

**SECTION 12 35 53**  
**LABORATORY CASEWORK AND EQUIPMENT**

**PART 1 GENERAL**

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 specification section, apply to work of this section.

1.2 SECTION INCLUDES

- A. Chemistry laboratory casework, fume hoods, and flammable storage cabinets.
- B. Unless otherwise indicated, fixtures and trim for this section shall be the manufacturers standard and furnished under this section.

1.3 QUALITY ASSURANCE

- A. All laboratories shall comply with NFPA 45 for educational occupancy instructional laboratory units.
- B. At least one of each type of unit in each accessible space must be accessible and comply with FBC-Accessibility.

1.4 REFERENCES

- A. ANSI/HPVA HP-1 – American National Standard for Hardwood and Decorative Plywood
- B. ANSI/BHMA A-156 Series – Standards Builders Hardware Manufacturers Association
- C. NFPA 30 – Flammable and Combustible Liquids Code
- D. NFPA 45 – Standard on Fire Protection for Laboratories Using Chemicals

1.5 SUBMITTALS

- A. Provide the manufacturer's descriptive product data indicating details, sizes, methods of attachment and anything pertinent to the complete installation of the work.

1.6 WARRANTY

- A. Provide manufacturer's warranty from defects in materials and workmanship for 1-year from date of Substantial Completion.

**PART 2 PRODUCTS**

2.1 CASEWORK MATERIALS

- A. Hardwood: Kiln-dried hardwood, clear and free of defects; Grade-A select Red Oak for exposed components
- B. Plywood: Exposed to be Grade-A Red Oak faced with surface veneer secured with highly water-resistant glue.
  - 1. Unexposed plies shall be a uniform hard face veneer with a 0.050" face to meet the ANSI/HPVA HP-1.
  - 2. Core materials shall be of hardwood.
- C. Exposed face Veneers: Plain-sliced Grade-A Red Oak sorted for golden wheat color and narrow hearts.
- D. Semi-exposed Face Veneers: Hardwood veneer compatible with exposed veneer to provide balanced construction of the same species throughout interior.
- E. Unexposed Face Veneers: Factory option hardwood veneer, Grade-A select Birch providing balanced construction.
- F. Banding: 3 mm hardwood edge banding to match veneer door and drawer fronts.
- G. Glass: Provide 7/32" (6 mm) for tall cases, 1/8" (3 mm) for wall and upper cases.
- H. Adhesive: Use laminating adhesive – Type II water-resistant free of added urea-formaldehyde.

- I. Use adhesives of low VOC meeting USGB LEED for Schools requirements for low VOC

## 2.2 CABINET CONSTRUCTION

- A. Style: Flush overlay with  $\frac{1}{8}$ " horizontal and vertical reveals between doors and drawers and  $\frac{1}{16}$ " vertical reveals between doors/drawers and cabinet ends.
- B. Joinery: 32 mm system with 8 mm diameter, fluted hardwood dowels glued in place.
- C. Grain Direction: Use a combination horizontal on drawers and vertical on doors.

## 2.3 CABINET COMPONENT CONSTRUCTION

- A. End Panels: Provide ( $\frac{3}{4}$ ") thick, 7-ply solid core, hardwood plywood.
- B. Vertical Panels: Provide ( $\frac{3}{4}$ ") thick, 7-ply solid core, hardwood plywood.
- C. Base: Integral  $\frac{3}{4}$ " x  $3\frac{3}{4}$ " rail mounted between end panels forming a 4" high x  $2\frac{1}{2}$ " deep toe space.
- D. Top Rails: 2" X  $1\frac{1}{4}$ " solid oak rail, front and back, grooved to receive  $\frac{1}{4}$ " diameter thru bolt and cross rails.
- E. Intermediate Rails:  $\frac{3}{4}$ " x 3" solid oak.
- F. Bottom Frame: 2' x  $1\frac{1}{4}$ " inch solid oak, front and back, grooved to receive  $\frac{1}{4}$ " diameter thru bolt.
- G. Security Panels: Full depth,  $\frac{1}{4}$ " thick hardboard, set in to front and rear intermediate rails, when installing locks.
- H. Cabinet Backs: Exposed interior – Use  $\frac{1}{4}$ " thick oak plywood and in unexposed interior –  $\frac{1}{4}$ " thick hardboard (removable at sinks).
- I. Shelves:
  - 1. Provide 1" thick 9-ply solid core, hardwood plywood, (oak face, birch back – all shelves).
  - 2. Front edge banded with solid oak.
  - 3. Shelves are adjustable on  $1\frac{1}{4}$ " centers, supported by four nickel-plated steel pin and socket type shelf clips.
- J. Doors:
  - 1. Provide square edge,  $\frac{3}{4}$ " thick solid lumber core with both faces surfaced with oak veneer.
  - 2. Edges banded with solid oak.
- K. Drawers:
  - 1. Front: Shall be square edge,  $\frac{3}{4}$ " thick solid lumber core with both faces surfaced with oak veneer, Edges banded with solid oak.
  - 2. Body: Back, sides, and front shall be  $\frac{1}{2}$ " thick, solid core solid hardwood joined by tongue and grooved joint and inter-fibrous friction fasteners.
  - 3. Finish: All drawer bodies shall receive one coat of both stain and sealer as selected from the manufacturer's standard color selection.
  - 4. Drawer slide system:
    - a. Drawer runners shall be powder epoxy coated, cold roll steel, featuring a captive roller system with in and out stop and out position keeper.
    - b. Runners to be side and bottom mount with 100 lb. load rating per ANSI/BHMA test procedure.

## 2.4 HARDWARE AND ACCESSORIES

- A. Hinges:
  - 1. Provide institutional type, ground tip, five-knuckle, with pins no less than 0.177" in diameter and leaves of not less than 0.072" thick.
  - 2. Hinges shall be wrought steel with black powder coating.
  - 3. Provide two hinges on doors less than 36" in height and three hinges for doors 36" and over.
  - 4. Hinges must be capable of supporting 150 lbs.
  - 5. Place 12" from hinge center with door open 90°.

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- B. Pulls:
    - 1. Solid metal, wire type, 4" long mounted with two screws fastened from back.
    - 2. Pulls are black powder coated to match hinges.
    - 3. Provide two pulls for drawers over 24".
  - C. Door catches: Provide two one top and one bottom, use nylon roller spring-catch type.
  - D. Elbow catches:
    - 1. Brass with latch held by coiled compressing ring.
    - 2. Catch plates shall be 16-ga plated steel.
  - E. Slam latch: Supplied on tall cases with double doors where locks are specified, 4<sup>5</sup>/<sub>8</sub>" bevel slide bolt with 2<sup>1</sup>/<sub>4</sub> lb/in actuated spring.
  - F. Leg shoes: Provide a molded vinyl, black, coved bottom type to match radius of base molding.
  - G. Locks:
    - 1. Drawers: Provide Schlage CL888R or Olympus 888IC cabinet drawer lock, complete with strike plate.
    - 2. Doors: Provide Schlage CL777R or Olympus 777IC cabinet door lock, complete with strike plate.
    - 3. Use a Schlage Everest D245 or Schlage 1456 Keyway upon owner directive.
    - 4. All locks provided with two keys and are subject to master keying.
- 2.5 COUNTERTOPS / BASE
- A. Epoxy resin – specially blended to produce a high chemical resistant material.
    - 1. Tops shall be one inch 1" thick, and have a tensile strength of 10,700 PSI, compressive strength of 30,600 PSI.
    - 2. Provide a base as integral part of the countertop.
    - 3. Color to be black.
  - B. Sizes:
    - 1. Furnish tops in maximum practicable lengths, in configuration indicated on the drawings.
    - 2. Top edges and corners shall be radius 3/16".
    - 3. Bottom edges shall have minor radius with drip groove.
- 2.6 SINKS / FIXTURES
- A. Sinks shall be epoxy resin, one-piece construction, and integral with the countertop.
  - B. Fixtures shall be of a one-piece construction, cast brass body with acid and solvent resistant epoxy powder coated finish.
    - 1. Provide vandal resistant gooseneck fixture, fixture cannot turn or spin once installed.
  - C. This contractor shall provide fixtures, trim, sinks for water, gas, and electricity, and installed per Divisions 22, 23, and 26.
- 2.7 FLAMMABLE STORAGE CABINET
- A. Cabinets shall be double wall construction throughout with 1<sup>1</sup>/<sub>2</sub>" insulating air-space between inner and outer walls; hinged doors with 3-point latch and lock; two adjustable shelves of reinforced galvanized steel; 2" deep, pan-type bottom; screened flame arrestor vent on each side and threaded to accept 2" standard pipe.
  - B. Cabinet shall comply with NFPA 30, NFPA 45, and O.S.H.A. safety requirements.
- 2.8 PORTABLE FUME HOOD
- A. Construct the hood of 1" square chrome plated tubing and containing fluorescent lighting, 3000 R.P.M. exhaust fan with 2" diameter connection in end of housing for attaching flexible duct.
    - 1. Flexible duct 2" diameter and 42" long shall be included as part of the unit.

- B. Hood shall include support table constructed of 1" square chrome plated tubing, 1¼" dished resin countertop and swivel casters for complete mobility.
- C. Both the hood and the support table below shall be by the same manufacturer.
- D. Provide all necessary fittings and accessories required for a complete working installation.
- E. Comply with NFPA 45.

## 2.9 FUME HOOD

- A. Hood shall be "Supplemental Air Thin Wall" type unit.
  - 1. Fabricate the exterior superstructure material from cold rolled furniture steel finished in color selected from the manufacturer's standard color palette.
  - 2. Exterior finish shall be chemical resistant two-part epoxy finish.
  - 3. The interior shall be non-asbestos, stainless steel.
  - 4. Attach the hood inner lining and exterior finished panels to a framework constructed of 16 and 18-gauge steel.
  - 5. Weld and bolt the framework together to form a rigid assembly and is painted with a black rust inhibitive finish.
  - 6. Treat all steel parts with an iron phosphate bath to resist corrosion and insure adhesion to the frame assembly.
  - 7. Securely fasten the inner lining material to this frame using stainless steel screws.
  - 8. Bolt the outer parts to the frame assembly.
  - 9. The finished end panels are removable to facilitate installation of plumbing fixtures, piping, electrical boxes, and wiring.
  - 10. Construct the vertical sliding sash of 18-ga steel, welded into a rigid frame, and has removable glass retainers for re-glazing.
  - 11. Provide the sash with full-length finger lift, and nylon guides on each side.
  - 12. Sash guides are stainless steel.
  - 13. Glazing consists of 7/32" inch clear laminated safety glass set in a "U" shaped neoprene channel.
- B. Hood superstructure shall provide for efficient removal of all fumes, both heavy and light, with the least amount of turbulence of air entering the hood.
- C. Hood shall have vapor proof, incandescent light fixtures.
- D. Provide Acid Storage Cabinet below hood for support of the fume hood.
  - 1. Line the cabinet with non-asbestos corrosion resistant material.
  - 2. Unit shall be steel to match the fume hood.
  - 3. Color of cabinet to be selected from manufacturer's standard color palette
- E. Fume hoods shall be listed, tested, balanced, certified, and tagged in compliance with NFPA 45.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. In accordance with manufacturer's installation procedures and design criteria.

### 3.2 CLEANING AND PROTECTION

- A. Remove all debris, dirt, rubbish, and excess material accumulated from the installation of items furnished under this section, and leave casework orderly and clean.
- B. Protect work installed from damage caused by other trades.

END OF SECTION