

# SPECIFICATIONS

## HEAVY DUTY MOVABLE LABORATORY CASEWORK AND EQUIPMENT RACKS

### PART 1 GENERAL REQUIREMENTS

#### 1.00 SUMMARY

- A. This Scope of Work/Specifications includes minimum requirements for movable laboratory casework and equipment racks:
  - 1. Support structures
  - 2. Table frames
  - 3. Countertops
  - 4. Shelves
  - 5. Base cabinets and wall cases suspended from support structures
  - 6. Framing channels
  - 8. Electrical distribution strips
  - 9. All associated parts, accessories, delivery and labor required to provide and install complete and functioning moveable laboratory casework system.
- B. Installation, including connection of all components, shall comply strictly with applicable local and national codes and standards.
- C. All electrical equipment and components shall carry the UL or CE mark and shall comply with the National Electrical Code (NEC) as applicable.

#### 1.01 ALTERNATE PROPOSALS

- A. Proposals from alternate manufacturers will be considered, only if the products proposed for submission fully comply with all minimum design requirements and minimum performance requirements specified herein. A notarized letter, signed by an officer of the manufacturer certifying full compliance with minimum requirements of this specification, shall be included as an attachment to the bid. The alternate manufacturers must also provide 2 sample equipment racks to be put into test and evaluation before they will be considered.

## 1.02 SYSTEM DESIGN REQUIREMENTS

- A. Heavy duty moveable laboratory casework and equipment racks shall be provided as a modular dimensioned system of vertical upright support structures and cantilevered support frames:
- B. Heavy-duty support structure for tables, storage units and shelves, shall meet the following minimum design requirements:
  - 1. Modular units shall be suitable for wall, peninsula or island configurations.
  - 2. Mobile support frames shall be designed to accommodate both side-to-side and back-to-back ganging.
  - 3. When units are placed in back-to-back configurations, no gap will be permissible between work surfaces or shelving when placed in the same plane.
  - 4. All casework support frame legs shall be equipped with heavy duty leveling casters. Casework support frame casters shall include an adjustment mechanism that raises the casters (to prevent unintentional rolling of the unit once the caster is in the raised position) and allows the support frame legs to directly support the casework. Each support frame leg shall be provided with a non-skid pad. Neither pads nor wheels shall mar, mark, damage or otherwise deface adjacent building finishes in any way.
  - 5. All casework shall be provided with the manufacturer's standard vertical service chase for cabling, piping and other services located at the rear of the casework unit if required. Utility services will be fed from the top of the unit.
- C. Tables shall meet the following minimum design requirements:
  - 1. Adjustable modular, interchangeable work surface support structures shall be provided in adjustable height configurations and shall fully support all cantilever configurations and shall be pre-punched for one-half inch (1/2") or one-inch (1") vertical adjustment of components.
- D. System requirements:
  - 1. System structural components shall independently support work surfaces, under counter cabinets, and overhead storage components.
  - 2. System structural components are self-supporting and independent of the building structure. Table frames, work surface supports and horizontal structural cross rails shall be fully welded construction, or equivalent mechanically fastened construction.
  - 3. Cabinet fastening devices shall be positively locked into the framing system to prevent accidental release. Intentional release shall be accomplished by loosening bolts (or an

- equivalent method insuring positive latching) without requiring removal of cabinet contents.
4. Removal of suspended base cabinets shall be possible without requiring removal of the work surface and/or shelf.
  5. Wall cabinets shall be adjustable both vertically and laterally and shall be removable with the use of commonly available hand tools.
  6. Suspended base cabinets shall be designed to allow relocation while fully loaded to all positions between table frames.
  7. Vertical height of table work surfaces, wall cases, and shelves shall be adjustable with simple, but positive mechanisms with the use of commonly available hand tools.
  8. Work surfaces and shelves shall be reconfigurable by the user with removable and height adjustable work surfaces.
  9. Storage cabinets shall be constructed to allow suspension from both cantilevered table frames and cantilevered shelf frames.
  10. Removable lower work surface shall allow a minimum 24.5" clear usable space below the work surface within the same plane as the main work surface for equipment clearance.
  11. Overall equipment rack height shall not exceed 6'-7" to allow access through a standard door frame. No exceptions.
  12. Units shall be tested and certified to support a minimum live load of 2,600 pounds, not including dead weight of heavy duty moveable laboratory casework and equipment racks, distributed over four work surfaces while maintaining full mobility.
  13. All casework, equipment, components and racks shall be fully ADA compliant.

### **1.03 SUBMITTALS**

- A. Submittals shall be submitted for approval AFTER award of contract and before starting fabrications.
- B. Shop Drawings: Provide minimum 3/4"=1'-0" scale elevations of all components, cross sections, rough-in and anchor placements, tolerances and clearances for approval. Shop drawings shall clearly indicate all attachment points and proposed methods where casework or equipment is fastened to building structure.

Provide minimum 1/4"=1'-0" "rough-in" plan drawings for coordination with associated trades. Rough in drawings shall show "free area". Manufacture of components shall not begin until approved drawings are returned from the Owner. A minimum of five (5) copies shall be submitted to Owner, for review and approval.

- C. Vendor shall visit the site and field-verify all dimensions prior to submitting shop drawings for approval. All discrepancies will be clearly noted on the submittal.

#### **1.04 QUALITY ASSURANCE**

- A. Single source responsibility: All laboratory mobile casework system components, , casework, work surfaces, and accessories shall be manufactured and/or furnished by a single laboratory casework manufacturer.
- B. Manufacturer's qualifications: Modern plant with proper tools, dies, fixtures and skilled workmen to produced high quality laboratory casework and equipment, and shall meet the minimum requirements:
  - 1. Manufacturer shall certify, in writing, a minimum of three (3) years continuous experience in the manufacture of laboratory casework and equipment of type specified.
  - 2. Manufacturer shall provide, in writing, a list of a minimum of five (5) installations with similar requirements. The list of similar projects shall include contact names and telephone numbers for each installation familiar with the performance of the vendor.
  - 3. The equipment rack provider shall modify the manufacturer's standard product to meet the University of Texas current design standards in force at the time of the bid at no additional cost to the Owner.
  - 4. The equipment rack provider shall modify the manufacturer's standard product to meet the University of Texas current design standards in force at the time of the shop drawing and submittal review as an additive change order to the contract. No changes to the contract will be made without an approved change order or purchase order correction.
- C. ISO 9001 or ISO 9002 shall be in force at the manufacturing facility at all times during manufacture of all components of the laboratory casework system. The vendor shall provide evidence of ISO 9002 certification as part of the submittal package.

#### **1.05 DELIVERY, STORAGE AND HANDLING**

- A. Laboratory furniture system, including all parts, components and associated pre-printed product literature, and assembly paperwork, shall be delivered directly to the final equipment locations. All equipment and components shall be received, uncrated, inspected and accepted and moved into final place by the vendor. The delivery route through the building shall include delivery and unloading at the building loading dock, use of the freight elevators located adjacent to the dock area to move materials from the dock to the delivery to the final locations. The vendor shall be responsible for protection of floors, walls, doors, door frames, and all other existing building components along the delivery route. An electronic copy of the floor plans of the facility may be available upon request. The actual

date and time of delivery shall be coordinated with the Owner a minimum of two (2) weeks before delivery and installation.

- B. Storage of equipment prior to installation shall be at a location of Vendor's selection and approved by Owner. Storage facility shall possess all adequate protection systems, including but not limited to fire, theft and weather protection. All costs associated with storage shall be at Vendor's sole expense and responsibility. Owner shall have no liability with regard to storage and handling prior to acceptance.
- C. Vendor shall provide storage for newly purchased items at no charge to Owner. New items are defined as any item that has not been utilized in an assembled state or used in its intended function, in its "purchased for" location.
- D. Vendor shall protect finished surfaces from soiling or damage during handling and installation.
- E. All equipment shall be installed, cleaned, disinfected, tested and certified by the Vendor. All connections included but not limited to electrical and HVAC connections, shall be the responsibility of the Vendor. Vendor shall demonstrate operation of all equipment to the Owner as a condition of acceptance.
- F. Removal and disposal of all unused materials, trash, debris, crating materials, etc. shall be the responsibility of the Vendor. Spaces shall be left clean and in the same condition as before installation of the laboratory casework.

#### **1.06 WARRANTIES**

- A. Vendor shall provide the manufacturer's standard one year warranty against defects in manufacture, workmanship and design. Warranty coverage shall begin upon date of Owner's final acceptance of equipment.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURER**

A. Approved Manufacturers:

1. MGC, Inc. (Fisher Hamilton LLC)  
12650 Directors Drive, Suite 600  
Stafford, TX 77477  
Contact: David Manhood, CEO  
281-340-1400
  
2. A. T. Villa USA, Inc.  
1717 Pearl Street  
Waukesha, WI 53186  
Contact: Jeffrey Kaplan, President  
800-779-4242

Local Distributor:  
Biomedical Solutions, Inc.  
3727 Greenbriar Drive, Suite 304  
Stafford, TX 77477  
Contact: Bill Stacy  
281-240-5893 ext. 103

- B. Design, materials, construction and finish of casework specified are the minimum acceptable standard of quality of adaptable/mobile laboratory casework and equipment racks.

### **2.02 SUPPORT STRUCTURES**

A. Minimum requirements for equipment rack and cantilivered type support structures:

1. Riser uprights: 11-gauge cold rolled steel supplied with two parallel rows of machine treaded welded nuts that accept bolts that positively engage the table and shelf frames.
2. Frames: Rolled steel, resistance welded, or equivalent mechanically fastened construction. Frame members, tie rail brackets and corner gussets shall be fabricated in minimum 11 gauge cold rolled steel.
3. Bottom shelf rails shall be fabricated in minimum 11 gauge cold rolled steel.
4. Base cover shall be fabricated in minimum 18 gauge cold rolled steel.
5. Slotted adjustment shall be machine punched into the riser upright at one-half inch (1/2") or one-inch (1") intervals to allow adjustment of

components supported from the riser upright.

6. The top plate for the Flange and Stem fitting shall be fabricated from forged steel.
7. All casework support frame legs shall be equipped with heavy duty leveling swivel casters. Casework support frames castors shall include an adjustment mechanism that raises the casters (to prevent unintentional rolling of the unit once the caster is in the raised position) and allows the support frame legs to directly support the casework. Each support frame leg shall be provided with a non-skid pad.
8. Casework support structures shall be tested and certified to support a minimum live load of 2,600 pounds, not including dead weight of heavy duty moveable laboratory casework and equipment racks. The load rating shall be certified for live loads distributed over four worksurfaces while maintaining full mobility.

### **2.03 FRAMING CHANNEL**

- A. Minimum requirements for framing channels to be used as the basic structural component of work surfaces and shelves.
  1. All framing channels shall be fabricated from 1¼" O.D. 11 gauge steel and shall be factory punched to accept standard 1" Unistrut fastening hardware, nuts and trolleys. Framing channel shall be provided around the entire perimeter of all work surfaces for unlimited mounting locations.
  2. All accessories shall be mounted to the framing channel with standard offset design, "mini-spring nut" and thumb-screw as manufactured by Unistrut.

### **2.04 WORK SURFACE**

- A. Cantilever Table/Shelf Frame:
  1. Nominal table frame dimensions:
    - a. Width: 36" 48" and/or 60".
    - b. Depth: 18" and/or 29" c. Height: 7"
  2. Cantilever Table/Shelf Frame shall be capable of vertical adjustment in one-half inch (1/2") or one-inch (1") increments.
  3. Support frame shall be fabricated of 11 gauge cold rolled steel that incorporates four mechanically fastened machine bolts that interlock into a machine threaded welded lock nut.
  4. Cantilever table frame shall provide support channels from which suspended cabinets can be hung and adjusted horizontally.

5. Suspended cabinets shall clear the top support arm for full width applications.
7. Weight capacity:
  - a. Each equipment rack shall support a minimum live load of 2,600 pounds distributed over four worksurfaces.
  - b. Each worksurface shall support a minimum live load of 925 pounds.
  - c. Each shelf unit shall support a minimum live load of 550 pounds.
9. Work surface materials shall be provided in Trespa TopLab only.
10. All work surfaces shall be provided with ½" x ½" Trespa retaining lips or equivalent continuous aluminum retaining lips.

## 2.05 SHELVES

- A. General requirements for shelves:
  1. Shelves are supported with a fully welded cantilevered frame (or an equivalent mechanically fastened frame) with separate retaining rods fabricated from 11 gauge rolled steel.
  2. Shelf brackets shall be fabricated from 11 gauge rolled steel.
  3. Vertical shelf height shall be adjustable in one-inch (1") increments.
  4. Shelves shall be provided in 18" depth.
  5. All shelves shall be provided with ½" x ½" Trespa retaining lips or equivalent continuous aluminum retaining lips.
- B. Outside Shelf:
  1. Nominal dimensions:
    - a. Length: 36" 48" and 60" and to match casework.
    - b. Depth: 18"
  2. Shelf shall be capable of being locked into position.
- C. Shelf materials shall be phenolic resin Trespa TopLab only, in minimum 5/8" thickness.

## 2.06 SUSPENDED BASE CABINETS/WALL CASES

- A. Cabinets shall be provided in "full overlay steel" or "Inset steel" in compliance with the manufacturer's pre-printed product literature.
- B. All cabinets shall be designed to be relocatable or removable without use of special tools.



- C. Permanent attachment of wall cases to upper work surface supports, including screw attachment, is not permissible. Wall cases shall be attached and suspended utilizing the same hardware as base cabinets.
- D. Casework shall be provided with recessed pulls in manufacturer's standard color selection to be selected during submittal process.

## **2.07 ACCESSORIES**

- A. Slide out keyboard trays attachable to underside of all upper and lower work surfaces. Keyboards shall be designed to allow adjustment to different heights under a single shelf.
- B. Horizontal mounting electrical strips: Built in circuit protection and reset switch. Adjustable horizontally. 20 amp receptacles in black color.
- C. Task lighting: Lights shall be horizontally adjustable by user with spring nuts and thumb screws. Suspension system shall be the same as the system used for task lights and the electrical power distribution system.
- D. Locks: For pricing purposes, manufacturer's standard lock cylinders shall be installed on Mobile Cabinets.

## **2.08 ELECTRICAL POWER DISTRIBUTION STRIP**

- A. General requirements for power distribution strips:
  - 1. Output rating: 125 volts, 20 amps, 2500 watts 50/60HZ
  - 2. Receptacles: 6-NEMA 5-20
  - 3. Dimensions: 17.00" L (19.60" rack mount with offset bracket) x 1.75" W x 1.35"D
  - 4. Indicators: Power on green LED, embossed power switch
  - 5. UL tested and recognized 1363
  - 6. Protection devices: 20 amp thermal breaker
  - 7. Cord: 10'-12/3 SJT power cord with NEMA L5-20 twist-lock plug
  - 8. Housing: Heavy duty 18 gauge steel housing, powder coated black textured finish.
  - 9. Brackets: Offset design, mounted with channel "mini spring nut" and thumb-screw.

## 2.09 COATINGS/PAINT FINISHES

### A. Metal finish:

1. Preparation: Spray clean metal with a heated cleaner/phosphate solution, pre-treat with iron phosphate spray, water rinse, and neutral final seal. Immediately dry in heated ovens, gradually cooled, prior to application of finish.
2. Application: Electrostaticly apply urethane powder coat and bake in controlled high temperature oven to assure a smooth, hard satin finish. Color shall be selected from manufacturer's standard color selections to be submitted with shop drawings for approval. Surfaces shall have a chemical resistant, high-grade laboratory furniture quality finish as follows:
  - a. Exterior and interior exposed surfaces: 1.5 mil average and 1.2 mil min dry film thickness.
  - b. Backs of cabinets and other surfaces not exposed to view: 1.0 mil average dry film thickness.

### B. Chemical Resistance

1. Chemical Resistance Test procedure: A finished test panel shall be laid flat and level on a horizontal surface. Chemical spot tests shall be made by applying 10 drops (approximately 0.5cm<sup>3</sup>) of each reagent identified to the surface to be tested. Each reagent spot shall be open to the atmosphere. Ambient temperature shall be 68°-72° (20-22.2°C). After a test period of one hour, chemicals shall be flushed away with cold water and the surface washed with detergent, warm water at 150°F (65.5°C) and alcohol to remove surface stains. Surface shall be examined under 100 foot candles of illumination.
2. Chemical Resistance Evaluation ratings: Allowable change in surface finish and function shall be described by the following ratings:
  - a. "No Effect": No visible change of finish.
  - b. "Excellent": Slight change in gloss and slight discoloration.
  - c. "Good": Change of gloss or surface discoloration while retaining integrity of finish film.
  - d. "Fair": Objectionable changes in appearance due to swelling or change in gloss while retaining integrity of finish film.
  - e. "Poor": Obvious and significant deterioration, including pitting or erosion of finish material.
3. Minimum acceptable Chemical Resistance Test results (concentration by weight): Manufacturer shall provide certified test results, performed by an independent testing laboratory, for specified finish color as part of the submittal process.

	<b><u>CHEMICAL</u></b>	<b><u>RATING</u></b>
a.	Acetic Acid-Glacial, 98%	Excellent
b.	Formic Acid, 88%	Excellent
c.	Hydrochloric Acid, 37%	No Effect
d.	Nitric Acid, 25%	No Effect
e.	Nitric Acid, 60%	Excellent
f.	Phosphoric Acid, 75%	No Effect
g.	Sulfuric Acid, 25%	No Effect
h.	Sulfuric Acid, 85%	Excellent
i.	Ammonium Hydroxide, 28%	No Effect
j.	Sodium Hydroxide, 10%	No Effect
k.	Sodium Hydroxide, 25%	No Effect
l.	Acetone	Excellent
m.	Sodium Hypochlorite, 5.25%	No Effect
n.	Ethyl Acetate	Excellent
o.	Ethyl Alcohol	No Effect
p.	Ethyl Ether	Excellent
q.	Formaldehyde, 37%	No Effect
r.	Hydrogen Peroxide, 30%	No Effect
s.	Methylethyl Ketone	Excellent
t.	Phenol, 85%	Excellent
u.	Xylene	Excellent

## **PART 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Laboratory Casework installation
  - 1. Install casework in strict accordance with manufacturer's instructions.
  - 2. Set system components plumb, square, and straight with no distortion or warping. Securely anchor all structural components to building structure.

### **3.02 FINAL ADJUSTMENT**

- A. Just prior to inspection, Vendor shall make final adjustments, as required, to insure smooth movement and operation of all moving parts and components.

### **3.03 CLEANING**

- A. All laboratory casework shall be installed, cleaned, disinfected, tested and certified by the Vendor. Vendor shall demonstrate successful operation of all equipment to the Owner as a condition of acceptance.
- B. Vendor shall touch up, repair or replace any damaged equipment or components, or other defective work, as required as directed by M.D. Anderson's representative upon completion of installation.
- C. Removal and disposal of all unused materials, trash, debris, crating materials, etc. shall be the responsibility of the Vendor. Spaces shall be left clean and in the same condition as before the installation of equipment/casework.

### **3.04 PROTECTION OF FINISHED WORK**

- A. Vendor shall be solely responsible for all protective measures to prevent damage to heavy duty movable laboratory casework, equipment racks and associated components until final acceptance by Owner.

# REVISION LOG

*The following is provided for convenience to the Owner and Vendor to track changes between document issuances and is not to be considered by any party to be contractual or 100% complete.*

<b>Issue Date</b>	<b>Revision Description Summary</b>
11/18/08	Initial posting of specification on the Owner's Design Guidelines web site.