ADA-Height Metal Laboratory Cabinets Specification Sheets
Part 1 - General

1.01 SCOPE:
A. The casework contractor shall furnish all material, equipment, tools, labor and insurance required to perform a complete installation in accordance with this specification and applicable drawings.

1.02 WORK INCLUDED:
A. Furnish all laboratory casework and equipment, deliver to the job-site, assemble, level, scribe and secure to floors or walls as required.

B. Furnish and deliver to the mechanical and electrical contractors all sinks, troughs, outlets, overflows, traps, fixtures, switches and receptacles as specified and called for on the drawings.

1.03 WORK BY OTHERS:
A. Furnish, deliver and install all electrical work, conduit, wiring, mechanical service piping, shut off valves, drain lines, vents, revents, special piping to meet local codes, vacuum breakers, ductwork and fume hood blowers.

B. Receive, store, distribute, install and connect all electrical service fixtures, plumbing service fixtures, drain fittings, traps, cupsinks and sinks supplied by the casework contractor. All framing, bucks, plaster grounds and reinforcement of walls, floors, and ceilings to support the casework.

1.04 MANUFACTURES
A. All laboratory casework covered by this specification shall be the product of one manufacturer. Manufacturers furnishing equipment shall have been engaged in work of this type, for at least five years and shall have completed five installations of equivalent size. The metal casework under the fume hoods shall be supplied by the fume hood manufacturer to assure paint match.

B. Approved laboratory casework manufacturers are:

   1. Air Master Systems  6480 Norton Center Dr. Muskegon, MI. Telephone (231) 798-1111
      sales@airmastersystems.com

   2. 

1.05 SAMPLES:
A. All bidders, upon request shall be required to submit a sample cabinet made in accordance with this specification. Samples shall be delivered, at no cost to the architect or owner, to a destination set forth by the architect, seven day prior to bid
date as a condition of approval of each bidder.

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Samples shall be full size, production type samples with the approximately dimensions of 18"W X 30"H X 22"D, with one drawer and one door.

Samples may be held by the owner or architect to insure that all equipment delivered conforms in every respect to the sample.

1.06 DRAWINGS:
A. The casework contractor shall furnish three sets of drawings for approval, describing and/or illustrating all equipment covered by this contract. Fabrication must not be started until prints with the architects "Final Approval" stamp affixed thereon, have been returned to the manufacturer.

1.07 GUARANTEE:
A. The casework contractor shall guarantee all materials and workmanship of equipment provided under this contract for a period of five years from date of shipment. Any defects due to the use of improper materials or workmanship, occurring within that time shall be promptly rectified by this contractor at his own expense upon notification by the owner or architect of this condition. Manufacturer must be a current SEFA member and casework shall have passed the SEFA standards.

Part 2 - Metal Casework Construction

2.01 MATERIALS:
A. All materials shall be of the highest quality, whether they be finished parts used in assembly, raw material, or materials and workmanship furnished by others, as part of the completed product.

B. All steel used in the manufacture of metal casework shall be cold rolled, prime grade, or better. Steel shall be inspected prior to fabrication and certified to be free of rust, pits, scratches, or any other defects(s) which prevent parts from being made to blueprint specifications.

2.02 GAUGES:
Gauge specifications for individual steel parts shall be as follows:
2.03 CONSTRUCTION:

A. Cabinets:
   Cabinets shall be constructed of prime 18 gauge steel for the sides, backs, and toe space. 1” X 18 gauge steel tubing shall be used for the top front and back rails. Each front joint is to be welded and ground flush to provide a smooth surface. A 4' high X 3' deep toe space shall be standard. Four corners are to be fitted with a stamped and welded 14 gauge leveling gusset plate, and a plated leveling screw. Leveling screws are provided with a slot for easy adjustment, and non marking nylon glides. Removable back panels shall be furnished on all cabinets. Cabinet bottom will be panned up to contain spills and removable for easy cleaning and maintenance.

B. Doors - Base Cabinet Doors:
   Doors shall be double pan construction, with insulating material fastened to the inside for sound deadening, and strength, to prevent panning and bending. Hinges are five knuckle gauge stainless steel, fastened to both the door and cabinet frame with zinc plated steel screws. Door catches plated, friction roller type. Door closes onto nylon bumpers for noise dampening, and over nylon spacers for alignment.

C. Drawers:
   Drawer bodies shall be one piece 20 gauge construction, fully coved on
all four sides horizontally and formed out of one sheet of steel.

D. Drawer Suspension:
Drawers shall operate on full extension, ball bearing, zinc plated, drawer suspension rated to withstand 10,000 cycles at 100 lbs.

E. Shelves:
Shelves shall be constructed of 18 gauge steel, with channels formed on both the front and back edges. K & V shelf clips are made from 14 gauge steel, and are to be adjustable vertically in 1" increments. Sliding shelves shall use the same ball bearing slides as drawer units.

F. Fabricated Accessories
All accessories required for specific installations shall be fabricated and finished to the same material and quality standards as the base units they will be made to compliment.

G. Wall Cabinets:
Wall cabinets shall be made to the same quality standards as base units. Material used, as noted above. Shelve hangers are to be constructed of 14 gauge steel, and to easily adjust vertically in one inch increments.

Shelves are to be constructed with channel type fronts and backs, as well as flanged ends with nylon button glides. Wall units to have open fronts, sliding glass, framed glass sliding and swinging, or sliding and swinging steel doors as specified. Glass is plate, ground on all exposed edges.

Sliding door units to be furnished with extruded top and bottom channels as well as ball bearing rollers. All wall units are to be furnished with hanger brackets for ease of installation.

H. Floor Units:
Floor units shall be made to the same quality standards as base units. Material used, as noted above.

Shelves and shelf hanger construction, same as wall units.

Floor units to be furnished with the same front and door configurations as the above described wall units.
I. Vacuum Pump Cabinets:
   Shall have a switch on the front panel that is pre-wired to a junction box on the back of the cabinet. 110Volt duplex mounted on the back of the inside of the cabinet pre-wired to the junction box. Cabinet shall be lined with neoprene along with the pull out shelf for noise/vibration control. Provide a 2" hole in the middle of the back of cabinet 4" down from the top. Cabinet doors shall be louvered.

2.04 FINISH:
A. All surfaces shall be painted or plated, whether they are exposed or not. Paint shall be a chemically resistant baked on epoxy powder coat enamel, conforming to Air Master Systems specifications.

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General

This specification establishes the performance and appearance requirements for the interior decorative coatings and used on laboratory products. The material to be used for the coating will be applied dry over metallic substrates. The material must be available in a number of colors matched to Air Master Systems standards.

Manufacturability

The material shall be such that it can be applied in multiple coatings where needed, without intercoat sanding. The shelf life of the material shall be (six (6) months) at not more the 77 degrees without deterioration of properties.

Appearance

<table>
<thead>
<tr>
<th>Description</th>
<th>Test Procedure</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Color</td>
<td>AES-C-0100</td>
<td>Pass</td>
</tr>
<tr>
<td>B. Light Resistant</td>
<td>QUV A Apparatus</td>
<td>48 hours w/o change in color or gloss</td>
</tr>
<tr>
<td>C. Thickness</td>
<td>Mill Gage</td>
<td>See page 3 of 3</td>
</tr>
<tr>
<td>D. Glass</td>
<td>ASTM D523-80</td>
<td>30 Degree + 5 Matte</td>
</tr>
<tr>
<td></td>
<td>60 Degrees Glossmeter</td>
<td>20 Degree + 5 Black</td>
</tr>
</tbody>
</table>

Performance
**A. Hardness**  
ASTM D3363-74  
(3-H Min. no indentation)

**B. Impact Resistance**  
ASTM D2794-69  
120 in-lbs w/o cracking

**C. Flexibility**  
ASTM D522-60  
No cracking or loss of adhesion at bend

**D. Abrasion**  
Tabor abrator  
CS 10 Wheel  
14 mg. max. weight loss per 100 cycle

**E. Humidity**  
ASTM D2247  
288 hours exposure with no loss of adhesion or blistering

**F. Salt Spray**  
ASTM B117-64  
144 hours exposure with no rust.

ASTM D1654-79  
Max 1/8" rust creep from scribe line

**G. Adhesion**  
90 of the squares show finish.

**H. Chemical Resistance**  
A door shall be removed from the cabinets and laid flat and level on a horizontal surface. Chemical spot tests shall be made by applying 10 drops (approximately 0.5 cm³) of each reagent listed in Table 1 to the surface to be tested. Each reagent spot shall be open to the atmosphere. Ambient temperature shall be 68-72 degrees F  
A max. of three failure classifications shall be acceptable.
(20-22 degrees C).
After one hour, chemical shall be flushed away with cold water and the surface washed with detergent and warm water at 150 degrees F (65 degrees C). Surface shall then be examined under 100 degree foot candles of illumination.

<table>
<thead>
<tr>
<th>Reagent</th>
<th>Concentrations by Weight</th>
<th>Reagents</th>
<th>Concentrations by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic Acid</td>
<td>98%</td>
<td>Acetone</td>
<td></td>
</tr>
<tr>
<td>Formic Acid</td>
<td>88%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>37%</td>
<td>Ethyl Acetate</td>
<td></td>
</tr>
<tr>
<td>Nitric Acid</td>
<td>25%</td>
<td>Ethyl Alcohol</td>
<td></td>
</tr>
<tr>
<td>Nitric Acid</td>
<td>60%</td>
<td>Ethyl Ether</td>
<td></td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td>75%</td>
<td>Formaldehyde</td>
<td>37%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>25%</td>
<td>Hydrogen Peroxide</td>
<td>5%</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>85%</td>
<td>Methyl Ethyl Ketone</td>
<td></td>
</tr>
<tr>
<td>Ammonium Hydroxide</td>
<td>28%</td>
<td>Phenol</td>
<td>85%</td>
</tr>
<tr>
<td>Sodium Hydroxide</td>
<td>10%</td>
<td>Xylene</td>
<td></td>
</tr>
<tr>
<td>Sodium Hydroxide</td>
<td>25%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I. Scratch Resistance
   Hoffman Scratch  No Substrate
   Hardness Tester  Appearance
                   with 1000 gram load

Application

Surface "A"
Description: Most critical of all areas. Completely exposed surface.
   No defects listed on page 3 allowed.
Surface "B"
Description: Not as critical as surface "A". Sometimes exposed interior and exterior surfaces.

Surface "C"
Description: Hidden surfaces; areas that will not be seen in normal use.

<table>
<thead>
<tr>
<th>APPEARANCE SURFACE</th>
<th>MIN. MILLAGE</th>
<th>SURFACE CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fillers</td>
<td>1.2</td>
<td>A</td>
</tr>
<tr>
<td>Front of Cabinet or Case Including Drawer and Door Fronts</td>
<td>1.2</td>
<td>B</td>
</tr>
<tr>
<td>Shelf Tops</td>
<td>1.2</td>
<td>B</td>
</tr>
<tr>
<td>Top of Wall and Floor Cases</td>
<td>1.2</td>
<td>B</td>
</tr>
<tr>
<td>Cabinet and Case Floors</td>
<td>1.2</td>
<td>B</td>
</tr>
<tr>
<td>All other than above interior and exterior vertical surfaces</td>
<td>1.0</td>
<td>B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>SURFACE &quot;A&quot;</th>
<th>SURFACE &quot;B&quot;</th>
<th>SURFACE &quot;C&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blemish</td>
<td>No</td>
<td>Not permitted on surfaces easily detected from an arms length.</td>
<td>Yes</td>
</tr>
<tr>
<td>Water Spot</td>
<td>No</td>
<td>Not permitted</td>
<td>Yes</td>
</tr>
</tbody>
</table>
**AIR MASTER SYSTEMS SPECIFICATIONS**  
**SECTION 12345 – LABORATORY CASEWORK**

on surfaces easily detected from an arms length.

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Slight</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sag</strong></td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Over Cure</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Under Cure</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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