

## **PART 1 - GENERAL**

### **1.1 GENERAL**

- .1 Comply with requirements of Division 1.

### **1.2 RELATED REQUIREMENTS**

- .1 Section 05 50 00: Metal Fabrications.
- .2 Section 06 40 00: Architectural Woodwork.
- .3 Section 07 92 00: Joint Sealing.
- .4 Mechanical and Electrical Divisions: Supply and installation of mechanical and electrical services.

### **1.3 REFERENCES**

- .1 American National Standards Institute (ANSI)
  - .1 ANSI A208.1-2009, Particleboard.
- .2 ASTM International
  - .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
  - .2 ASTM A240/A240M-11b, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.
  - .3 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .4 ASTM A1008/A1008M-15, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
  - .5 ASTM B117-16, Standard Practice for Operating Salt Spray (Fog) Apparatus.
  - .6 ASTM B456-11e1, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
  - .7 ASTM E478-08, Standard Test Methods for Chemical Analysis of Copper Alloys.
- .3 CSA International
  - .1 CSA O112.10-08 (R2013), Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).
- .4 Electrical and Electronic Manufacturer's Association of Canada (EEMAC).
- .5 Scientific Equipment and Furniture Association (SEFA)
  - .1 SEFA 8: Recommended Practices for Laboratory Casework
  - .2 SEFA 3: Recommended Practices for Laboratory Work Surfaces.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for steel laboratory casework and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Storage and handling requirements.
  - .3 Installation methods.
- .3 Shop Drawings:
  - .1 Submit drawings, drawn to scale, prepared by casework manufacturer showing layout plans, elevations of furniture assemblies, cross-sections of units, ends, service run spaces, and locations and types of service connections and fittings.
  - .2 Indicate on drawings:
    - .1 Details of laboratory casework construction and related and dimensional position, with sections.
    - .2 Location of each casework unit.
- .4 Samples:
  - .1 Submit duplicate samples of:
    - .1 Countertop material: 300 x 300 mm including external corner.
    - .2 One complete set of colour chips showing manufacturer's full range of available colours. Minimum sample size: 50mm x 76mm.
- .5 Test Reports: submit test reports by independent testing laboratories indicating results of furniture finish tests.
- .6 Certificates: Submit certificates indicating casework meets performance requirements described in SEFA 8 for steel casework.

#### **1.5 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 – Closeout Submittals.
- .2 Submit operation and maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
- .3 Submit maintenance data: Include maintenance procedures, recommendations for maintenance materials and equipment, and suggested schedule for cleaning.
- .4 Submit copies of accepted shop drawings for incorporation into O&M manual.
- .5 Warranty Documentation: submit manufacturer's warranty documents.

## **1.6 QUALITY ASSURANCE**

- .1 Performance Criteria for steel laboratory casework: steel laboratory casework to comply with SEFA 8 standards and performance test requirements.
- .2 The casework manufacturer is responsible for all site dimensions that will affect his work. Coordinate installation of all casework.
- .3 If requested by the Departmental Representative, the casework manufacturer is to provide a list of completed projects of equal or more value than this project completed in the last five years.

## **1.7 MOCK-UPS**

- .1 Mock-Ups: Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
  - .1 Construct mock-up for approval by Departmental Representative to establish a standard of quality.
  - .2 Install one base cabinet unit, one wall cabinet unit, countertop, shelving unit complete with hardware and shop applied finishes, and install on project at designated location.
  - .3 Allow 48 hours for inspection of mock-up by Departmental Representative before proceeding with Work.
  - .4 When accepted, mock-up will demonstrate minimum standard for this work. Accepted mock-up will remain as part of finished work.

## **1.8 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2 Delivery Requirements:
  - .1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
  - .2 Products shall have packaging adequate to protect finished surfaces from soiling or damage during shipping, delivery and installation.
  - .3 Schedule casework delivery after painting, utility rough-ins and related activities are completed so as to avoid work that could damage new casework.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect steel laboratory casework from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return pallets, crates, padding, packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **1.9 WARRANTY**

- .1 Provide manufacturer's written warranty stating that work performed under this Section will remain free from defects as to materials and workmanship for the duration of the project warranty period commencing at Final Performance of the Work. Defects in materials and workmanship that develop within this time are to be replaced without cost or expense to the contract.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- .1 Sheet steel: Cold rolled sheet steel, to ASTM A1008/A1008M, commercial quality, furniture grade; thickness of 3mm (12 Ga), 1.9mm (14 Ga), 1.5mm (16 Ga), 1.2mm (18 Ga), 0.9mm (20 Ga).
- .2 Galvanized steel sheet: commercial quality to ASTM A653 with designation Z275 zinc coating.
- .3 Sealants: as specified in Section 07 92 00 – Joint Sealing.
- .4 Laminated Hardwood Countertop and splashback: as specified in Section 06 40 00 – Architectural Woodwork.
- .5 Bent steel plate Countertop and splashback: as specified in Section 05 50 00 – Metal Fabrications.

### **2.2 CASEWORK: GENERAL**

- .1 Casework: high quality steel casework for the laboratory environment to SEFA 8 standards and performance requirements.
  - .1 Flush construction: Surfaces and panel faces shall align with cabinet fronts without overlap to form a smooth, flush surface. Horizontal and vertical case body members shall meet in the same plane without overlap, cracks or crevices.
  - .2 Standard of Acceptance: Mott Lab, Sigma Frame Series; or other acceptable manufacturers.
  - .3 Each cabinet unit to be complete and self-supporting so that units can be used interchangeably and relocated without requiring field application of finished ends or other such parts.
  - .4 Base cabinet unit body construction shall be 1.2mm (18 Ga), except as follows:
    - .1 Gusset plates for levelling bolts: 3mm (12 Ga).
    - .2 Case and drawer suspension slides: 1.9mm (14 Ga).
    - .3 Tubular rails, legs for tables, cabinet top and intermediate rails, gusset plates: 1.5mm (16 Ga).
    - .4 Drawer backs, door backs, vertical closure channels, removable back panels, shelves, drawer bodies, drawer dividers, bin bodies and pull-out shelves: 0.9mm (20 Ga).

## **2.3 FABRICATION**

- .1 Fabricate steel laboratory casework to meet standards and performance requirements of SEFA-8.
- .2 Align end panels, top rails, bottoms and vertical posts, at intersections in same plane, without overlap.
- .3 Grind exposed welds flush and smooth, burnish to match adjacent surfaces.
- .4 Metal thickness:
  - .1 Use 2 mm. thick metal for tapping strips, gussets, drawer runners and hinge reinforcements.
  - .2 Use 1.5 mm. thick metal for cabinet top rails, hanging brackets, frame and base.
  - .3 Use 1.2 mm. thick metal for cabinet door outer pan and slide support, cross rails, cabinet fronts, scribe strips and fillers.
  - .4 Use 0.9 mm. thick metal for drawer and door inner panels, drawer bodies and back panels to cabinets.

## **2.4 LOWER CABINET DRAWER UNITS**

- .1 Existing lower cabinet drawer units: Supplied by Departmental Representative (existing on site) and installed by Contractor.
  - .1 Verify rail spacing to ensure that new table frames accept existing units.

## **2.5 CABINET HARDWARE**

- .1 Existing hardware for existing lower cabinet drawer units: supplied by Departmental Representative (existing on site) and installed by Contractor.
  - .1 Verify quantities.

## **2.6 SUPPORT TABLE FRAMES AND RAILS**

- .1 Fabricate support table frames and rails from nominal 100mm (4") channel sections welded to form a rigid frame construction.
  - .1 Table frame size: 1525 mm (60") wide x 558 mm (22") deep and standing height.
  - .2 Finish: powder coat, one (1) colour as selected by Departmental Representative
- .2 Notch corners and reinforce to receive 50mm x 50mm steel tubular legs with welded brackets. Securely bolt legs in place. Each table leg to have recessed leveling device and moulded 100mm high leg shoe. Table frame height to be adjustable in 25 mm. increments.
- .3 Provide support table frame with hanging rails to suspend existing lower cabinet drawer units supplied by Departmental Representative.

## **2.6 SUPPORT FRAME AND RAILS (continued)**

- .4 Standard of acceptance:
  - .1 Support Frame and Rails for Laminated Hardwood countertop: Mott Lab, Sigma Series or equal.
  - .2 Heavy-duty Welded Table Frame for Steel countertop: Mott Lab, All-Welded Table Frame, or equal.

## **2.7 COUNTERTOP AND SPLASHBACKS**

- .1 Laminated hardwood countertop and backsplash: by Section 06 40 00 – Architectural Woodwork.
- .2 Steel plate countertop and backsplash: by 05 50 00 – Metal Fabrications.

# **PART 3 - EXECUTION**

## **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for steel laboratory casework installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

## **3.2 INSTALLATION**

- .1 Install laboratory casework components plumb, straight and square. Securely anchor to substrate with no distortion.
- .2 Level table frames by adjusting levelling screws.

Units in continuous runs shall be fastened together with joints flush, uniform and tight. Maximum width of joint 1mm. Variance in level of adjacent units not to exceed 1.5mm in 3m.
- .3 Support existing lower cabinet drawer units, provided by Departmental Representative, on table frames. Install existing hardware. Adjust and align drawers to ensure smooth opening and closing operation.
- .4 Apply small bead of sealant at junction of countertop and adjacent wall finish.

### **3.3 INSTALLATION - COUNTERTOP**

- .1 Install countertops in a single plane, true and level to 1.5mm in 3m, ends abutting at hairline joints and with no raised edges.
- .2 Fasten tops to table frames using appropriate fasteners and/or adhesives recommended by manufacturer. Seal abutting ends in accordance with manufacturer's instructions.
- .3 Install applied backsplashes using appropriate adhesive recommended by manufacturer. Seal abutting ends in accordance with manufacturer's instructions.

### **3.4 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .1 Examine casework for damaged or soiled areas.
  - .2 Remove and replace, or repair damaged or defective units.
  - .3 Clean all finished surfaces, including drawers and cabinet shelves, and glass surfaces.
  - .4 Wipe down all surfaces to remove fingerprints and markings.
- .3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.5 PROTECTION**

- .1 Protect installed products and components from damage until completion of construction and Final Acceptance by Departmental Representative.
- .2 Use appropriate protective coverings that will not scratch or damage finished casework and countertops.
- .3 Repair damage to adjacent materials caused by steel laboratory casework installation.

**END OF SECTION**