

**SECTION 12345.2**  
**FLUSH OVERLAY LABORATORY CASEWORK**

**PART 1 GENERAL**

**1.00 SUMMARY**

- A. Section Includes
  - 1. Steel casework with [steel] [wood] [plastic laminate] drawer and door fronts.
  - 2. Table frames.
  - 3. Work surfaces.
  - 4. Sinks and outlets.
  - 5. Service fittings.
  - 6. Accessory equipment.
  
- B. Related sections:
  - 1. Section 11610 and 11611 - Laboratory Fume Hoods are a part of the work of this section.

**1.02 CASEWORK DESIGN REQUIREMENTS**

- A. Flush overlay construction:  
Surfaces of doors and drawers shall overlay the cabinet ends, top or bottom rails. Horizontal and vertical case shell members (panels, top rails and bottoms) shall be concealed behind drawer and door fronts. Reveals shall be a uniform 1/8" horizontally between drawer and door fronts and 5/32" vertically between adjacent drawer and door.
  
- B. Slimline styling: Front width of end panels 3/4".
  
- C. Self-supporting units: Completely welded shell assembly without applied panels at ends, backs or bottoms, so that cases can be used interchangeably or as a single, stand-alone unit.

- D. Interior of case unit: Easily cleanable, flush interior. Base cabinets that are 30" and wider, with double swinging doors, shall provide full access to interior without center vertical post.
- E. Drawers: Sized on a modular basis for interchange to meet varying storage needs, and designed to be easily removable in field without the use of special tools.
- F. Case openings: Rabbeted-like joints all four sides of case opening for hinged doors and two sides for sliding doors in order to provide structural integrity.
- G. Framed glazed doors: Identical in construction, hardware and installation to solid panel doors. Design frame glazed doors to be removable for glass replacement.

### **1.03 CASEWORK PERFORMANCE REQUIREMENTS**

- A. Structural performance requirements: Casework components shall withstand the following minimum loads without damage to the component or to the casework operation:
  - 1. Steel base unit load capacity: 500 lbs. per lineal foot.
  - 2. Suspended units: 300 lbs. per lineal foot.
  - 3. Drawers in a cabinet: 150 lbs. per drawer.
  - 4. Utility tables (4 legged): 300 lbs. per lineal foot.
  - 5. Hanging wall cases: 200 lbs. per lineal foot, not to exceed 600 lbs.
  - 6. Load capacity for shelves of base units, wall cases and tall cases: 150 lbs.
- B. Metal Finish Performance Requirements:
  - 1. Abrasion resistance: Maximum weight loss of 5.5 mg. per 100 cycle when tested on a Taber Abrasion Tester #E40101 with 1000 gm wheel pressure and Calibrase #CS10 wheel.
  - 2. Hardness: Surface hardness equivalent to 4H or 5H pencil.
  - 3. Humidity resistance: Withstand 1000 hour exposure in saturated humidity at 100 degrees F.
  - 4. Moisture resistance:
    - a. No visible effect to surface finish after boiling water trickled over test panel inclined at 45 degrees for five minutes.
    - b. No visible effect to surface finish following 100 hour continuous application of a water soaked cellulose

sponge, maintained in a wet condition throughout the test period.

5. Adhesion: Score finish surface of test panel with razor blade into 100 squares, 1/16" x 1/16", cutting completely through the finish but with minimum penetration of the substrate, and brush away particles with soft brush. Minimum 95 squares shall maintain their finish.
6. Salt spray: Withstand minimum 200 hour salt spray test.

C. Chemical Resistance Finish Performance Requirements:

At specifier's option, insert chemical resistance requirements. See Appendix E.1.

#### **1.04 WORK SURFACE PERFORMANCE REQUIREMENTS**

At specifier's option, insert here applicable performance requirements for selected work surfaces from Appendix A.

#### **1.05 SUBMITTALS**

Include number of each type of submittal required if this information is not covered in Division 1 or elsewhere.

- A. Shop Drawings: Provide 1/2" = 1'-0" scale elevations of individual and battery of casework units, larger scale details and sections as required. Indicate relation of units to surrounding walls, windows, doors and other building components. Provide 1/4" = 1'-0" rough-in plan drawings for coordination with trades. Rough-in shall show free area.
- B. Product Data: Submit manufacturer's data for each component and item of laboratory equipment specified. Include component dimensions, configurations, construction details, joint details, and attachments, utility and service requirements and locations.

- C. Product Samples Upon Request: Submit for approval:
  - 1. Top Sample.
  - 2. Finish Sample (3" x 5" Painted Steel).
  
- D. Finish Samples: Submit [3 x 5] [\_\_x\_\_] inch samples of each color of finish for casework, work surfaces and for other prefinished equipment and accessories for selection by [Architect] [Owner].

Include following paragraph if specifier elects to include work surface performance requirements from Appendix A.1, A.2 or A.3.

- E. Test Reports: When requested by [Architect] [Owner], submit independent laboratory certified test reports verifying conformance to test performance specified

#### **1.06 QUALITY ASSURANCE**

- A. Single source responsibility: Casework, work surfaces, laboratory fume hoods, equipment and accessories shall be manufactured or furnished by a single laboratory furniture company.
  
- B. Manufacturer's qualifications: Modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory casework and equipment, and shall meet the following minimum requirements:
  - 1. Five years or more experience in manufacture of laboratory casework and equipment of type specified.
  - 2. Ten installations of equal or larger size and requirements.
  
- C. Installer's qualifications: Factory trained and/or certified by the manufacturer.
  
- D. Cabinet identification: Cabinets are identified on drawings by manufacturer's catalog numbers. Unless otherwise modified on drawings or in specifications, catalog description constitutes specific requirements for each type of cabinet.

## **1.07 DELIVERY, STORAGE AND HANDLING**

- A. Schedule delivery of casework and equipment so that spaces are sufficiently complete that material can be installed immediately following delivery.
- B. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.
- C. Protect all work surfaces throughout construction period with 1/4" corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering "No Standing".

## **1.08 PROJECT CONDITIONS**

- A. Do not deliver or install equipment until the following conditions have been met:
  - 1. Windows and doors are installed and the building is secure and weathertight.
  - 2. Ceiling, overhead ductwork and lighting are installed.
  - 3. All painting is completed and floor tile is installed.

# **PART 2 PRODUCTS**

## **2.01 MANUFACTURER**

- A. Design, materials, construction and finish of casework specified is the minimum acceptable standard of quality for flush overlay laboratory casework. The basis of this specification is Jamestown Metal Products Inc., 178 Blackstone Avenue, Jamestown, New York 14701 product.

## **2.02 CASEWORK MATERIALS**

- A. Sheet steel: Mild, cold rolled and leveled unfinished steel.

- B. Minimum gauges:
1. 20 gauge: Interior drawer fronts, scribing strips, enclosures, and drawer bodies.
  2. 18 gauge: Case tops, ends, bottoms, bases, backs, uprights, top front rails, filler panels, shelves, security panels, sloping tops, and access panels.
  3. 16 gauge: Drawer suspensions, vertical posts, top rear gussets, intermediate horizontal rails, table legs and frames, leg rails and stretchers.
  4. 11 gauge: Table leg corner brackets and gussets for leveling screws.
- C. Glass for glazed swinging and sliding doors: 1/8" (3mm) framed doors, 7/32" (6mm) unframed doors, thick, clear float glass.

### 2.03 CASEWORK FABRICATION

- A. Base Units and cases:
1. Base units and 23-5/16", 30-7/8" and 36" high wall cases: End panels and back reinforced with internal reinforcing front and rear posts. Base units shall be 22" overall in depth.
  2. 47-13/16" and 84" high cases: Formed end panels with front and rear reinforcing post channels; back shall be formed steel panel.
  3. Posts: Front post fully closed with full height reinforcing upright. Shelf adjustment holes in front and rear posts shall be perfectly aligned for level setting, adjustable to 1/2" o.c.
  4. Secure intersection of case members with spot and arc welds.
  5. Bottoms: Base units and 23-5/16", 30-7/8", 36" and 47-13/16" high wall cases shall have one piece bottom with front edge formed into front rail, rabbeted as required for swinging doors and drawers and flush design for sliding doors.
  6. Top rail for base units interlock with end panels, flush with front of unit.
  7. Horizontal intermediate rails: Recessed behind doors and drawer fronts.
  8. Base for base units: 4" high (4-3/16" with leveling gusset) x 3" deep with formed steel base and 12 gauge die formed steel gussets at corners. Provide 1/2" diameter leveling screw with integral bottom flange of minimum 0.97 sq. in. area at

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eachcorner.

9. Tops of wall cases: One piece, with front edge formed into front rail.

B. Drawers:

1. Drawer fronts: 3/4" thick, double wall construction, assembled with sound deadening honeycomb; top corners fitted smooth.
2. Drawer bodies: Stainless steel bottom and sides formed into one-piece construction with bottom and sides coved; formed top edges.
3. Drawer suspension: Removable full extension (3-member) ball bearing drawer guides, 150lbs. per pair rating.
4. Provide drawer with resilient bumpers. Friction centering devices are not acceptable.
5. Provide security panels for drawers with keyed different locks (as required).

C. Doors:

1. Solid panel doors: 3/4" thick, double wall, box steel construction with interior sound deadening. Hinges shall be removable; welding of hinges not acceptable. Doors shall close against rubber bumpers.
2. Frame glazed doors: Outer head to be one piece construction. Inner head to be one piece construction that is removable for installation or replacement of glass. Provide vinyl glazing retainer to receive glass. In all other respects, framed glazed door construction and quality shall match solid panel doors.
3. Sliding Doors-Solid or Framed Glazed: Design for tilt-out removal. Doors shall be top hung wheel assembly with top and bottom guide tracks. Provide resilient bumpers at fully opened and closed door position.
4. Unframed sliding glass doors: Glass, with edges ground, top hung wheel assemblies and top and bottom guide tracks. Provide resilient bumpers at fully opened and closed door position.

D. Shelves:

1. Form front and back edges down and back 1". Form ends down 1".

2. Reinforce shelves over 36" long with welded hat channel reinforcement the full width of shelf.
  3. Roll out shelves: Same suspension as specified for drawers.
- E. Base molding: 4" high, to be furnished and installed by flooring contractor.
- F. Hardware:
1. Chrome plated brass with brushed finish, screw attached at 4" centers.
  2. Hinges: Institutional type, five knuckle projecting barrel hinges, minimum 3" long, stainless steel with brushed finish. Provide two hinges for doors up to 36" high; three hinges for doors over 36" high. Drill each leaf for three screw attachment to door and frame.
  3. Door catches: Adjustable type, spring actuated nylon roller catches.
  4. Removable core locks can be keyed alike or different, and grand-master-keyed as directed.
  5. Label holders: Formed steel with powderpaint finish, 1" x 1-1/2"
  6. Shelf clips: Peg style steel, zinc plated, designed to engage in shelf adjustment holes.

## **2.04 TABLE FRAMES**

- A. Table frames: 4-1/2" high "C" channel front and back aprons, end rails and cross rails.
- B. Table drawers: Provide front and back rails; drawer unit, hardware and suspension same as specified for base unit drawers.
- C. Legs: 2" x 2" steel tube legs with welded leg bracket. Attach legs with two bolts to front and back aprons and weld to end rails. Each leg shall have a recessed leveling screw.

## **2.05 METAL FINISH**

- A. Preparation: Spray clean metal with a heated cleaner/phosphate solution, pretreat with iron phosphate spray, water rinse, and neutral final coat. Immediately dry in heated ovens, then gradually cool prior

to application of finish.

B. Application: Electrostatically apply urethane powder coat of selected color and bake in controlled high temperature oven to assure a smooth, hard satin finish. Surfaces shall have a chemical resistant, high grade laboratory furniture quality finish of the following thicknesses:

1. Exterior and interior surfaces exposed to view: 1.5 mil average and 1.3 mil minimum
2. Backs of cabinets and other surfaces not exposed to view: 1.0 mil average.

C. Chemical Resistance

1. Test procedure: Apply 10 drops (approximately 0.5 cc) of each reagent identified to the surface of the finished test panels laid flat and level on a horizontal surface. Ambient temperature: 68-72 degrees F. (20-22 degrees C.) After one hour flush away chemicals with cold water and wash surface with detergent and warm water at 150 degrees F. (65.5 degrees C.) and with alcohol to remove surface stains. Examine surface under 100 footcandles of illumination.

2. Evaluation ratings: Change in surface finish and function shall be described by the following ratings:

- a. Excellent: Indicates excellent to superior integrity of finish film. Includes no effect of slight change in gloss and slight discoloration.
- b. Good: Allows change of gloss or discoloration or slight swelling while retaining integrity of finish film.
- c. Failure: Obvious and significant deterioration, including blistering, pitting, cratering, erosion and/or loss of finish material.

5. Test Results:

REAGENT	RATING
Acetate, Amyl	Excellent
Acetate, Ethyl	Excellent
Acetic Acid, 98%	Excellent
Acetone	Excellent

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Acid Dichromate, 5%	No Effect
Alcohol, Butyl	No Effect
Alcohol, Ethyl	Excellent
Alcohol, Methyl	Excellent
Ammonium Hydroxide, 28%	No Effect
Benzene	No Effect
Carbon Tetrachloride	No Effect
Chloroform	Excellent
Chromic Acid, 60%	No Effect
Cresol	Good
Dichlor Acetic Acid	Failure
Dimethylformamide	No Effect
Dioxane	Good
Ethyl Ether	No Effect
Formaldehyde, 37%	No Effect
Furfural	Fair
Gasoline	No Effect
Hydrochloric Acid, 37%	Good
Hydrochloric Acid, 48%	No Effect
Hydrofluoric Acid, 48%	Failure
Hydrogen Peroxide, 3%	No Effect
Iodine, Tincture of	Good
Methyl Ethyl Ketone	Excellent
Methylene Chloride	Excellent
Mono Chlorobenzene	Excellent
Naphthalene	No Effect
Nitric Acid, 20%	No Effect
Nitric Acid, 30%	No Effect
Nitric Acid, 70%	Good
Phenol, 90%	Good
Phosphoric Acid, 85%	No Effect
Silver Nitrate, Saturated	Good
Sodium Hydroxide, 10%	No Effect
Sodium Hydroxide, 20%	No Effect
Sodium Hydroxide, 40%	No Effect
Sodium Hydroxide, Flake	No Effect
Sodium Sulfide, Saturated	No Effect
Sulfuric Acid, 33%	No Effect
Sulfuric Acid, 77%	Good
Sulfuric Acid, 96%	Fair
Sulfuric Acid (77%) & Nitric Acid (70%)	Good

Toluene	No Effect
Trichloroethylene	No Effect
Xylene	No Effect
Zinc Chloride, Saturated	No Effect

- D. Finish drawer bodies in matching or harmonizing color and apply corrosion-resistant treatment to selected, concealed interior parts.
- E. Provide independent certified test report on chemical resistance of finish.

## **2.06 WORK SURFACES**

Insert specification for selected work surface from Appendix A.

## **2.07 SINKS, DRAINS AND TRAPS**

Insert specification for selected sinks, drains and traps from Appendix B.

## **2.08 LABORATORY FITTINGS**

Insert specification for selected laboratory fittings from Appendix C.

## **2.09 ACCESSORY EQUIPMENT**

Insert specification for selected accessory equipment from Appendix D.

# **PART 3 EXECUTION**

## **3.01 INSTALLATION**

- A. Casework installation:
  - 1. Set casework components plumb, square, and straight with no distortion and securely anchored to building structure. Shim as required using concealed shims.
  - 2. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16"

tolerance.

3. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.
  4. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8" between top units.
- B. Work surface installation:
1. Where required due to field conditions, scribe to abutting surfaces.
  2. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure joints in field, where practicable, in the same manner as in factory, with dowels, splines, adhesive or fasteners recommended by manufacturer.
  3. Secure work surfaces to casework and equipment components with material and procedures recommended by the manufacturer.
- C. Sink installation: Sinks which were not factory installed shall be set in chemical resistant sealing compound and secured and supported per manufacturer's recommendations.
- D. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations. Turn screws to seat flat; do not drive.

### **3.02 ADJUSTING**

- A. Repair or remove and replace defective work, as directed by [Architect] [Owner] upon completion of installation.
- B. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly.

### **3.03 CLEANING**

- A. Clean shop finished casework, touch up as required.

- B. Clean countertops with diluted dishwashing liquid and water leaving tops free of all grease and streaks. Use no wax or oils.

### **3.04 PROTECTION OF FINISHED WORK**

- A. Provide all necessary protective measures to prevent exposure of casework and equipment from exposure to other construction activity.
- B. Advise contractor of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

**END OF SECTION**