

TECHNICAL SPECIFICATIONS FOR LABORATORY FURNITURE AND FUME HOODS

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MANDATORY REQUIREMENTS

1. The bidder should be a manufacturer registered in India or their authorized dealer or should be 100% subsidiary in India of parent company, if any
 2. Joint ventures are not accepted
 3. The bidder should have had an Office in the city of Kolkata for the last 7 years for faster and better serviceability
 4. If an authorized dealer is bidding for the parent company then the authorized representative should be having an office for the last 5 years
 5. Should have satisfactorily completed installation of laboratory furniture works in India only as mentioned below during the last Seven years ending last day of the month April 2023:
 - Two similar works costing not less than Rs. 6.00 Lacs each or
 - One similar work costing not less than Rs. 8.00 Lacs“Similar work” shall mean Lab furniture comprising of fume hoods, lab work benches, electrical, LAN, gas & utility distribution, etc.
- Required:** Documentary Evidence
6. Bidder or their OEM Should have had average annual financial turnover of Rs. 30 Crore on manufacturing, supply & installation of Lab furniture works during the last three years ending 31st March 2023. (Scanned copy of Certificate from Chartered Accountant to be furnished)
 7. The bidder or their OEM should have in house ASHRAE 110: 1995 and EN 14175:2003 fume hood test facility. Photographs of this test facility must be attached to the technical bid
 8. SEFA Membership Certificates for Last four years on a continuous basis
 9. **Test Report:** Welded Cabinets should be third-party tested for SEFA 8M by NABL approved Lab and SEFA 10 class 7/8 for Adaptable Laboratory Furniture.
 10. **Test Report:** Fume Hood should be type-tested as per EN 14175 by a third-party
 11. **Test Report:** Fume Hood should be type-tested as per ASHRAE 110 by a third-party
 12. **Membership Certificate:** The bidder/parent company should possess the key professional staff, at least one, in his organization with good knowledge of codes and standards like SEFA, OSHA, EN 14175, ASHRAE 110 and NFPA 45. Such professionals should have a valid membership of SEFA and in addition membership of any of the international governing standards
 13. ISO 9001-2008, ISO 14001-2004, BS OSHAS 18001-2007 (For Design, Development, Manufacturing, Supply and servicing)

LABORATORY FURNITURE

Scope of Work

- Supply and Installation of Laboratory Workbenches/Storage units including granite worktops and other supporting structures/hardware's based on the specified Make List. This includes delivery to INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE, unloading the consignment and transporting it from the place of storage to the installation site.
- Supply & Installation of all utility service outlets and accessory fittings, electrical receptacles, electrical switches & fittings identified on drawings as mounted on the laboratory furniture.
- Supply & Installation of service structures where specified and setting in place reagent shelves of the type shown in the drawings.
- Removal of debris, dirt and rubbish accumulated as a result of installation/commissioning of the laboratory furniture and accessories and leaving the premises broom clean and orderly.

Basis of Work

- It is the intent of this specification to use specified make list as the standard of construction for steel laboratory furniture. The construction standards of this product line shall provide the basis for quality and functional installation.
- INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE 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.
- Participants in the quotation process have the option of clarifying deviations to the specified design, construction or materials. Without such clarifications, sealed quotations to INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE will be construed as being in total conformance to the requirements of the specification.

Quality Assurance

- The steel laboratory furniture manufacturer shall provide work tops and casework all manufactured & shipped with proper packing & should take the full responsibility of the entire Scope of Works as specified in the tender.
- General Performance: Furniture shall meet the performance requirements and should follow SEFA 8 guidelines

Submittals

- Manufacturer's Data: Submit installation instructions for each type of casework.
- Samples: Samples if called for will be reviewed for color, texture, and pattern only.
- Shop Drawings – Submit shop drawings for furniture assemblies showing the required details.

Products/Manufacturers

- The selected manufacturer must warrant for a period of one-year starting (date of acceptance or occupancy, whichever comes first that all products sold under the contract referenced above shall be free from defects in material and workmanship.
- INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE will retain the above samples of the successful manufacturer or owner to insure that material delivered to jobsite conforms in every respect to the samples submitted if need be.

TECHNICAL SPECIFICATIONS

C-FRAME SYSTEM

All C-Frames assemblies should be manufactured from standard hollow metal sections; confirming to I.S. Code 7138:1973 (Indian Standard specification for steel tubes for furniture) and all sheet metal components should be of CRCA confirming to IS Code 513:1994.

The suspended under-bench welded units should be supported on heavy-duty steel frames fully carrying the load of worktops. Its superior strength combined with aesthetically appealing end caps shall give maximum flexibility and modularity while making a layout. C-frame should be constructed from a rectangular pipe with a cross section of 60mm x 30mm and should be 2 mm thick and should be without a vertical front leg to give a clean look. This shall provide more knee space or leg space and would facilitate uninterrupted lateral movement of the under-bench units within the bench run. The C-frame legs should be supplied with adjustable feet (tolerance from -5mm to +20mm) to correct the unevenness of flooring. The tubular enclosed type construction shall discourage dust accumulation and unwanted development of bacteria & fungus.

Drainage gradient should be well adjusted throughout the length of table and should have horizontal supports for drainage systems. The structure should have a removable back panel to provide access for maintenance throughout the length of table. The C-frame shall also have skirting at back bottom side. It should be suitable for sitting and standing nominal heights of 750mm & 900mm respectively. The nominal table depths should be 620 mm, 770 mm and 920 mm for wall side and 1240mm, 1540mm, 1840mm for Island tables. The Corner Units shall fit well with 770mm & 920mm table depths. All frame-work is should be pre-treated with superior pure epoxy powder coated finish.

The C-Frames should be for suspended storage cabinets or for cabinets that can slide through-and-through from one end of the workbench to the other through C-Frames (configuration depends upon the Schedule of Quantities)

HORIZONTAL MEMBERS

These should be made from rectangular pipes of 2mm thickness. Cross-sectional dimensions of the pipe should be 60 x 30 x 2 mm. They should be made of CRCA MS and coated with pure epoxy powder. These connect two C-Frames together as shown using C-clamps/U-clamps. Together with the C-Frames and Horizontal Members connected together, the skeletal structure of the work-bench is formed on which the worktop can be placed and the hanging-type storage cabinets can be suspended. Horizontal Members determine the width of the lab workbench as they form the member (distance) between two adjacent C-Frames. They should be available in various widths of 600, 750, 900, 1050, 1200, 1350, 1500, 1650, and 1800

Removable Back Panels

These cover panels cover the service lines that run behind them. These should be easily removable (unclipped) and the service line be accessed for maintenance. This allows the equipment on workbench to remain undisturbed They should be made of CRCA MS with pure epoxy powder coating and are of 1mm thickness

COVER PANELS

All side cover panels and back panels, filler panels should be made from CRCA MS panels of 1.0mm thickness with pure epoxy powder coating

REAGENT SHELVES

Fixed-Type reagent shelves should be provided. It should be complete modular design consisting of 2 stage horizontal storage shelves made of CRCA MS with pure epoxy powder coating and having cutouts

for electrical switches and sockets. It should have provision for placing Granite pieces (as per requirement in BOQ)

WELDED UNDER-BENCH STORAGE CABINETS

Welded cabinet body should be of flush face construction with intersection of vertical and horizontal members like LH and RH side panel along with front horizontal channel, back panel and bottom panel. It should be relocated anywhere easily as it is an independent unit. Cabinet should be of square non-sharp edge construction. Doors should be assembled with SS-304 hinge assembly. Removable back panel should be provided to easily access the service lines running behind the cabinet benches. Intermediate horizontal channels should be provided between door and drawer. Shelf should be eight bend panel with 20mm height. Drawer tray should be of single piece construction. Drawer should be well supported on LH and RH ball slide suspension system. Steel door and drawer front is of double wall construction with sound dampening material filled inside. Doors should be easily removable and hinges should be easily replaceable. Knee space panel should be in 22 gauge construction.

Storage Units to be of the followings shall be Suspended Type.

(Depending upon the requirement in the schedule of quantity)

Dimensions: W=300/450/600/750/900 mm, D = 530mm, H = 635/485 mm. **Configurations:** 1 Shutter/ 2 Shutters + No Drawer/1 Drawer/2 Drawers/3 Drawers, **MOC:** MSCRCA: IS – 513 (1994), **Thickness:** LH/RH side panels, shutter front, Bottom panel, Top front, Drawer separator, shelf, Alignment channel should be of 1.2mm thk. Removable Back panel, Shutter cover, Fr. Rack strip, Top cover panel should be of 0.8mmthk. **Finish:** Powder coating pure epoxy, thickness 40-50 microns. **Handle:** Anodized Aluminum Recessed-Type, **CTC:** 160.0mm. **Lock:** Units have a locking facility with 180° and 10 lever cam lock mechanism (except for sink and corner unit). **Hinge:** Knuckle-butt type SS Hinge. **Screw:** SS304. Shutter should be of twin-type construction with sound dampening effect using profeel. Shutter cover should be equipped with Bump on for sound dampening. Ball Slide: 500mm Length (required only for drawer unit). Shutter should have provision of roller catch

WORKTOP

It should be 19mm (+/- 2mm) thick Jet Black Granite worktop. The exposed edges of the worktop should be chamfered and smoothened. The bottom of the worktop should be polished and there should be a V-groove throughout the length of the exposed edges to protect the cabinets from coming in contact with the spillages. The overhang on the storage cabinet is 25 mm at the front side and 30 mm at the sides. The backing material used is a neoprene mat of 6 mm thickness. A representation the worktop edges is shown as under

TECHNICAL SPECIFICATIONS - FUME HOODS

Superstructure Frame – It should be a free-standing rigid panel structure of steel (G.I.)

Interior Walls - Double wall ends, not more than 6" wide, should be provided to maximize interior working area. The area between the double wall ends should be closed to house the remote control valves. Cut-outs should be provided inside the fume hood for service line accessibility. The same to have a cover with a fastener free design. The vertical fascias shall contain the required service controls, electrical switches and receptacles.

Airfoil - A streamlined airfoil should be integral at the bottom of the hood opening on bench and distillation hoods. This foil shall provide a nominal 20mm open space between the foil and the top front edge of the work surface to direct an air stream across the work surface to prevent back flow of air. The sash should be provided with a separate handle which also provides for air flow when in completely closed position. The foil should be of 1.2mm steel to resist denting and flexing.

Baffles - A stable, non-adjustable baffle with a single slot on the back baffle to aid in distributing the flow of air into and through the hood. The baffle should be spaced out from the back liner and should be

removable for cleaning.

Duct Collar - A 8"-10" diameter polyethylene funnel shaped rectangular duct collar should be located in the top of the hood plenum chamber.

Lighting- Two CFL tubes of 40 watts each should be provided in the fume hood. The lighting fixture should be completely outside the fume hood area.

Sash - A combination sash should be provided. The sash should have horizontal sliding glass panels in a vertical rising steel frame. The bottom of the sash frame should have a full length metal handle. The sash track has minimum protrusion to avoid any kind of turbulence. The sash should be counterbalanced with a weights to prevent tilting and binding during operation. The glass panels should be 5mm toughened glass mounted in an levelled channel with roller for smooth operation.

Plumbing Services - Utility services like Vacuum, Nitrogen, Compressed Air & Raw water (as per Schedule of Quantity) shall consist of remote control valves as selected located within the end panels, controlled by in and out facility with flexible hose passing through the side panels of the hood, with color coded plastic handles. Interior fitting for gases and water should be with powder coated brass. All gas valves for regular lab gases to have standard needle valve and push and turn type arrangement for all burning gases should be supplied. All supplied valves to clear the following pressure test conditions: Gas Fittings – 7 bar, Water fittings – 10 bar.

Electrical Services – The hood superstructure should be fully wired and should have a control box with MCB blower starter all safety devices like trip etc. Inlet should be of 3 phase power supply and the whole electrical should be of plug and play type. It also has 4 nos. electrical sockets and switches of Northwest make (230V, 5/16 A, 50 Hz)

Liner – Interior liner panels should be 6 mm thick Phenol resin based industrial laminate.

Lattice Rod Assemblies - 12mm dia solid SS rods should be clamped with the PP clamps to form a lattice arrangement to hold the test samples and rotors within the fume hood.

Centrifugal Blower – Silenhigh efficiency remote blower consisting of continuous rating motor and chemical resistant impellar. The blower should be designed to give a face velocity at safe working height as per the international safe velocity norms. (ANSI/AIHA Z9.5). The blower body should be polypropylene UV treated, high density and chemical (corrosion) resistant and mounted on a metallic stand.

Ducting – Rigid Ducting of PP (Polypropylene) + FRP (Fibre Reinforced Polyester) and flexible ducting with flanges, bends, damper transitions, clamps etc. Flexible joint should be provided in the ducting in order to avoid transmitting the blower vibrations to the hood. A weather proof rain cowl is provided at the outlet of blower.

Base Cabinets – Fume hoods are designed to rest on a bench (high base stand, pedestal or a cabinet) which is a complete rigid steel structure. Gauge of steel used in its construction should be 0.8 mm GI for apparatus storages. An FRV mould should be inserted inside the cabinet wherever acid storages are required (as per BOQ requirement).

Ceiling Enclosures - Use to enclose space between front top and ceiling of Concept fume hood superstructure also provides enclosure for raised sash.

Transition – Used to connect fume hood with ducting. They are designed to reduce the static pressure and are made up of Poly-propylene of 6 mm thickness.

Work Surface – Standard hood work surface should be 18mm thick jet black granite made in the form of a watertight pan, not less than 7 mm deep to contain spillage. Worktop will have oval shaped 102 mm X 175 mm 'PP' Cup-Sink for drainage. Top should be manufactured at the same manufacturing location as the fume hood to assure proper cut-out alignment and coordinated shipping. The work surface and cup drain should be available in black.

LIST OF APPROVED MAKES

Steel	TATA Steel, JINDAL Steel
Powder Coating	Kansai Nerolac, Berger Paints, Asian Paints
Emergency Devices, Water Faucets and Gas Valves, Fume Hood Utility Fittings	Watersaver, Broen
Switches and Sockets, Data and LAN points	Northwest, Norisys
Locks	Hettich, Hafele, Godrej
Drawer Slides	Hettich, Hafele, Godrej
Sink (PP Sink)	KL Labs, Malaysia, Alloyplass
Worktop	Jet Black Granite
Storages for Flammable items	Justrite, Asecos
Blowers	Seat, Colasit, Almonard
Spot Extractors	Nederman, Fumex