

FULL DETAILED SPECIFICATION

SECTION 12310.6

LABORATORY BENCH SYSTEM

(Sigma Frame[™])

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

- .1 This Specification identifies the minimum material and construction standards that are required to deliver a quality installation of laboratory furniture. Furniture shall be supplied in accordance with the requirements of this Specification. The casework identified in this Specification includes metal furniture, metal shelving, and the miscellaneous metal panels and other related components as identified on the Drawings and that are necessary to provide a complete installation.

1.2 QUALIFICATIONS OF MANUFACTURERS

- .1 Work of this Section shall be fabricated by one manufacturer by skilled craftsmen in accordance with the best industry practice in shop of a company specializing in Work specified.
- .2 Manufacturer shall have minimum of 5 years of continued experience, having successfully completed other laboratory projects of similar or greater magnitude.

1.3 STANDARD OF QUALITY

- .1 The metal furniture specified herein and Section 11610 Fume Hoods shall be based on Mott Manufacturing Sigma Systems™. Bids shall be based on and meet or exceed the products and execution described.

1.4 WARRANTY

- .1 Manufacturer shall submit warranty statement with proposal.

PART 2: PRODUCTS

2.1. STEEL LABORATORY CASEWORK

- .1 **Basic Materials:**
 - .1 Sheet Steel: Mild steel, cold rolled ASTM A366/A366M-91, Grade C or higher.
 - .2 Galvanized Sheet Steel: Commercial quality to ASTM 653, Designation Z275.
 - .3 Stainless Steel: Sheet: ASTM A167, Type 316 alloy. Finish: AISI No. 4 Brushed finish.

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- .4 Stainless Steel: Sheet: ASTM A240m, Type 304 alloy. Finish: AISI No. 4 Brushed finish.
- .5 Glass: Clear Float, 6 mm and 3 mm thick, Glazing Quality. Laminated Glass: CAN/CGSB-12.1-M90, Type 1 with clear PVB interlayer.

.2 **Cabinet Hardware:**

- .1 Pulls: 4" satin finish aluminium
- .2 Door Hinges: Provide five knuckle-type barrel door hinges of 14 Ga steel.
- .3 Drawer and Hinged Door Bumpers: Two, white rubber, press-fit bumpers per door or drawer
- .4 Sliding Glass Door Bumpers: Provide 1" diameter, 1/8" thick felt bumper pads, adhesive on one side.
- .5 Shelf Clips: Clips for base cabinets, wall hung and tall storage cabinets; zinc-finished steel.
- .6 Sliding Door Track (Metal): Upper track shall be galvanized or stainless steel double-track, "V" grooved sliding metal and framed glass doors, painted to match furniture, with nylon-rimmed ball-bearing rollers.
- .7 Leveller Bolt: Provide 3/8" dia. hex-head leg leveller bolt with hex drive point.
- .8 File Drawer Slides, 20" full-extension, load capacity 100 pounds.

2.2. **SUSPENDED CABINET CONSTRUCTION**

- .1 Materials and Thicknesses: Use following minimum U.S. standard steel thicknesses for furniture manufacturing:
 - .1 14 Ga drawer slides, horizontal suspension channels and side suspension channels.
 - .2 16 Ga for tubular rails, legs for tables, gusset plates, cabinet top and intermediate horizontal rails.
 - .3 18 Ga for door and drawer fronts, cabinet floor, cabinet sides, vertical front members, cabinet toe kick, service cover panels, table and kneehole frames, front rails, gable legs and dust caps, false panels, furring and filler panels.

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- .4 20 Ga for drawer backs, door backs, vertical closure channel, removable back panels, shelves, drawer bodies, drawer dividers, bin bodies, and pull-out shelves.
- .2 **Basic Suspended Cabinet Frame:**
 - .1 Provide one-piece die-formed cabinet bottom construction with return side flanges turned up.
 - .2 Cabinet bottoms shall be turned down at front and back to form 1-1/4" "U" channel.
 - .3 Provide additional vertical 3" "HAT" shaped channels, spot-welded over the rear vertical 3" corner returns for 15", 18", 20-3/16, 24", 30", 36", 39-3/8", 42", 48" and 58" cabinets. Channel shall be provided with 3/16" prepunched holes to receive shelf clips, and slotted holes to receive drawer suspension tracks. Cabinets 30" wide and larger shall be provided with intermediate 4-5/8" "HAT" channels to brace cabinet and accept shelf clips and drawer tracks.
 - .4 Front vertical posts shall form inboard flush front construction for doors and drawers acting as the cabinet main member side gable tying the cabinet bottom and horizontal member together to form a rigid case.
 - .5 Doors and drawers shall overlap top intermediates and floor horizontal members.
 - .6 Provide an formed channel at the top front and rear of cabinet that shall interlock with bench system support channels.
 - .7 Cabinet construction shall be electro spot-welded to form a strong well-fitted, one-piece unit.
 - .8 Exposed horizontal structural cabinet members between doors and drawers shall be unacceptable.
- .3 **Suspended Cabinet Components:**
 - .1 Provide removable back panels for cupboard and drawer sections of base cabinets, with the lower flange dropping in place and fitting over the floor return. Provide finger pull for ease of removal without tools. Provide Fixed back panels and security panels on cabinets requiring locks
 - .2 Shelving edges; turned down on all four sides 1", and returned under on front and back 1". Shelves 36" and longer shall be provided with 'HAT' channel reinforcement at front edge.
 - .3 **Doors:**

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- .1 Fabricate doors of 2 telescoping metal panels, 3/4" thick, painted internally with a sound-deadening material extending continuously full-width, and top to bottom. Provide positive door closer by nylon roller friction catches, with 2 rubber bumpers.
- .4 **Drawers:**
 - .1 Fabricate drawer fronts of 2 telescoping metal panels painted internally, and totally filled with sound-deadening material to eliminate possible drumming effect. Form removable outside panel with lip to fit over inside panel on top edge, and to lock into position at bottom with locking tabs to form a rigid, one-piece 3/4" thick drawer front.
 - .2 Provide drawer operation on 1" diameter nylon wheels with steel ball bearings, with 1 wheel on drawer slide and 1 on drawer suspension track. Mechanically fix and lock drawer suspension tracks to vertical posts. Drawer suspension tracks shall provide self-closing feature for last 6" of travel.
 - .3 Drawer body shall consist of one piece construction including the bottom, two sides, back and inner front flanged end which shall be welded to the interior drawer front head. Drawer bodies shall be fully cove cornered at interior bottom on all 4 sides for easy cleaning, and have a reinforcing curl on top edges.
 - .4 Provide built-in stops to prevent inadvertent removal of drawers, with allowance for drawer to be removed by lifting front of drawers and pulling out.
- .5 Provide drawer pulls in central location of drawer face.

2.3. SERVICE CORE AND BENCH FRAME

- .1 Materials and Thicknesses: Use following minimum U.S. standard steel thicknesses for furniture manufacturing:
 - .1 11 Ga - "U" brackets, box brackets.
 - .2 14 Ga - Front cabinet support rails, rear cabinet support rails
 - .3 16 Ga - Vertical service core post, vertical island and wall posts, fixed bench frames, adjustable bench frames
 - .4 18 Ga - Upper service cover panels, lower service cover panels, end close off panels, service drops, adjustable service cover support rail, service cover support rails

.2 Construction

- .1 The bench frame system shall provide complete independent rigid support for work surfaces, under counter suspended cabinets, over head shelving, service cover panels, sinks and all mechanical and electrical line work as necessary to make the assembly operation.
- .2 The framing system shall accommodate the following design concepts:
 - A. Separate service strip consisting of a flat counter top 24" deep with a 6" deep service strip top with integral 6" high back splash.
- .3 The system shall allow the addition, relocation or removal of suspended base cabinets, the removal of the entire leg frame module including base cabinets and work surfaces, leaving intact the separate service strip with all its service fittings, service lines and cover panels as a finished operational component.
- .4 The Standard Bench module shall be based on a standard 60" nominal inside dimension to accommodate any combination of cabinets up to 60" in width. It shall be possible to make 24", 36", 48" or custom length modules where necessary to suit room dimensions.

.3 Components

.1 Leg Frames

(A) Each leg frame shall be fabricated from die-formed components. All welds are to be ground smooth ready for painting. Each leg frame shall have a 3/8 diameter levelling bolt, a slip on wrap around black PVC shoe and two welded studs for securing to service strip.

(B) Adjustable height leg frames shall be constructed as specified in .3.1(A) with the following additions. The front leg shall be constructed of two telescoping frames on 1/2" centres with a total height adjustment of 6" Telescoping frames are to be locked in position with a spring loaded pin, accessible from underside of the leg frame.

.2 Cabinet Support Front Rail

Front cabinet support rail shall be fabricated in a channel formation to be secured to the adjacent leg frames. The bottom edge of the rail shall be designed to engage with the front rail of the suspended base cabinet. The outer rail shall fit flush with the face of the cabinet. Flat ledges above the cabinet that will collect dust are not acceptable.

.3 Cabinet Support Front Rail

Rear cabinet support rail shall be fabricated in a channel formation to overlap the adjacent leg frames. The bottom edge of the rail shall be designed to engage with the front rail of the suspended base cabinet.

.4 Service Cover Support Rails

Service cover support rail shall be fabricated in a "Z" channel formation to be secured to the service strip. The bottom edge of the rail shall be designed to suspend the top edge of the service cover panel.

.5 Service Cover Panels

Rear cabinet support rail shall be provided between all leg frames to totally enclose the service strip space. Service Cover Panels shall be constructed in two sections. The lower section shall be fixed in place to the rear of the service strip. The upper section shall be easily removable, without the use of tools. Each panel shall be formed to fit between each leg frame and to be supported in place by the service cover support rail.

.6 End Closure Panels

End closure panels shall be used to close off the ends of the service strip. End closure panels for wall benches shall be flanged on one edge, the other unformed edge shall slide in to a slip joint angle secured to the wall. Island assemblies shall have both edges flanged for securing to the service strip.

.7 Island Vertical Post Structure:

(A) Provide a two-piece telescoping upper vertical slotted post 1-5/8" by 1-5/8" sleeved into a 1-7/8" by 1-7/8" lower post. . Upper and lower section shall be through bolted with 3/8" diameter zinc plated bolts to allow for field levelling.

(B) The vertical post system shall be attached with an upper horizontal "u" bracket, lateral "u" strut, 3/8" zinc plated bolts and spring nut. The lower horizontal box bracket shall be lagged to the floor, and attached to the furniture system with 3/8" zinc plated bolts and spring nuts.

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(C) The vertical post system shall be slotted on 1" centres to except a notched shelf bracket. Shelves shall be fully adjustable without the use of tools.

(D) The shelf bracket shall be notched to fit in to the slotted post, and positively lock when weight is applied. The bottom shall be flanged to support the horizontal shelf, and will be tabbed and pre punched to mount the shelf.

(E) Shelves shall be of high pressure plastic laminate, painted steel, epoxy or similar material to support the desired weight. The rear of the shelf shall be blocked off with a painted steel angle running the open width of the shelf.

.8 **Wall Vertical Post Structure:**

(A) Provide a one piece vertical slotted post 1-5/8" by 13/16" by 36" or 48" as required.

(B) The vertical post system shall be through secured to the wall material with appropriate fasteners to suit wall conditions.

(C) The vertical post system shall be same as 2.3.3.7 (C) above

(D) The shelf bracket shall be the same as 2.3.3.7 (D) above.

(E) Shelves shall be the same as 2.3.3.7 (E) above.

.9 **Service Drop Structure:**

(A) Provide die-formed enclosed structure flange at the bottom to mount to the counter top. The front shall be formed and notched, and similar in construction to the base cabinets, and will except a removable door, Upper and lower Panel. The front of drop shall be open to allow for existing services to access the interior of the structure.

(B)The service drop shall be painted on all surfaces to match cabinet .

(C) No exposed fasteners are allowed. Upper and lower panels shall be fixed to the drop with zinc plated screws through the side flanges of the opening, The door shall be notched and formed to fit securely into the upper panel, and drop securely into the lower panel. Door shall sit flush with face of service drop, and will be removable without the use of special tools.

2.6 STEEL FURNITURE FINISH

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Paint Performance data is available in Appendix 1

END OF SECTION