

SECTION 12 31 00.3
(FORMERLY 12310.1)

Manufactured Metal Casework
FLEXIBLE LABORATORY FURNITURE SYSTEM (SIGMA FLEX)

PART 1 – GENERAL

Summary:

This Specification identifies the minimum material and construction standards that are required to deliver a quality installation of the flexible laboratory furniture system. Laboratory furniture shall be supplied in accordance with the requirements of this Specification. The laboratory furniture identified in this Specification shall include the miscellaneous metal panels and other related components as identified on the Drawings and that are necessary for the complete installation.

1.1 SECTION INCLUDES

- A. Modular Support Structure
- B. Steel Cantilever Table Frame
- C. Structural Table Base
- D. Core Support Structures
- E. Island Core Assemblies
- F. Mobile Instrument Carts
- G. Suspended Base/Upper Cabinets

1.2 RELATED SECTIONS

- A. Division 06 Section 10 00, "Rough Carpentry"
- B. Division 06 Section 40 00, "Architectural Woodwork"
- C. Division 09 Section 65 13, "Resilient Base and Accessories"
- D. Division 11 Section 53 00, "Laboratory Equipment"
- E. Division 12 Section 36 00, "Countertops"

- F. Division 12 Section 35 53, "Manufactured Metal Casework"
- G. Division 12 Section 32 00, "Manufactured Wood Casework"
- H. Division 22 Section 40 00, "Plumbing Fixtures"
- I. Division 26 Section 05 00, "Common Work Results for Electrical"
- J. Related Work To Be Performed By Others:
 - 1. Final installation of all plumbing, service and electrical fixtures attached to service carriers.
 - 2. Final connection to service lines of all plumbing, service and electrical fixtures attached to service carriers.

1.3 REFERENCES

- A. SEFA 8: Laboratory Furniture – Casework, Shelving and Tables Guidelines
Science Equipment and Furniture Association (SEFA)
- B. ISO 9001:2008 – Quality Management
International Standards Organization (ISO)
- C. ADA (ATBCB ADAAG) Americans with Disabilities Act Accessibility Guidelines
Americans with Disabilities Act (ADA)

1.4 SUBMITTALS

Refer to Section 01 33 00, "Submittal Procedures," for requirements, procedures, etc.

A. Product Data:

Drawings shall include data and details for construction of the laboratory furniture as well as information regarding the name, quantity, type and construction of materials (such as hardware, gauges, etc), that will be used to complete the project.

B. Shop Drawings:

- 1. The laboratory furniture manufacturer shall furnish shop drawings illustrating the layout and placement of all laboratory furniture, casework and fume hoods as well as any products included in this section.
- 2. Indicate the type and location of all service fittings and associated supply connections.
- 3. Preparation instructions and recommendations.
- 4. Storage and handling requirements and recommendations.

5. Installation methods.

C. Selection Samples:

Submit the following:

1. One complete set of color chips representing the manufacturer's full range of available colors. Minimum sample size 2 inches by 3 inches (50mm x 76mm).

D. Quality Assurance/Control

1. Design Data/Test Reports: Manufacturer shall submit test data and design criteria which are in compliance with the project specifications.
2. Certificates: All certifications required in the specifications shall be submitted with the original submittal package under separate cover. Certificates must be provided with the signature of a qualified individual of the supplier.
3. Manufacturers' Instructions: Provide manufacturer's instructions for installation and maintenance of all products provided and installed within this section. Instructions will be in bound form, tabbed and organized by section number.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

The following list of information will be provide to the Architect at least ten (10) days prior to the bid opening:

1. List of manufacturing facilities;
2. A list of ten (10) installations of comparable stature completed within the past 5 years;
3. Construction details depicting the materials, sizes and methods of construction;
4. Independent laboratory test reports that include information on cabinet, fume hood and table top finish and performance that have been conducted within the last two years.

B. Mock-Ups

1. Area mockups shall be as indicated on the shop drawings. Post bid mockup areas must be priced for disassembly and reassembly and used within the project.
2. Do not proceed with remaining work until installation is approved by Architect.

- a) Install service carrier post assembly with specified hardware.
- b) Install service carrier body with specified hardware.
- c) Install all supports and cover panels as required.

1.6 DELIVERY, STORAGE AND HANDLING

A. Packaging, Shipping, Handling and Unloading

- 1. Packaging: Products shall have packaging adequate enough to protect finished surfaces from soiling or damage during shipping, delivery and installation.
- 2. Delivery: Casework delivery shall only take place after painting, utility rough-ins and related activities are completed that could otherwise damage, soil or deteriorate casework in installation areas.
- 3. Handling: Care, such as the use of proper moving equipment, experienced movers, etc., shall be used at all times to avoid damaging the casework. Until installation takes place, any wrapping, insulation or other method of protection applied to products from the factory will be left in place to avoid accidental damage.

B. Acceptance at Site:

Casework will not be delivered or installed until the conditions specified under Part 3, Installation section of this document have been met.

C. Storage:

Casework shall be stored in the area of installation. If, prior to installation, it is necessary for casework to be temporarily stored in an area other than the installation area, the environmental conditions shall meet the environmental requirements specified under the Project Site Conditions article of this section.

D. Waste Management and Disposal:

The supplier of the laboratory casework is responsible for removing any waste or refuse resulting from the installation of, or work pertaining to laboratory casework; thereby leaving the project site clean and free of debris. Trash container(s) to be provided by others.

1.7 PROJECT SITE CONDITIONS

- A. Building must be enclosed (windows and doors sealed and weather-tight);
- B. An operational HVAC system that maintains temperature and humidity at occupancy levels must be in place;
- C. Adjacent and related work shall be complete;
- D. Ceiling, overhead ductwork and lighting must be installed;

- E. Site must be free of any further construction such as “wet work”;
- F. Required backing and reinforcements must be installed accurately and the project must be ready for casework installation.

1.8 WARRANTY

- A. Furnish a written warranty that Work performed under this Section shall remain free from defects as to materials and workmanship for a period of two (2) years from date of shipment. Defects in materials and workmanship that may develop within this time are to be replaced without cost or expense to the Owner.

Defects include, but are not limited to:

1. Ruptured, cracked, or stained coating
2. Discoloration or lack of finish integrity
3. Cracking or peeling of finish
4. Slippage, shift, or failure of attachment to wall, floor, or ceiling
5. Weld or structural failure
6. Warping or unloaded deflection of components
7. Failure of hardware

- B. The warranty with respect to products of another manufacturer sold by Mott Manufacturing is limited to the warranty extended by that manufacturer to Mott Manufacturing.

PART 2 – PRODUCTS

2.1 MANUFACTURER

- A. **Acceptable Manufacturer:**

Mott Manufacturing Ltd.; 452 Hardy Rd. Brantford, ON, Canada N3T 5L8. Tel: (519) 752-7825.
Fax: (519) 752-2895. Email: inquire@mott.ca, www.mott.ca.

- B. **Substitutions:**

Must meet all specification requirements and have prior approval.

- C. **Requests for substitutions:**

All requests will be considered in accordance with provisions of Section 01 60 00.

2.2 MATERIALS

A. Sheet Steel:

Mild steel, cold rolled furniture grade to requirements of ASTM A1008/A1008M, Grade C or higher, with smooth surfaces to furniture quality.

B. Galvanized Sheet Steel:

Commercial quality galvanised sheet steel to ASTM 653, Designation Z275.

C. Stainless Steel:

1. Sheet: ASTM A240, Type 304 AND 316 alloy.
2. Finish: Unless otherwise indicated, AISI No. 4 Brushed finish.

D. Glass:

Clear Float, 6 mm and 3 mm thick, conforming to CAN2 12.3-M76, Glazing Quality. Laminated Glass: CAN/CGSB-12.1-M90, Type 1 with clear PVB interlayer. Total nominal thickness of laminated glass: 6 mm.

E. Sealant:

One component, clear silicone base sealant, chemical curing conforming to CAN/CGSB-19.18-M87, anti fungus composition. Acceptable types: "DC-786" by Dow Corning, and "Sanitary 1700" by CGE.

F. Resilient Base and Adhesive:

Top set coved, 1/8" thick, 6" high and 4" high as indicated for base units, including premoulded end stops and external corners of color selected by Consultant from full range. Continuous lengths. Adhesive for rubber base shall be trowelled on giving 100% coverage. Use an adhesive compatible with both surfaces, as recommended by the base manufacturer.

2.3 DESIGN REQUIREMENTS:

- A. Support systems shall be a core and panel style support structure.
- B. Core structure can be supported by anchoring to suitable flooring material or may be supported by structural end gables (outrigger legs).
- C. Modular components shall be suitable for single faced wall cores or double faced peninsula or island configuration.
- D. Core assemblies shall have removable panels on all sides.

2.4 CONSTRUCTION

A. Modular Support Structure:

1. Core or wall system shall support work surfaces, under counter cabinets and overhead storage components.
2. Structural core systems may be configured for floor anchor alone or additional support legs may be used if floor is not of sufficient strength for cantilever support.
3. Core system allows plumbing, electrical and other services to be installed using commonly available mounting systems.
4. Suspended cabinets shall be supported using hook shaped rails attached near the front and rear of the cabinets. It shall be possible to remove and relocate a fully loaded cabinet to any position between legs.
5. All access panels shall be fastened with positive friction catch which snap into place. Panel attachment system shall not rely on adhesives. Panels shall be half width and it shall be possible to remove panels without removing suspended cabinets.
6. Upper storage cabinets shall be adjustable vertically and laterally and shall be removable.
7. It shall be possible to remove and relocate suspended cabinets without disturbing the countertop.
8. Vertical height of table work surfaces, upper storage units and shelves can be adjusted in one inch increments without the use of special tools.
9. It shall be possible to install open shelving both above and below work surface. Shelves from above and below work surface shall be interchangeable.

B. Steel Cantilevered Table Frame:

1. Nominal table frame dimensions:
 - a) Width: 24", 36", 48", 60", 72"
 - b) Depth: 23", 29"
 - c) Height: 22"
2. Capable of vertical height adjustments in 1" increments.
3. Bracket shall engage upright with 5 hooks.
4. Leveling Bolt: Bracket shall be fitted with a levelling bolt which will allow the bracket angle to be adjusted for proper alignment of work surface front edge.
5. Table frame shall provide channels from which suspended cabinets may be hung.
6. Table frame shall be at minimum 4" wider than cabinets installed to allow clearance for table end brackets.
7. Load Capacity: Table frame shall support the work surface plus 600 pounds total load.

C. Structural Table Base:

1. Nominal base frame dimensions:
 - a) Width: 24", 36", 48", 60", 72"
 - b) Depth: 23", 29"
 - c) Height: 30", 36"
2. Used to attach to core and upright to provide support legs.
3. Structural table frame shall provide channels from which suspended cabinets may be hung
4. Weight Capacity: Work Surface plus 600 pounds

D. Core Support Structure:

1. Riser Uprights: 16 Ga wipe coat galvanised steel (painted). Upright shall have slot system allowing for components to be adjusted in one inch increments.
2. Upright connecting members 16 Ga wipe coat galvanised steel
3. Base Cover: 18 Gage cold rolled steel
4. Riser cap: PVC, ABS or cold rolled steel.
5. Closure panels: 18 Gage cold rolled steel. Removable panels shall be fastened with positive friction catch. Attachment method shall not rely on adhesives of any kind.
6. Floor Mounting Brackets: Two per core assembly. 3" x 2" x 1/4" thick Structural steel angle complete with levelling bolts and mounting holes.

E. Island Core Assemblies:

1. Nominal Dimensions:
 - a) Width: 24", 36", 48", 60", 72"
 - b) Depth: 34"
 - c) Height: 78"
2. Casters: Four per cart assembly. 4" x 1.25" wheels with grey non-marking tire. Each caster shall have a 300 pound load rating. Front two casters shall be equipped with a modern total lock (locks both wheel rotation and caster swivel). Casters shall be attached to extreme corners of the cart base by threading into welded inserts.
3. Cart base assembly: Cart base assembly shall be fabricated from 1.5" x 3" rectangular tube steel of 16 gage wall thickness. Base shall be welded together with neat, professional MIG weld fillets. For maximum strength, fillets shall be left unground. Mobile cart base shall be in a "C" shape with two members across the back and one member at each end. Cart base shall be open at front to allow knee space for seated users. Vertical upright attachment members of

- 24" in length shall be welded to each end of the "C" shaped base. All open tube ends shall be plugged with black plastic plugs.
4. Slotted vertical uprights shall be the same construction and hole pattern as all other furniture in the same series (Mott Manufacturing Sigma-Flex). Slotted uprights shall be bolted to vertical upright attachment members using four 5/16" socket head cap screws. Screws shall be concealed beneath snap in plugs.
 5. All hanging components attached to vertical uprights shall be adjustable in 1" increments.
 6. Mobile Instrument Cart shall accept all shelves, cantilevered work surfaces suspended casework and upper storage cabinets designed for other furniture in the same series (Mott Manufacturing Sigma-Flex).
 7. Fully assembled 78" high instrument cart shall support the following components. Each component has an individual maximum load, but total load shall not exceed 1000 pounds.
 - a) Shelves - 6", 8", 12" - 180 lbs.; 18" - 130 Lbs.; 24" - 100 lbs.
 - b) Wall cases - 300 Lbs
 - c) One cantilever work surfaces - 600 Lbs each (includes weight of work surface and suspended cabinets (if any)

F. Mobile Instrument Carts:

1. Nominal Dimensions:
 - a) Width: 24", 36", 48", 60", 72"
 - b) Depth: 34"
 - c) Height: 78"
2. Casters: Four per cart assembly. 4" x 1.25" wheels with grey non-marking tire. Each caster shall have a 300 pound load rating. Front two casters shall be equipped with a modern total lock (locks both wheel rotation and caster swivel). Casters shall be attached to extreme corners of the cart base by threading into welded inserts.
3. Cart base assembly: Cart base assembly shall be fabricated from 1.5" x 3" rectangular tube steel of 16 gage wall thickness. Base shall be welded together with neat, professional MIG weld fillets. For maximum strength, fillets shall be left unground. Mobile cart base shall be in a "C" shape with two members across the back and one member at each end. Cart base shall be open at front to allow knee space for seated users. Vertical upright attachment members of 24" in length shall be welded to each end of the "C" shaped base. All open tube ends shall be plugged with black plastic plugs.
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 - b) Wall cases - 300 Lbs
 - c) One cantilever work surfaces - 600 Lbs each (includes weight of work surface and suspended cabinets (if any))

G. Suspended Base/Wall Cabinets:

1. Design and construction shall be as in section 12 35 53 - Laboratory Metal Casework.
2. Suspended cabinets shall be supported using hook shaped rails attached near the front and rear of the cabinets. It shall be possible to remove and relocate a fully loaded cabinet to any position between legs.
3. Suspended wall cases: Provide a system of cold-rolled steel hanger rails attached to the casework frames, to be vertically adjustable on one inch increments. Installation and removal to be accomplished without the use of tools.

H. Suspended CPU Holder:

1. The CPU holder shall be suspended from standard system furniture using compatible hanging rails. It shall consist of a 14 gauge steel "U" shaped channel connected to a 14 gauge steel inverted "U" shape top channel. The main portion which supports the computer shall slide outward on full extension runners for access. The clear interior dimensions shall be: 9" wide x 21" high x 22" deep.

I. Steel Furniture Finish:

1. Metal finish to be as in Appendix 1 - Laboratory Steel Furniture Finish

2.6. SUSPENDED BASE CABINETS / WALL

1. Design and construction shall be as in section 12310 - Laboratory Metal Casework.
2. Suspended cabinets shall be supported using hook shaped rails attached near the front and rear of the cabinets. It shall be possible to remove and relocate a fully loaded cabinet to any position between legs.
3. Suspended wall cases: Provide a system of cold-rolled steel hanger rails attached to the casework frames, to be vertically adjustable on one inch increments. Installation and removal to be accomplished without the use of tools.

2.7 STEEL FURNITURE FINISH

1. Metal finish to be as in Appendix 1 - Laboratory Steel Furniture Finish.

PART 3: EXECUTION

3.1 INSTALLATION

1. Install casework within system, align and set level with levelling devices, in accordance with shop drawings.
2. At wall locations secure wall cabinets to face of finished walls and partitions, applying self-tapping screws through wall finish material into each concealed stud flange.
3. Install components to effect a secure, neat and complete installation.

END OF SECTION