

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, 4⁵/₈" bevel slide bolt with 2¹/₄ 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 1¹/₂" 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