panels, rails, and four rows of shelf support holes.

#### 2.3.1.2 Top Frames (Front and Back)

Horizontal front top rail shall be a minimum 3/4" x 3" solid hardwood attached to cabinet ends with glued (minimum 8mm) dowel joinery and screws. Vertical back top rail shall be minimum 3/4" x 3 3/4" hardwood attach to cabinet ends with glued (minimum 8mm) dowel joinery and screws.

#### 2.3.1.3 Backs

Backs of cupboard units shall be one-piece 3/16" thick hardboard, rabbetted into rear top rail for easy removal from inside of cabinet. Drawer unit backs shall be open. Sink units shall have half-height, one-piece 3/16" thick hardboard, rabbetted into rear rail for easy removal from inside of cabinet.

#### 2.3.1.4 Drawer Fronts

3 ply 3/4" thick particleboard core plywood with 3 mm hardwood edgebanding on all four sides.

#### 2.3.1.5 Drawer Sides and Backs

Drawer shall be a four-side box with back, front and sides of 1/2" 9-ply birch plywood with chemical-resistant finish and finished top edges. Three-sided drawer box attached to outer drawer front is not accepted. Sides shall be joined by lock joint, glued and pinned.

#### 2.3.1.7 Doors

3-ply 3/4" thick particleboard core plywood with 3mm hardwood banding on all four edges.

#### 2.3.1.8 Wall Upper Cases and Tall Cases

1.3.1.8.1 Shall be manufactured with appropriate materials and joinery

methods as specified for base units except as noted below.

2.3.1.8.2 Tops: 1"thick, 9-ply veneer core plywood with 3mm hardwood banding on front edge.

2.3.1.8.3 Bottoms: Bottoms in wall and upper cases shall be 1" thick, 9-ply veneer core plywood with 3mm hardwood banding on front edge. Bottoms in tall cases shall be 3/4" 7-ply veneer core plywood with 3mm hardwood banding on front edge. Bottom plywood kick rail on tall cases shall be 3/4"high joined to cabinet sides.

2.3.1.8.4 Backs: 1/4" thick veneered plywood, recessed 7/8" and set into top, bottom and ends, sealed with hot melt glue process around entire perimeter.

2.3.1.8.5 Shelves: Veneer core plywood, 3mm hardwood banded on front edge, adjustable on 32mm centers. 1" thick 9-ply for all shelves.

2.3.1.8.6 Framed Glass Doors: Solid hardwood, minimum 3/4"X 2 3/4" frame stock machined to accept glass, mitered joints, extruded vinyl retaining molding to allow glass to be replaced without tools.

2.3.1.8.7 Unframed Sliding Glass Doors: Glass as specified with edges ground, set in extruded aluminum shoe with integral pulls, nylon wheel assemblies and top and bottom extruded aluminum track. Provide rubber bumpers at fully opened and closed door positions.

2.3.1.9 Stiles and Rails of Glazed Doors

3/4" x 2 3/4" inch solid hardwood with mortise and tenon or doweled connections, glued and screwed.

2.3.2 Leg Shoes

Vinyl or rubber, black, open-bottom type.

2.3.3 Base Molding

As specified in section 09650 Resilient Flooring

2.3.4 Filler Strips

Provide as needed to close space between cabinets and walls, ceilings, and indicated equipment. Fabricate from the same material and with the same finish as cabinets.

2.4 FINISH FOR WOOD LABORATORY CASEWORK

2.4.1 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.

2.4.2 Staining

Remove fibers and dust with compressed air or tack cloths and apply

wash-coat sealer and stain to exposed and semi-exposed surfaces as required to provide uniform, color-matching, approved samples.

#### 2.4.3 Chemical-Resistant Finish

Apply manufacturer's standard 2-coat, chemical-resistant, baked, clear finish consisting of a thermosetting catalyzed sealer and a thermosetting catalyzed conversion varnish. Hand sand and wipe clean between applying sealer and topcoat. Topcoat may be omitted on fully concealed surfaces.

#### 2.4.4 Chemical and Physical Resistance of Finish System

Provide wood laboratory casework with finish system complying with the following requirements for chemical and physical resistance:

##### 2.4.4.1 Chemical Resistance

Capable of withstanding application of not less than 5 drops 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).

##### 2.4.4.2 Moisture Resistance

No visible effect when exposed to the following:

- a. Hot water at a temperature of 190 to 205 degrees F, trickled down the surface at a 45-degree angle for 5 minutes.
- b. Constant moisture using a 2 x 3 x 1 inch cellulose sponge, soaked with water, in contact with surface for 100 hours.

#### 2.5 CASEWORK HARDWARE

##### 2.5.1 Hardware, General

Provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.

#### 2.5.2 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 high and 3 for doors more than 48 inches high.

#### 2.5.3 Pulls

Stainless steel fastened from back with 2 screws. For sliding doors, provide stainless steel recessed flush pulls. Provide 2 pulls for drawers more than 24 inches wide.

#### 2.5.4 Door Catches

Dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48 inches wide.

#### 2.5.5 Drawer Guides

**Shall be self-closing, epoxy-coated, nylon bearings, 100 lb. dynamic load-bearing, with integral stop/hold-open feature, allowing removal of drawers without the use of tools for all drawers except file drawers. File drawer suspension shall be full extension with overtravel, ball-bearing roller, 150 lb. dynamic load, zinc-plated accuride 4034 series or equal.**

#### 2.5.6 Label Holders

Stainless steel sized to receive standard label cards approximately 1 x 2 inches, attached with screws or brads.

#### 2.5.7 Drawer and Cupboard Locks

Cylindrical type, 5-pin tumbler and cam, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1.

- a. Provide minimum of 2 keys per lock and 6 master keys.
- b. Provide where indicated.

#### 2.5.8 Sliding Door Hardware Sets

Manufacturer's standard, to suit type and size of sliding door units.

#### 2.5.9 Adjustable Shelf Supports

**Shall be metal "plated pin and socket", adjustable on 32 mm centers with integral anti-tip feature; four per shelf.**

### 2.6 TOPS AND SINKS

#### 2.6.1 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 over base cabinets, formed with continuous drip

groove on underside 1/2 inch from edge.

#### 2.6.2 Sinks, General

Provide sizes and types indicated on the drawings or manufacturer's closest standard size of equal or greater volume, as approved by Owner.

##### 2.6.2.1 Outlets

1 1/2 inch NPS (DN40) outlets with strainers and tailpieces a minimum of 6 inches long, of stainless steel, or as otherwise approved by Owner.

##### 2.6.2.2 Overflows

For each sink, except cupsinks, provide overflow of standard beehive or open-top design and with separate strainer. Height 2 inches less than sink depth. Provide in the same material as sink.

#### 2.6.3 Epoxy Tops and Sinks

Factory molded of modified epoxy-resin formulation, uniform mixture throughout full thickness with smooth, nonspecular finish.

##### 2.6.3.1 Physical Properties

Comply with the following minimum requirements:

- a. Flexural strength: 15,000 psi.
- b. Compressive strength: 30,000 psi.
- c. Hardness (Rockwell M): 100.
- d. Water absorption (24 hours): 0.02 percent (maximum).
- e. Heat distortion point: 350 degrees F.
- f. Thermal-shock resistance: Highly resistant.

##### 2.6.3.2 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.

##### 2.6.3.3 Colors

Provide products that result in colors complying with the following requirements:

- a. Color: Black.

#### 2.6.3.4 Top Fabrication

Cast surfaces very smooth, with factory sinks. Fabricate plain butt-type joints assembled with epoxy adhesive and prefitted, concealed metal splines.

##### 2.6.3.4.1 Top Configuration

Square edge with drip groove and integral coved backsplash.

##### 2.6.3.4.2 Top Thickness

3/4 inch.

#### 2.6.4 Stainless Steel Work Surface

##### 2.6.4.1 Material

14 gauge, Type 304 stainless steel with No. 4 polished finish on all exposed surfaces and edges.

##### 2.6.4.2 Tops

Form tops with one inch lip and 1/2" return flange, and provide 16 gauge steel reinforcing channels applied to underside as required for rigidity and sound dampening. Form edges, flanges and curbs integrally with top, from one sheet of metal.

##### 2.6.4.3 Sink Tops

Provide seamless, die formed 3/16" high integral marine edges at sink tops, and pitch top to sink bowl. Unless otherwise noted, provide plain edges at all other tops. Coat underside of tops which include integral sink and/or drain boards with sound dampening material.

##### 2.6.4.4 Sink Bowls

Electrically weld stainless steel bowls to opening in top. Grind welds flush and polish to a satin finish to produce an integral unit with invisible joint line. Cover underside of sink bowls with sound dampening material.

##### 2.6.4.5 Joints

Electrically weld all shop joints; grind smooth and polish. Design field joints to be mechanically bolted and supported full length, resulting in a hair line seam with perfectly aligned, flat, level surfaces each side of joint.

#### 2.7 ACCESSORIES

##### 2.7.1 Balance Table

Refer to drawings for size and location. Balance table shall be

constructed of top and side slabs of black epoxy resin to match counter tops, with a tubular steel brace. All components shall be included for proper assembly. Minimum weight shall be 450 pounds.

## 2.8 WATER AND LABORATORY GAS SERVICE FITTINGS

### 2.8.1 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.

### 2.8.2 Material and Finish

Fabricate service fittings from cast or forged red brass, unless otherwise indicated.

a. Finish exposed surfaces, including fittings, escutcheons, and trim, with acid- and solvent-resistant, electrostatically applied epoxy coating in manufacturer's colors as approved by Owner.

b. For reagent-grade water service fittings, provide polypropylene, PVC, or polyvinylidene fluoride for parts in contact with water. All water and gas fittings shall be screw type.

### 2.8.3 Water Valves and Faucets

Provide units complying with ASME A112.18.1M, with renewable seats, designed for working pressure up to 125 psig.

#### 2.8.3.1 Vacuum Breakers

Provide vacuum breakers on all water fixtures.

#### 2.8.3.2 Aerators

Provide aerators on water fittings that do not have serrated outlets.

### 2.8.4 Ground-Key Cocks

Tapered core and handle of one-piece forged brass, ground and lapped, held in place under constant spring pressure. Provide units designed for working pressure up to 40 psig. Provide with serrated outlets.

### 2.8.5 Needle Valves

Provide units with renewable, self-centering, floating cones and renewable seats of stainless steel or Monel metal. Provide with removable serrated outlets. Provide high-pressure units designed for working pressure up to 150 psig.

### 2.8.6 Hand of Fittings

Furnish right-hand fittings unless fitting designation is followed by "L."

### 2.8.7 Remote-Control Valves

Provide needle valves, straight-through or angle type as indicated for fume hoods and where indicated.

#### 2.8.8 Handles

Provide 3-or 4-arm, forged-brass handles for valves, unless otherwise indicated.

- a. For ground-key cocks, provide lever-type handles.
- b. For needle valves, provide knurled nylon handles.

#### 2.8.9 Service-Outlet Identification

Provide color-coded plastic discs, with embossed identification, secured to each service-fitting handle to be virtually tamperproof.

### 2.9 ELECTRICAL SERVICE FITTINGS

#### 2.9.1 Service Fittings, General

Provide UL-labeled units complying with Division 16 Sections, complete with metal housings, receptacles, terminals, switches, pilot lights, device plates, and accessories and gaskets required for mounting on casework.

#### 2.9.2 NOT USED

#### 2.9.3 Receptacles

Provide Hospital Grade, 2-pole, 3-wire grounding devices rated at 20 A, 125 V, ac.

##### 2.9.3.1 GFCI Receptacles

Provide ground-fault circuit interrupter duplex receptacles where indicated and when located in units containing water supplies or sinks.

#### 2.9.4 Switches

Provide single-pole, double-pole, or 3-way switches, as required; rated 120 to 277 V, ac; and in amperage capacities to suit units served.

- a. Provide pilot lights adjacent to toggle switch, where noted as "PL" next to switch identification.
- b. Provide thermal-overload switches, single or double pole, as required, with maximum overcurrent trip setting to suit particular motor controlled.

#### 2.9.5 Pedestal-Type Fittings

Cast-aluminum housings with sloped single face or 2 faces, as indicated, with neoprene gasket under base and concealed mounting holes in base for attaching to casework. Provide holes tapped for conduits.

#### 2.9.6 Line-Type Fittings

Provide with cast-metal boxes with threaded holes for mounting on rigid steel conduit. Provide cover plates the same size as boxes.

### 2.9.7 Recessed-Type Fittings

Provide with galvanized steel boxes.

### 2.9.8 Finishes for Service-Fittings Components

Furnish housings or boxes for pedestal-and line-type fittings with manufacturer's standard baked-on, chemical-resistant enamel in color as selected by Owner from manufacturer's full range of colors. Provide ivory- or brown-colored receptacles and switches as selected by Owner.

### 2.9.9 Cover Plates

Provide satin finish, Type 304, stainless steel cover plates with formed, beveled edges.

### 2.9.10 Cover Plate Identification

Provide identification on cover plates at receptacles, switches, terminal posts, and other locations as indicated. Provide 1/4 inch high letters, unless otherwise indicated. Provide identification on the following devices whether indicated on Drawings or not:

- a. Receptacles, other than standard 125-V duplex, grounding type. Indicate voltage and phase.
- b. Switches and thermal-overload switches. Indicate equipment being controlled.
- c. Pilot lights when located remotely from associated equipment or switch, where function is not obvious. Indicate equipment being controlled.

On stainless steel, stamp or etch directly on plate and fill in letters with black enamel.

## **2.10 Flammable Liquid Storage Cabinets**

**2.10.1 Design: Door overlay design, either flush or lipped, and face veneer species, red oak, shall be the same as specified for other laboratory case work.**

**2.10.2 Cabinet: Bottom, top, back, door(s) and sides of cabined shall be constructed of 1" veneer core plywood. All joints shall be rabbeted and shall be fastened in two directions with wood screws.**

**2.10.3 Back: Floor mounted and suspended cabinets shall have removable back panels for access to utility case from inside the cabinet. Floor mounted cabinets with flush top panel shall also incorporate the top panel as removable.**

**2.10.4 Door: Provide with five-knuckle hinges, manual three-point latch and door sill raised at least tow inches above cabinet bottom to retain spilled liquid within the cabinet. When more than one door is used, there shall be an overlap ;of not less than 5/8"**

**2.10.5 Ventilation: Cabinet shall include two threaded, two-inch pipe**

**vent outlets and flame arrestors on the back of the cabinet. Vent as required by local code.**

**2.10.6 Bottom: In addition to cabinet bottom, provide with minimum 2" deep, lipped, removable, liquid tight, powder coated steel bottom pan.**

**2.10.7 Shelving: Provide with full width and full depth 3/4" thick adjustable shelf.**

**2.10.8 Identification: All solvent storage cabinets shall be marked with conspicuous, 2" high lettering: FLAMMABLE - KEEP FIRE AWAY.**

**2.10.9 Finish: Shall be as specified for other wood laboratory casework.**

### PART 3 EXECUTION

#### 3.1 EXAMINATION

Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcement, and other conditions affecting performance of wood laboratory casework installation. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### 3.2 CASEWORK INSTALLATION

##### 3.2.1 Installation

Install plumb, level, 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.

##### 3.2.2 Utility-Space Framing

Secure to floor with 2 fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.

##### 3.2.3 Base Cabinets

Set cabinets straight, plumb, and level. Adjust 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 24 inches 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.

a. Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than 2 fasteners. Cabinets that will support shaker machines will be independent of adjacent cabinets and will be anchored to the slab with anchorbolts and neoprene bushings at each corner.

##### 3.2.4 Wall Cabinets

Hang cabinets straight, plumb, and level. 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.

#### 3.2.5 Hardware

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.

#### 3.2.6 Adjustments

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

#### 3.3.1 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.

#### 3.3.2 Fastenings

Secure epoxy tops to cabinets with epoxy cement, applied at each corner and along perimeter edges of not more than 48 inches o.c.

#### 3.3.3 Surface Joints

Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection. Where necessary to penetrate tops with fasteners, countersink heads approximately 1/8 inch and plug hole flush with material equal to top in chemical resistance, hardness, and appearance.

#### 3.3.4 Holes and Cutouts

Provide required holes and cutouts for service fittings.

#### 3.3.5 Dress Joints

Carefully dress joints smooth, remove surface scratches, and clean entire surface.

#### 3.3.6 Scribe Moldings

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. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.

### 3.4 INSTALLATION OF ACCESSORIES

Install accessories according to approved Shop Drawings and manufacturer's written instructions.

### 3.5 INSTALLATION OF SERVICE FITTINGS

Comply with requirements of Division 15 and 16 Sections for installing water and laboratory gas service fittings, piping, electrical devices, and wiring.

Install fittings according to approved Shop Drawings and manufacturer's written instructions. Bed bases and flanges of sink-and countertop-mounted fittings in sealant recommended by manufacturer of sink or countertop material. Securely anchor fittings, piping, and conduit to casework, unless otherwise indicated.

### 3.6 CLEANING AND PROTECTING

Repair or remove and replace defective work as directed on completion of installation.

Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Owner.

Protection: Provide 6-mil plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at minimum of 48 inches.

-- End of Section --