

SECTION 12 35 53.13 – Metal Laboratory Casework

Part 1 – DESCRIPTION OF WORK

1.0 SUMMARY AND SCOPE

A. Section Includes:

1. Using **EAGLE MHC, Inset Stainless Steel Laboratory Furniture** as a steel casework specification standard, furnish all cabinets and casework, including tops, ledges, supporting structures, and miscellaneous items of equipment as listed in these specifications, equipment schedules, and drawings. Include delivery to the building, set in place, level, and scribe to walls and floors as required. Furnish and install all filler panels, knee space panels and scribes as shown on drawings.
2. Furnish and deliver all utility service outlet accessory fittings, electrical receptacles and switches as listed in these specifications, equipment schedules, and drawings, as mounted on the laboratory furniture. All plumbing and electrical fittings, not preinstalled in equipment, shall be packaged separately and properly marked for delivery to the appropriate contractor.
3. Furnish and deliver, for installation by the mechanical contractor, all laboratory sinks, cup sinks or drains, drain troughs, overflows and sink outlets with integral tailpieces, which occur above the floor, and where these items are part of the equipment or listed in these specifications, equipment schedules, and drawings. All tailpieces shall be furnished less the couplings required to connect them to the drain piping system.
4. Furnish service strip supports where specified, and set in place, service tunnels, service turrets, supporting structures and reagent racks of the type shown on the drawings.
5. Removal of all debris, dirt and rubbish accumulated as a result of the installation of the laboratory furniture to an onsite container provided by others, leaving the premises broom clean and orderly.

B. Related Divisions:

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|---------------------|-------------------------------------|
| 1. Divisions 5 & 6: | Behind-the-Wall Blocking and Studs |
| 2. Division 9: | Base Molding |
| 3. Division 11: | Chemical Fume Hoods |
| 4. Division 22: | Plumbing |
| 5. Division 26: | Electrical Fittings and Connections |
| 6. Division 27: | Communications |

C. Related Publications:

1. SEFA 3 - Scientific Equipment and Furniture Association
2. SEFA 8M - Scientific Equipment and Furniture Association
3. ASTM D522 - Bending Test

1.01 BASIS OF WORK AND ALTERNATE PROPOSALS

- D. Proposals are invited from alternate manufacturers only if they comply with the minimum design requirements and the minimum performance requirements. A notarized letter stating full compliance must be included in alternate proposals signed by an officer of the manufacturer to ensure compliance. It is the intent of this specification for EAGLE MHC, Inset Stainless Steel Laboratory Furniture to be the standard of construction for the laboratory furniture. The construction standards of this product line shall provide the basis for quality and functional installation. All quotations from a manufacturer other than Eagle MHC shall contain a review of the following capabilities:
1. List of shop facilities
 2. List of engineering and manufacturing personnel
 3. Proof of financial ability to fulfill the contract
 4. List of a minimum of ten (10) installations over the last five (5) years of comparable scope
 5. Proof of project management and installation capabilities
 6. SEFA member in Good Standing
- E. The selected manufacturer shall warrant that all products be free of defects in material and workmanship for a period of one (1) year. The period shall start at the date of acceptance or occupation, whichever comes first. Purchaser shall notify the manufacturer's representative immediately of any defective product. The manufacturer shall have a reasonable opportunity to inspect the goods. The purchaser shall return no product until receipt by purchaser of written shipping instructions from the manufacturer.
- F. Supply all equipment in accordance with this specification. The offering of a product differing in materials and construction from this specification requires written approval from the owner/architect. This approval must be obtained seven (7) days before the quotation deadline. Procedures for obtaining approval for an alternate manufacturer are defined in section 1.03.B in this specification.
- G. General Contractors should secure a list of approved laboratory furniture manufacturers from the architect as a protection against non-conformance to these specifications.
- H. Participants in the quotation process have the option of clarifying deviations to the specified design, construction, or materials. Without such clarifications, sealed quotations to the owner or owner representative will be construed as being in total conformance to the requirements of the specification.
- I. The owner/owner's representative reserves the right to reject qualified or alternate proposals and to award based on product value where such action assures the owner greater integrity of product.

1.02 CASEWORK DESIGN REQUIREMENTS

- A. Inset construction: Surfaces of doors and drawers shall be inset to the cabinet

ends, top and bottom rails. Horizontal and vertical case shell members (panels, top rails and bottoms) shall be in full view around drawer and door fronts. Reveals shall be a uniform 1/8", vertically and horizontally, between adjacent drawer and door's fronts. Reveals shall be a uniform 1/8" (3mm) horizontally between drawer and door fronts and panels, top rails, and bottoms.

B. Appearance: Front width of end panels 3/4" (18mm) and front height of top and bottom members 1" (25mm).

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 units: Easily cleanable, flush interior. Base cabinets, 30" to 48" wide, with double swinging doors shall provide full access to complete 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: Welded joints all four sides of case opening 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 without objectionable distortion of interference with door and drawer operation.
2. Suspended units: 300 lbs.
3. Drawers in a cabinet: 100 lbs.
4. Utility tables (4 legged): 300 lbs. (with levelers)
5. Hanging wall cases: 300 lbs.
6. Load capacity for shelves of base units, wall cases and tall cases: 40 lbs. per square foot, maximum load – 200 lbs. up to 48" wide.

1.04 WORKSURFACES

A. Materials:

1. Epoxy Resin Tops
2. Plastic Laminate
3. Stainless Steel
4. Phenolic Resin Tops

1.05 SUBMITTALS

- A. Shop Drawings: Provide 3/4" = 1'-0" scale elevations showing plans, elevations, ends, cross-sections, service run spaces, location and type of service fittings, rough-in and anchor placements, tolerances and clearances. 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 for mechanical and electrical services when required.
- 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. Samples: Samples from non-specified manufacturers will be required and reviewed per specification. Samples shall be delivered, at no cost to the architect or owner, to a destination set forth by the architect or owner. This must be done seven (7) days before quotation deadline as a condition of approval of each bidder. Samples shall be full size, production type samples. Miniature or "Show Room" type samples are not acceptable. Furnish the following:
 - 1. One 18" combination (1) drawer and (1) cupboard base unit showing complete construction details, including (1) shelf
 - 2. One 24" mobile base cabinet with (2) cupboard doors
 - 3. One extra base unit shelf of sufficient size to perform finish requirement tests
 - 4. One sample of all top materials shown or called for, of sufficient size to perform finish requirement tests
 - 5. Sample of all mechanical service fittings, locks, door pulls, hinges, and interior hardware

The architect or owner will retain the above samples of the successful manufacture to insure that material delivered to jobsite conforms in every respect to the samples submitted.

- D. Finish Samples: Submit 4 x 6 inch samples of each color of finish for casework, work surfaces and for other pre-finished equipment and accessories for selection by Architect/ Owner.
- E. Test Reports: Submit a full test report from a SEFA approved independent laboratory certifying SEFA 8M compliance.

1.06 QUALITY ASSURANCE

- A. Single source responsibility: Casework, work surfaces, equipment and accessories shall be manufactured or furnished by a single laboratory furniture company.
- B. Casework construction and performance characteristics shall be in full compliance with SEFA 8M Metal standards.
- C. Manufacturer's qualifications: Modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory grade 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.
- D. Installer's qualifications: Factory trained and certified by the manufacturer.
- E. 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 REFERENCE STANDARDS

- A. All casework, work surface and service fixture construction and performance characteristics shall be in full compliance with SEFA (Scientific Equipment and Furniture Association) standards. At the owner's request, independent, third party testing must be submitted validating compliance and adheres to the architectural specifications.

SEFA 1.2 – Fume Hoods
SEFA 2.3 – Installation of Scientific Laboratory Furniture and Equipment.
SEFA 3 – Work Surface.
SEFA 7 – Laboratory and Hospital Fixtures
SEFA 8 – Laboratory Furniture

1.08 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".

1.09 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 weather tight.
 2. Ceiling, overhead ductwork and lighting are installed.
 3. All painting is completed and floor tile is installed and cleaned.

PART 2 – PRODUCTS

2.00 MANUFACTURERS

- A. The basis of this specification is steel casework manufactured according to the standards used by Eagle MHC. The specified design is Eagle MHC Inset Casework. All laboratory equipment covered by the specification shall be the product of one manufacturer assuring single-source responsibility. All quotations from a manufacturer other than Eagle MHC shall contain a review of the following capabilities:
- 1) List of shop facilities
 - 2) List of engineering and manufacturing personnel
 - 3) Proof of financial ability to fulfill the contract
 - 4) List of a minimum of ten (10) installations over the last five (5) years of comparable scope
 - 5) Proof of project management and installation capabilities
 - 6) SEFA member in Good Standing
- B. The selected manufacturer shall warrant that all products be free of defects in material and workmanship for a period of one (1) year. The period shall start at the date of acceptance or occupation, whichever comes first. Purchaser shall notify the manufacturer's representative immediately of any defective product. The manufacturer shall have a reasonable opportunity to inspect the goods. The purchaser shall return no product until receipt by purchaser of written shipping instructions from the manufacturer.

2.01 MATERIALS

- A. Stainless Steel: ASTM A240, type 304 with brushed #4 finish.
- B. Minimum gauges:
1. 20 gauge: Exterior/interior drawer fronts, interior door panels, scribing strips, filler panels, enclosures, drawer bodies, shelves, security panels and sloping tops.
 2. 18 gauge: Door/Drawer assemblies, , ends, bottoms, bases, backs, vertical posts, uprights, and access panels, scribes and fillers.
 3. 16 gauge: Top front rails, case tops, top rear gussets, intermediate horizontal rails, table legs and frames, leg rails and stretchers.
 4. 14 gauge: Drawer mounting rails, door and case hinge reinforcements and front corner reinforcements.
 5. 12 gauge: Table leg corner brackets and gussets for leveling screws.
- C. Glass for glazed swinging and sliding doors and/or unframed doors:
[Specifier's Option]
- * ¼ inch Clear Float Glass (framed)
 - * ¼ inch Safety Glass - Laminated (framed)
 - * ¼ inch Safety Glass - Tempered (unframed)
- D. Hardware and Trim:
1. Drawer and Door Pulls: Stainless 4" wire pull

2. Hinges: Institutional type, five knuckle projecting barrel hinges, minimum 2-1/2" long, type 304 stainless steel. 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. Independently Tested to the SEFA 8M 200 pound static load and 100,000 cycles without failure or permanent deformation
3. Drawer Slide: Drawer Slide: Heavy duty ball bearing slides, rated for SEFA 8M Laboratory 100 lb. Load – Independent tested with 100 pound load per SEFA 8M for 50,000 cycles at a rate not to exceed 10 cycles per minute without failure or permanent deformation. Provide full extension slides for full access and operation
4. Locks: As required per project specification.
5. Shelf Adjustment Clips: Shelf adjustment clips shall be die formed, stainless steel.
6. Leg Shoes: Leg shoes shall be a pliable, black vinyl material and shall be provided on all table legs, unless otherwise specified, to conceal leveling device. Use of a leg shoe, which does not conceal leveling device, will not be acceptable.
7. Base Molding: Base molding shall be provided by others.
8. Label Holders: Label holders, where shown or called for, shall be self-adhesive type aluminum with satin finish and designed for 2-1/2" x 1-1/8" cards, unless otherwise specified.
9. Number Plates: Number plates, where shown or called for, shall be self-adhesive type aluminum with indented black lettering.
10. Door catches: Adjustable type
11. Elbow catches: Spring type of nickel plated steel, with strike of suitable design.
12. Sink Supports: Sink supports shall be the hanger type, suspended from end panels of sink cabinet by four 1/4" dia. rods, threaded at bottom end and offset at top to hang from two full-depth reinforcements, welded to the top of end panels. Two 3/4" x 1-1/2" x 12 gauge channels shall be hung on the threaded rods to provide an adjustable sink cradle for supporting sinks.
13. Support Struts: Support struts shall consist of two 16 gauge channel uprights fastened top and bottom by two adjustable 12 gauge "U" shaped spreaders, each, 1-1/2" x length required, formed from galvanized steel. Struts shall be furnished to support drain troughs, and to support worktop at plumbing space under fume hood superstructures or other heavy loads. Support struts can be furnished with hangers at extra cost when specified, to support mechanical service piping and drain lines.

2.02 CASEWORK FABRICATION

- A. Inset – Square Edge
Drawers and doors, when closed, shall be recessed to create an overall flush face with 1/8" reveals. Designed and finished to eliminate sharp raw edges of steel. The corners

of the door shall be welded and ground smooth.

- B. Steel Drawer Fronts: 3/4" thick, double wall stainless steel construction, and sound deadened.
- C. Drawer bodies: Shall be made in one-piece construction including the bottom, two sides, back and front. They shall be fully coved at interior bottom on all four sides for easy cleaning. The top front of the inner drawer body shall be offset to interlock with the channel formation in drawer head providing a 3/4" thick drawer head.
- D. Provide drawer with rubber bumpers. Friction centering devices are not acceptable.
- E. Provide security panels for drawers with keyed different locks.
- F. File drawers: Provide with 150# full extension slides for full access and operation.
- G. Steel Solid Panel Doors: 3/4" thick, double wall, steel construction with sound deadening. Hinges with screws to internal 14 gauge reinforcing in case and door. Hinges shall be removable; welding of hinges not acceptable. Doors shall close against rubber bumpers.
- H. Shelves:
 - 1. Form front and back edges down and back 3/4". Form ends down 3/4".
 - 2. Reinforce shelves over 36" long with welded hat channel reinforcement the full width of shelf.
 - 3. Pull out shelves: Same suspension as specified for drawers.
- I. Base molding: 4" high, to be furnished and installed by flooring contractor.
- J. Corner base guards: 4" high #304 stainless steel corner guards.
- K. Sink Supports: Sink supports shall be the hanger type, suspended from end panels of sink cabinet by four 1/4" dia. rods, threaded at bottom end and offset at top to hang from two full-depth reinforcements, welded to the top of end panels. Two 3/4" x 1-1/2" x 12 gauge channels shall be hung on the threaded rods to provide an adjustable sink cradle for supporting sinks.
- L. Support Struts: Support struts shall consist of two 16 gauge channel uprights fastened top and bottom by two adjustable 12 gauge "U" shaped spreaders, each, 1-1/2" x length required, formed from galvanized steel. Struts shall be furnished to support drain troughs, and to support worktop at plumbing space under fume hood superstructures or other heavy loads. Support struts can be furnished with hangers at extra cost when specified, to support mechanical service piping and drain lines.

2.03 TABLE FRAMES

- A. Table frames: 5" 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 and a black, coved vinyl or rubber leg shoe, 2" in height.
- D. Knee space frame: 2" high apron where no drawers required.
- E. Leg rails and stretchers: Channel formed.

PART 3 – EXECUTION

SITE EXAMINATION

- A. The owner and/or his representative shall assure all building conditions conducive to the installation of a finished goods product; all critical dimensions and conditions previously checked have been adhered to by other contractors (general, mechanical, electrical, etc.) to assure a quality installation.

3.01 INSTALLATION

- A. Casework installation:
 - 1. Set casework components plumb, square, and straight with no distortion and securely anchored to building structure. Level as required using cabinet levelers.
 - 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.