FULL DETAILED SPECIFICATION

SECTION 12310.3

LABORATORY METAL CASEWORK

With

OAK VENEER FRONTS

SI/IMPERIAL MEASUREMENTS

MANUFACTURING LTD. **SIGMA SYSTEMS™**

9 August 2001

PART 1: GENERAL

1.1 CONFORMANCE

.1 Conform to Division 1 - General Requirements.

1.2 EXTENT OF WORK

.1 Work consists of furnishing laboratory furniture and fume hoods where specified and as shown on Laboratory Layout Drawings, Detail Drawings, Legends and Schedules.

.2 It is intended that Work supplied under this Section shall be complete in every detail for purpose required. Include minor materials not herein specifically mentioned, but which may be found necessary to complete or perfect any portion of Work in accordance with requirements of this Specification.

.3 Co-operate with mechanical, electrical, and other trades for installation and connections.

.4 Drill holes and provide cut-outs in equipment deemed necessary for installation of service fittings shown on Laboratory Drawings and as required to permit passage of service lines pertaining to this Section of Work which penetrate laboratory furniture components.

1.3 RELATED WORK SPECIFIED ELSEWHERE

.1 The supply and installation of the laboratory furniture shall refer to the work required in the following related Sections:

.1	Section 06100	Rough Carpentry
.2	Section 06400	Architectural Woodwork
.3	Section 09650	Vinyl Base
.4	Section 11610	Fume Hoods
.5	Section 15400	Plumbing
.6	Section 16100	Electrical

1.4 QUALIFICATIONS OF MANUFACTURERS

.1 Work of this Section shall be fabricated by one manufacturer by skilled craftsmen in accordance with 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.

1.5 BIDDING SAMPLE

.1 Bidding samples are required for comparison, and after the Bid Closing Date, Bidders shall provide a 1.5m (6-foot) minimum sample unit comprising of a cross section of wall storage and base units, at no cost to the Owner. The samples shall be representative of the type of system upon which the bid is based, being typical of style, quality of work, type of finishes, and indicative of installation methods described in the Specifications.

.2 Bidders shall be notified by the Consultant of the specific details and location for the sample to be installed.

.3 Bidders shall provide the sample, ready for inspection, 15 working days after notification. Failure to meet this condition will disqualify the bid proposal.

1.6 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.

1.7 ALTERNATIVES

.1 Alternate products shall meet the intent and design criteria shown on Drawings and specified herein. Such alternatives shall be stated in Section 00300 and as further described herein:

.1 List of 5 projects completed in the last 5 years of comparable scope, including reference names and current phone and fax numbers.

.2 Summary of manufacturing facilities, location and production capacity.

.3 Current delivery period.

.4 Shop drawing completion period for project being bid.

.5 Proof of financial ability to successfully complete this project.

.6 A copy of manufacturers quality assurance program. ISO9002 Certificate preferred.

.7 Submit copy of warranty and any extended warranty statements.

1.8 SUBMITTALS

.1 Shop Drawings

.1 Further to requirements of Section 01334, prepare and submit for review complete shop drawings showing all items to be furnished under this Contract on AutoCAD, Version 14 or later.

.2 Shop drawings shall clearly indicate materials being supplied and finishes, connections, attachments, reinforcing, locations or exposed fastening, colors, gloss intensities and coating types by trade name.

.3 Be responsible for checking all dimensions of Site which affect this work, and for necessary corrections to shop drawings which may arise from such Site dimensions.

.4 Where dimensions are not available before fabrication is commenced, dimensions required shall be agreed upon between various trade Sections or manufacturers concerned.

.5 The preparation of shop drawings, catalogue cuts, and manufactured equipment drawings shall be implemented immediately upon signing of Contract.

.6 Submission of shop drawings for review by the Consultant, shall bear the signature of the Laboratory Sub-contractor's project manager, signifying that the drawings have been thoroughly checked and are complete as required for the first submission.

.7 Clearly indicate:

.1 Details of laboratory furniture and fume hoods, including bench and construction sections.

.2 Location of each furniture unit in plan and elevation for each assembly.

.3 Location for roughing-in of plumbing; including sinks, faucets, strainers, cocks and electrical services.

.4 Co-ordinate elevations to each related room plan. Similar or repetitious elevations shall be repeated and included with each room plan for purposes of co-ordinating electrical wire mould, service ducts, and access panels.

.5 Provide dimensions of bench locations from building grid lines and walls.

.6 On request, provide test reports by independent testing laboratories indicating results of furniture finish, laboratory top materials, and fume hood linings.

1.9 **WARRANTY**

.1 Manufacturer shall submit warranty statement with proposal.

PART 2: PRODUCTS

2.1. STEEL LABORATORY FURNITURE

.1 **Basic Materials:**

.1 Sheet Steel: Mild steel, cold rolled furniture grade to requirements of ASTM A366/A366M-91, Grade C or higher, with smooth surfaces to furniture quality.

.2 Galvanized Sheet Steel: Commercial quality galvanized sheet steel to ASTM 653, Designation Z275.

.3 Stainless Steel:

.1 Sheet: ASTM A240, Type 304 AND 316 alloy.

.2 Finish: Unless otherwise indicated, AISI No. 4 Brushed finish.

.4 Glass: Clear Float, 6 mm and 3 mm thick, conforming to CAN2 12.3-M76, Glazing Quality. Laminated Glass: CAN/CGSB-12.1-M90, Type 1 with clear PVB interlayer. Total nominal thickness of laminated glass: 6 mm.

.5 Sealant: One component, clear silicone base sealant, chemical curing conforming to CAN/CGSB-19.18-M87, antifungus composition. Acceptable types: “DC-786” by Dow Corning, and “Sanitary 1700” by CGE.

.6 Resilient Base and Adhesive: Top set coved, 3mm (1/8”) thick, 150mm (6”) high and 100mm (4”) high as indicated for base units, including premoulded end stops and external corners of color selected by Consultant from full range. Continuous lengths. Adhesive for rubber base shall be trowelled on giving 100% coverage. Use an adhesive compatible with both surfaces, as recommended by the base manufacturer.

.7 Door and drawer fronts: Red Oak or White Oak (choose one) Veneer panels plain sliced, veneer grade A front and grade 1 back on a

combination MDF/plywood core Edge shall be banded with minimum 3mm solid oak. Panels shall have a minimum of 250 Lb screw holding stength on face and 225 lb on edge. Finished thickness shall be 3/4". Grain shall be vertical on door fronts and horizontal on drawer fronts. Adjacent panels shall not be required to have matching grain.

.2 **Cabinet Hardware:**

.1 Pulls: Provide handles for drawers and hinged doors in 100mm (4") tubular stainless steel.

.2 Door Catches: Provide adjustable zinc-plated, spring-loaded, nylon roller.

.3 Strike Plates: Provide strike plates fabricated of stainless steel, designed to be secured to cabinet stile without twisting, fixed with a single self-tapping screw.

.4 Door Hinges: Provide five knuckle-type barrel door hinges of 1.9mm (14 Ga) steel screwed into door and fastened to cabinet side. Black baked enamel available on request.

.5 Deleted

.6 Locks; Base Cabinets: Locks for doors and drawers on base cabinets, hinged doors on wall and floor-standing cabinets: Locks shall be 5 disc tumbler with master key capability. Cabinet Lock. Keys shall be removable in locked or unlocked positions.

.7 Locks; Sliding Glass Doors: Slip-on ratchet type locks for sliding glass doors in chrome-plated steel. #963 by Knape and Vogt.

.8 Locks; Sliding Metal Doors: Locks for sliding metal doors; chrome-plated steel. #C08042-26D by National Lock, Rockford, Illinois.

.9 Drawer and Hinged Door Bumpers: Provide two tongue-type white rubber, press-fit bumpers per door or drawer.

.10 Sliding Glass Door Bumpers: Provide 25mm (1") diameter, 3mm (1/8") thick felt bumper pads, adhesive on one side. Two pads per door.

.11 Press Plugs: Provide plugs for cabinet levelling device holes in floors in black PVC.

.12 Shelf Clips:

.1 Clips for base cabinets, wall hung and tall storage cabinets; zinc-finished steel.

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.2 Clip for Solvent Storage: zinc-finished steel.

.13. Sliding Door Track (Glass):

.1 Vinyl Glass Door Clip: Joseph Taylor #KN3007-00.

.2 Lower track for sliding glass doors. Joseph Taylor #KN1012-11.

.3 Upper track for sliding glass doors. Joseph Taylor #KN1007-11.

.4 Provide "H" shaped shoe and roller assembly for sliding glass doors. Joseph Taylor #KN1019-11 with #51001/nylon rollers with steel spring clip.

.5 Drawer track systems shall be designed to eliminate metal surface-to-surface contact side play, while incorporating a self-closing action for 150mm (6”) of drawer travel. Made up of custom manufactured components.

.14. Sliding Door Track (Metal):

.1 Upper track shall be galvanized double-track, “V” grooved sliding metal and framed glass doors, painted to match furniture. Provide 2 suspended rollers per door, with special set of brackets for fixing to sliding doors. Nylon rimmed ball bearing rollers as specified for drawer track assemblies.

.2 Lower guide for sliding metal doors, full-width, black PVC extruded double "U" channel.

.15 Leg Leveller Bolt: Provide 9.5mm (3/8”) dia. hex-head leg leveller bolt with hex drive point

.16 Split Pin for Door Handle, 16mm (5/8”). Bolt & Nut Supply #607-293.

.17 Casters, Table locking: Colson Casters #22-3054-441C5. Stem caster, 89mm (3-1/2”) diameter x 32mm (1-1/4) wide non marking cushion wheel with side lock brake. Load capacity: 102kg (225lb)

.18 Casters, Lab Cabinet locking: Colson Casters #11-03356-441.
75mm (3”) diameter x 22mm (7/8”) wide non marking cushion wheel with side lock brake. Load capacity: 57kg (125 lb)

.19 Full Extension Drawer Slides, 508mm (20”) extension, load capacity 45kg (100 pounds).: Knape & Vogt #8400B.

2.2. PERFORMANCE REQUIREMENTS

.1 **Static Load Performance of Furniture Units**:

.1 Furniture units shall withstand the following maximum static loads without causing deformation, drawer, or door malfunction, or tipping of the unit.

.2 Floor Supported Base Cabinets shall carry 745kg per linear metre (500 pounds per linear foot) of width evenly distributed over the full width and depth.

.3 Suspended Cabinets shall carry 136kg (300 pounds) evenly distributed inside the cabinet on the lower surface and shelves or drawers with the cabinet suspended.

.4 Post-supported Shelves shall carry 75kg per linear metre (50 pounds per linear foot) evenly distributed over the full width and depth of the shelf or 113kg (250 pounds) applied on the front edge of the shelf at the width midpoint.

.5 Cabinet Levelling Device shall carry 227kg (500 pounds) and be capable of adjustment after the load is removed.

.6 Cabinet Door shall withstand 68kg (150 pounds) applied at the outer edge of a cabinet door that is swung 180^{o}.

.7 Wall Cabinets: Each shelf and the cabinet bottom shall carry 75kg per linear metre (50 pounds per linear foot) of width with load evenly distributed on all shelves and cabinet bottom over the full width and depth.

.8 Base Cabinet Shelves shall carry 45kg (100 pounds) evenly distributed over the full width and depth.

.2 **Dynamic Load Performance of Furniture Components**

.1 Furniture components shall withstand the following performance requirements without deformation or malfunction:

.2 Cabinet Drawers: shall perform to 50,000 opening and closing cycles with an evenly distributed 45kg (100 pound) load in the drawer.

.3 Positive Door Catches: shall perform 100,000 opening and closing cycles without breakdown.

.4 Door Hinges: shall perform 100,000 opening and closing cycles with no static load added to the door.

.5 Self-Closing Drawers: Drawers shall close when 150mm (6 inches) open and have no static interior load.

.6. Drawers 1219mm (48" wide): shall be fully operable from either front corner with an interior 45kg (100 pound) static load without racking or bending.

.7 Drawer Opening: Drawers shall operate with a maximum force of 22.3N (5 pounds) to fully open a drawer with an interior static load of 68kg (150 pounds) in a properly levelled cabinet.

2.3. BASE CABINET CONSTRUCTION

.1 Materials and Thicknesses: Use following minimum steel thicknesses for furniture manufacturing:

.1 3mm (11 Ga) levelling bolt gusset plates.

.2 1.9mm (14 Ga) drawer slides and side suspension channels.

.3 1.5mm (16 Ga) for tubular rails, legs for tables, gusset plates, cabinet top and intermediate horizontal rails.

.4 1.2mm (18 Ga) for 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.

.5 0.9mm (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 Cabinet Frame:**

.1 Provide one-piece die-formed cabinet bottom construction with return side flanges turned up. Spot weld flanges to cabinet sides. Provide sink cabinets with galvanized bottom painted to match cabinet.

.2 Cabinet bottoms shall be turned down at front to form 32mm (1-1/4") "U" channel to accept toe kick and turn down 133mm (5-1/4") at back with 16mm (5/8") return to form the back lower member of cabinet base. Provide punched 19mm (3/4") dia. corner holes for access to levellers and to accept PVC press plugs.

.3 Provide additional vertical 75mm(3") "HAT" shaped channels, spot-welded over the rear vertical 75mm (3") corner returns for 381mm(15"), 457mm(18"), 610mm(24"), 762mm(30"), 914mm(36"), 1067mm(42"), 1219mm(48") and 1473mm(58") cabinets. Channel shall be provided with prepunched holes to receive shelf clips, and slotted holes to receive drawer suspension tracks. Cabinets 762mm(30") wide and larger shall be provided with intermediate 117mm(4-5/8") "HAT" channels to brace cabinet and accept shelf clips and drawer tracks.

.4 Where applicable, the corner posts shall be prepunched and slotted to accept drawer suspension systems and suspension pull-out shelves. 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. Front post closure channels shall be **"J"** shaped 9mm(11/32") x 33mm(1-5/16") x 49mm(1-15/16"). Provide channel with prepunched holes to receive shelf clips.

.5 Doors and drawers shall overlay top, intermediates and floor horizontal members as well as vertical members.

.6 Top horizontal front framing member shall form a **"J"** shaped section 75mm(3") wide, 10mm(3/8") return by 25mm(1") deep with 16mm(5/8") return.

.7 Intermediate horizontal framing members shall form a "U" 32mm(1-1/4") high with a 25mm(1") return on top and 16mm(5/8") return on bottom.

.8 Top rear horizontal framing member shall be 32mm(1-1/4") x 32mm(1-1/4") angle section welded to back corner lapped post and side gables with welded corner gusset plates acting as cabinet bracing and counter top material fixing member.

.9 Enclose cabinetry toe space shall be 75mm(3") deep x 100mm(4") high and shall act as a total enclosure to bottom of cabinet. Toe space section

shall key up into "U" shaped front floor member and act as reinforcement. Toe space, front floor of cabinet and corner post sections shall be spot welded together forming one structural member.

.10 The toe space members, side gable returns, and back lower member shall form all welded structural corner to accept leveller gussets and 10mm(3/8") levelling bolts.

.11 Cabinet construction shall be electro spot-welded to form a strong well-fitted, one-piece unit.

.12 Exposed horizontal structural cabinet members between doors and drawers shall be unacceptable.

.3 **Base Cabinet Components:**

.1 Provide removable back panels for cupboard and drawer sections of base cabinets. Provide partial back panels 229mm(9") in height to accommodate plumbing at sink units. When requested, provide back panels and security panels on cabinets requiring locks. Back panels for cabinets shall be formed with upper and lower return flanges to position panel and semi-anchored into cabinet interior rear structure to form a flush finish. Upper flange shall friction press fit behind cabinet upper horizontal member, and the lower flange shall drop in place and fit over the floor return. Provide finger pull for ease of removal without tools.

.2 Shelving edges; turned down on all four sides 25mm(1"), and returned under on front and back 25mm(1"). Shelves 914mm(36") and longer shall be provided with "HAT' channel reinforcement at front edge.

.3 **Doors:**

.1 Doors shall be of Wood Veneer Particle board as described in section 2.1.1.7. Secure hinges to cabinet posts with machine screws and concealed self-locking Kep-nuts. Provide positive door closer by nylon roller friction catches, mounted on horizontal top or intermediate members pull side of doors. Provide each hinged door with 2 rubber bumpers.

.2 Doors, drawers, tracks and back panels shall be replaceable in the field without requiring special tools.

.3 All standard double door cabinets shall be designed without center stiles to maximize access to the cabinet.

.4 **Drawers:**

.1 Drawer fronts shall be of Wood Veneer Particle board as described in section 2.1.1.7.

.2 Provide drawer operation on 25mm(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.

.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 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.

.4 **Tables:**

.1 Fabricate tables from metal skirting panels formed into 95mm(3-3/4") channel sections, and welded into a rigid frame construction. Notch corners and reinforce to receive 50mm(2") square metal tubular legs bolted securely in place. Provide leg with 10mm(3/8") levelling devices and slip-on type black PVC shoes.

.2 Construct mobile tables the same as standard laboratory tables, except for the table legs which shall be designed to receive swivel casters.

.3 Casters shall be as manufactured by Colson Casters. Casters shall be non-marking type urethane tires in grey color.

.4 Table Bracing: Table bracing members shall consist of 25mm(1") x 50mm(2") removable tube members, installed between legs according to two table bracing configurations. Removable bracing shall be mechanically fixed to concealed "U" shaped mounting bracket welded on each leg. Where called for, provide table braces welded to legs as a fixed rigid bracing system.

.5 Table Drawers: Where called for, drawers located in table aprons shall be supplied in a maximum width of 381mm(15") with two drawers supplied in tables 1219mm(48") and wider. Drawer suspension shall be with 25mm(1") nylon ball bearing rollers and self closing action, and custom manufactured 1.5mm(16 Ga) suspension system.

.5 **Leg Sets:**

.1 Leg sets shall consist of two 50mm(2") square metal tubular legs complete with steel bolt levellers and slip on PVC shoes.

.2 Legs, when secured together, shall be provided with 25mm(1") x 50mm(2") steel rail centred 203mm(8") up from bottom of leg.

.3 Top of legs, both standing and sitting heights, shall have a 1.9mm(14 Ga) triangular mounting plate welded in position for securing to underside of countertop.

.6 **Apron Drawer Assembly:**

.1 Apron drawer assembly shall be fabricated from metal channel shaped skirting panels of modular widths the same as standard base cabinets. Rails 95mm(3-3/4") high channel ends shall be turned to fit into end mounting brackets. Drawer suspension framing shall be mechanically fixed to channels, welded integrally with front and back channel sections formed into a rigid one-piece frame.

.2 Where called for, drawers located in table aprons shall be supplied in a maximum width of 381mm(15") with two drawers supplied in tables 1219mm(48") and wider. Drawer suspension shall be with 25mm(1") nylon ball bearing rollers and self-closing action, custom manufactured 1.5mm(16 Ga) suspension system.

.7 **Front Rails:**

.1 Front rail units shall be fabricated from a single metal channel-shaped skirting panel in modular widths the same as standard base cabinets. Channel ends shall be turned to fit into end mounting brackets. Rails are 3-3/4" high.

.8 **Gable Legs:**

.1 Gable legs shall consist of two telescoping side panels totally enclosed on all four sides and welded to form a strong rigid unit.

.2 Gables shall be 38mm(1-1/2") thick with 75mm x 100mm(3" x 4") toe space and designed to be secured in a concealed fashion to the adjacent kneehole assembly or to the bench top material.

.3 Gable legs shall be provided with two levelling devices.

.9 **Acid Storage Cabinets:**

.1 Construct in similar manner to standard steel base cabinets with entire interior lined with 5mm(3/16") thick fibre glass reinforced polyester thermoset resin similar to fume hoods.

.2 The lining on the back of doors shall be fitted so that when the door is in a closed position the lining shall fit inside the interior lining of the cabinet.

.3 Acid storage cabinets shall contain one full-width shelf.

.4 Secure removable back panels in place with stainless steel screws fixed to vertical back framing members.

.5 Provide one door with decal signifying "ACID" storage. Exhaust ports shall be provided in back exterior of cabinets for fume evacuation to ducting when shown on drawings.

.6 Cabinets occurring under fume hoods, when shown on drawings, shall be provided with two exhaust ducts which shall extend up through the top material into the hood side wall and terminate with entry into hood chamber at a point above the upper baffle. Ducting material shall be 38mm(1-1/2") diameter O.D. flexible plastic tubing supplied separate for installation on site by installer.

.10 **Bin Cabinets:**

.1 Constructed the same as a standard base cabinet, except the door panels shall be hinged at the bottom to permit the door to tilt out from the top. Bin section shall have its own built-in catch, designed to stop and hold the loaded bin at a predetermined opened position.

.2 Bin door shall have one integral bin compartment capable of supporting 45kg(100 pounds). without sagging or binding.

.3 Bin cabinets shall be suitably fastened in place only in fixed bench assemblies to prevent any tipping action when bin sections are loaded and in an open position.

.4 When shown on drawings, removable leak-proof bin liners with two lift out handles shall be designed to fit into bin compartment and fabricated of either Type 304, 1.2mm(18 Ga) stainless steel or 1.2mm(18 Ga) galvanized steel.

.11 **Control Panel Base Cabinets (457mm(18") or 559mm(22") optional depths):**

.1 Constructed the same as standard base cabinets, except blank panels are provided above cupboard doors for the mounting of remote control fittings. Cabinet shall be complete with removable back panels.

.12 **File Drawer Cabinets:**

.1 Construct file drawer cabinets in similar manner to standard base cabinets, and consisting of 1 or 2 double height file drawers for low height or standard height file cases.

.2 Provide each file drawer complete with 2 file supports and hanger rods.

.3 The file drawer shall be provided with 508mm(20") full extension telescoping drawer tracks.

.4 Hanger rods are adjustable to accommodate legal or letter size files.

.13 **Service Cover Panels:**

.1 Service cover panels shall be provided, where called for, between base cabinets to enclose the pipe space. Service cover panels shall be designed in two sections. The lower section shall be fixed in place to mount cove base moulding. The upper section shall be fitted between the base cabinets and shall be removable.

.14 **Filler Panels:**

.1 Fabricate front filler panels complete with flanges on both sides and a 75mm x 100mm (3" x 4") toe space along the working face.

.2 Scribe filler panels shall be flanged on one side and flat on the other, to be cut on jobsite to suit wall conditions, and shall fit into double angles secured to the wall. No visible mounting screws permitted.

.3 Corner filler panels shall be a two-piece construction, one fixed panel and the other a variable panel to facilitate room dimensions. Each shall have flanges and an integral 75mm x 100mm(3" x 4") toe space filler to interlock with its counterpart.

.4 End closing filler panels shall be flanged on one side 25mm(1") and secured to back of cabinet. The edge extending to wall shall be flat and fit into a double angle secured to wall. No visible mounting screws permitted.

.15 **Glassware Drying Base Cabinets - Electric Heat:**

.1 Constructed the same as steel base cabinets in general, except the whole of the interior shall be lined with 6mm(1/4") thick composition cement

board. The lining on back of doors shall be sized to fit inside the interior lining of the cabinet when door is closed.

.2 Provide a full-width perforated stainless steel shelf.

.3 Provide drying cabinets located under fume hoods with two 38mm(1-1/2") O.D. plastic exhaust ducts which extend up through the fume hoods top material into the hood immediately behind the main baffle.

.4 Heater controls shall be a thermostatic control equal to Ranco Co. G4-14209 complete with a Style "0" sensitive bulb and neon pilot light. The strip heater available (115 or 230 volt) shall be set to produce a maximum temperature of 93^{o}C(200^{o}F).

.5 Wiring and connections within the cabinet shall meet local codes and be factory installed and connected, and shall terminate in a junction box located on the top rear of the cabinet ready for connection to a power source on the jobsite.

.6 Cabinet electrical devices shall be U.L and CSA certified.

.16 **Safety Storage Cabinets; Fume Hood Base Type:**

.1 Construct storage cabinets of double wall, welded sheet steel construction with double panel door; overall thickness, 50mm(2"). Provide cabinets with 4 adjustable levelling devices to compensate for approximately 25mm(1") base building floor differential. Raise door sill 50mm(2") above bottom of the cabinet to form a liquid-tight well. Overlap cabinet frame with hinged doors having continuous piano type hinges with three-point locking mechanism shiplapped at opening stile.

.2 Provide adjustable galvanized sheet steel shelves with four edges turned down 25mm(1") and additionally returned under 16mm(5/8") on all edges. Provide 13mm(1/2") incremental shelf adjustment.

.3 Provide 50mm(2") vents, complete with fire baffle covers on each vent, with 50mm(2") dia. fine metal filter.

.4 Except for galvanized shelves and on request only, factory paint cabinets with safety yellow enamel. Provide overlaid red warning letters on doors as follows: "**FLAMMABLE -- KEEP FIRE AWAY**".

.5 Construction shall meet requirements of OSHA Standard 1910-106(d)(3), considered as organized storage centres for flammable and combustible liquids. Cabinets shall be UL1275 listed to meet Canadian and US code requirements. Provide grounding screw lug in accordance with Codes.

.6 Construct safety storage cabinets sizes adjusted for under-counter and under fume hood configurations as required by Drawings.

2.4. WALL AND FLOOR CABINET CONSTRUCTION

.1 **Materials and Thicknesses:** Use the following standard steel thicknesses for this furniture manufacturing:

.1 1.2mm(18 Ga) levelled prime grade furniture steel for sides, top, back, bottom, false bottom, dust caps and bases on tall storage cabinets.

.2 3mm(11 Ga) cold rolled steel for levelling device brackets on floor storage cabinets only.

.2 **Wall Storage Cabinets Sliding Glass Door or Open Type:**

.1 Cabinet sides, bottom and top shall be flat panels die-formed "U" shaped flange on front edge and a return flange on back edges. Provide top and bottom panels with 40mm(1-9/16”) flanges on both ends with double returns. Reinforce front flanges on both sides and top with a flanged "U" shaped member. Both front side stile reinforcing channels shall contain a vertical row of shelf support clip holes 5mm(3/16”) diameter and 13mm(1/2”) o.c. Reinforce bottom with "U" channel.

.2 Design of cabinet shall enable it to be easily converted to a sliding glass door cabinet.

.3 Wall cabinets shall be provided with an internally painted, flush bottom enclosure interlocking with front floor of cabinet as a telescoping panel with flange at rear and secured through the cabinet back.

.4 Provide shelves with edges turned down on 4 sides 25mm(1”), and return under on front and back by 25mm(1”). Provide shelf adjustment on 13mm(1/2”) increments for full height of cabinet interior. Provide a minimum of four zinc plated shelf clips per shelf. Provide shelves 914mm(36”) and longer with ‘HAT” channel reinforcement at front edge.

.5 Provide sliding glass doors in 6mm(1/4”) sheet glass with "H" shaped extruded aluminium shoes fixed to and running the full width of the door bottom. Provide vinyl glazing channel fixed into shoe. Provide 2 removable spring steel and nylon wheel assemblies, one located at each end. The door assembly shall run on an inverted double "Y" shaped extruded aluminium track. Provide each door at top with 2 PVC guides running in double "U" shaped extruded aluminium track. One finger pull per door shall be ground into glass on side of door next to cabinet frame.

.6 Install 25mm(1”) dia. felt bumpers on vertical reinforcement members of the cabinet frame.

.3 Deleted

.4 **Wall Storage Cabinets: Hinged Doors:**

.1 Fabricate cabinets as specified in Para. 2.4.2.1. with two front side frames modified to minimize dust penetration. Provide intermediate vertical members in a double “U” shaped channel. The front edges of the top panel shall have a channel formation reinforced with a flanged “U” channel. The exterior bottom panel shall have a channel formation at front and fitted with a flanged interior floor.

.2 Hinged doors shall be as specified in Para. 2.3.3.3.

.5 **Floor Storage Cabinets; Sliding Glass Doors and Open Type:**

.1 Fabricate cabinet bottom as specified in Section 2.3.2.8., 2.3.2.9. and 2.3.2.10., with vertical height divided into two equal sections, each with a set of sliding doors and track system. Provide a finished floor full width and depth of interior with return flanges turned down on all four edges in both upper and lower sections and welded in place. Fabricate cabinet floor flush with front flange.

.2 Provide a shelf separating upper and lower sections, with 40mm(1-9/16”) flanges on all four sides, fixed and spot welded in place.

.3 Provide built-in toe space 100mm(4”) high extending full width of cabinet recessed back 75mm(3”) from front face with a 10mm(3/8”) diameter steel threaded bolt type levelling device in each corner.

.4 Provide sliding glass doors in 6mm(1/4”) sheet glass with "H" shaped extruded aluminium shoes fixed to and running the full width of the door bottom. Provide vinyl glazing channel fixed into shoe. Provide 2 removable spring steel and nylon wheel assemblies, one located at each end. The door assembly shall run on an inverted double "Y" shaped extruded aluminium track. Provide each door at top with 2 PVC guides running in double "U" shaped extruded aluminium track. One finger pull per door shall be ground into glass on side of door next to cabinet frame.

.6 **Floor Storage Cabinets - Hinged Doors:**

.1 Construct cabinets as per Para. 2.3.2.8., 2.3.2.9. and 2.3.2.10., and modified as in Para. 2.4.5.1.

.2 Hinged doors as per Para. 2.3.3.3.

.7 **Dust Cap:**

.1 Dust caps shall be fabricated from 1.2mm(18 Ga) steel, and shall mount flush with the front edge of the cabinet and extend back at an angle of 30 degrees to a point perpendicular to the rear of the cabinet. Ends shall be finished and flanged so as to allow attachment to the cabinet below.

2.5 STEEL FURNITURE FINISH

Paint Performance data is available in Appendix 1

2.6 WOOD FINISH

Wood portions of cabinets shall have the following finish:

1. Finish shall be a laboratory grade, chemically resistant, acid curing catalytic lacquer finish.

2. Apply sealer to all exposed and semi-exposed surfaces.

3. Sand all finished surfaces with a fine sandpaper between each application of sealer and finishing lacquer.

PART 3: EXECUTION

3.1 INSTALLATION

.1 Install casework within system, align and set level with levelling devices, in accordance with shop drawings.

.2 At wall locations secure wall cabinets to face of finished walls and partitions, applying self-tapping screws through wall finish material into each concealed stud flange.

.3 Install components to effect a secure, neat and complete installation.

END OF SECTION