

Part 1 - GENERAL

STEEL LABORATORY CASEWORK IS NOT IN CONTRACT. THIS SECTION PROVIDED FOR INFORMATION ONLY.

1.1 RELATED SECTIONS

- .1 Division 15 - Mechanical
- .2 Division 16 - Electrical

1.2 REFERENCES

- .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 167- 94a, Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM A 653/A 653M- 95, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .3 ASTM B 117- 95, Practice for Operating Salt Spray (Fog) Apparatus.
 - .4 ASTM B 456- 95, Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - .5 ASTM E 54- 80(1996), Test Methods for Chemical Analysis of Special Brasses and Bronzes.
 - .6 ASTM E 478- 89a(1996), Test Methods for Chemical Analysis of Copper Alloys.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.1- M 90, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.2- M 91, Flat, Clear Sheet Glass.
 - .3 CAN/CGSB-12.3- M 91, Flat, Clear Float Glass.
 - .4 CAN/CGSB-12.11- M 90, Wired Safety Glass .
 - .5 CAN/CGSB-12.12- M 90, Plastic Safety Glazing .
 - .6 CAN/CGSB-71.20- M88, Adhesive, Contact, Brushable.
- .3 Canadian Standards Association (CSA)
 - .1 CAN3-A172- M79 (1996), High Pressure Paper Base, Decorative Laminates.

- .2 CAN3-0188.1- M78, Interior Mat-Formed Wood Particleboard.
- .3 CSA 0112 Series- M1977, CSA Standards for Wood Adhesives.

1.3 SAMPLES

- .1 Submit samples in accordance with Section 013300 - Submittal Procedures.
- .2 Submit duplicate samples of:
 - .1 Each countertop material, 300 x 300 mm including external corner.
 - .2 Each standard colour of cabinet finish on 300 x 300 mm steel sheet.
 - .3 Each item of cabinet hardware.
 - .4 Each item of plumbing brass and electrical outlet.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 013300 - Submittal Procedures.
- .2 Indicate:
 - .1 Details of laboratory casework construction and related dimensional position, with sections.
 - .2 Location of each casework unit.
- .3 Include test reports by independent testing laboratories indicating results of furniture finish tests.

PART2 - PRODUCTS

2.1 MATERIALS

- .1 Galvanized steel sheet: commercial quality to ASTM A 653 with Z275 zinc coating.
- .2 Stainless steel tubing: AISI Type 304, commercial grade, seamless welded, 1.25 mm wall thickness.
- .3 Glass:
 - .1 Float glass: CAN/CGSB 12.3, 6 mm thickness.
 - .2 Laminated safety glass: CAN/CGSB 12.1, 6 mm total thickness.

2.2 COUNTERTOP MATERIALS

- .1 Laminated plastic for chemical-resistance to ANSI/NEMA LD3-1995.
- .2 Laminated plastic backing sheet: supplied by same manufacturer as facing sheet, same thickness and colour as face laminate.
- .3 Stainless steel sheet: to ASTM A 167-96, Type 304 or 316, with #4 finish.
- .4 Particleboard core: to CAN3-0188.1, Grade R sanded faces, of thickness indicated.
- .5 Sealer: water resistant sealer or glue recommended by laminate manufacturer.
- .6 Draw bolts and splines: as recommended by fabricator.

2.3 COUNTERTOP FABRICATION

- .1 Fabricate laboratory countertops, splashbacks and service enclosures as indicated, postformed or non-formed as indicated.
- .2 Use specified materials in designated locations as follows:

Code	Materials
TSPL	Postformed grade acid resistant plastic laminate over MDF core.
TSST	Stainless steel, 1.58 mm thick over MDF core.
- .3 Fabricate countertop, splashback and service enclosure sections in as long a length as practicable.
- .4 Cut holes for fittings, accessories, and equipment.
- .5 Round or chamfer exposed edges and corners of cutouts.
- .6 Apply plastic laminate to core faces, backs and edges under pressure and heat.
- .7 Form countertops, backsplashes, integral sinks and work surfaces of 1.58mm thick type 304 stainless steel in #4 finish, with edges returned as indicated.
- .8 Drill plumbing trim holes to verified plumbing trims and centre dimensions.
- .9 Connect steel reinforced tops to cabinets with bolts.

- .10 Apply metal tops to a waterproof particle board or plywood core using contact adhesive.
- .11 Cove internal corners of sheet metal to 12 mm radius.
- .12 Finish exposed edges and surfaces in same manner as specified for working surface of countertop material.
- .13 Make allowances around periphery and where fixed objects pass through or project into countertop material to permit normal movement without restriction.
- .14 Joints: field welded or mechanical watertight.

2.5 ELECTRICAL FITTINGS

- .1 Electrical outlets: to applicable EEMAC standards and CSA approval. Refer to Division 16.
- .2 Electrical raceway enclosure as indicated, to CSA approval, prefinished to match lab cabinets.

2.6 CABINET HARDWARE

- .1 Hinges:
 - .1 Recessed and secured in place.
 - .2 Two hinges for doors to 1 219 mm high; three hinges for larger doors.
 - .3 Load capacity of 90 kg through full opening range without permanent distortion.
 - .4 1.9 mm steel with five knuckle type barrel screwed to door and fastened to cabinet with two countersunk 8-32 cadmium plated machine screws. Enamel finish.
- .2 Door catch: Nylon roller friction catch mounted at mid-height location on pull side of doors. L shaped stainless steel strike plate secured to cabinet with self-tapping screw.
- .3 Door bumpers: two rubber tongued bumpers per door mounted on case frame.
- .4 Pulls: recessed flush fitting finger pulls in clean anodized aluminum or black extruded PVC.

- .5 Drawer slides: full extension style with 25 mm diameter nylon wheels with steel ball bearing slides side mounted on drawers.
 - .1 One wheel on each drawer slide and one wheel on each drawer suspension track.
 - .2 Drawer suspension track removable, but mechanically fixed to the vertical posts.
 - .3 Drawer tracks designed to eliminate metal to metal contact and side to side play.
 - .4 Self-closing action for minimum last 150 mm of drawer travel.
 - .5 Built-in stops to prevent inadvertent removal of drawers, but designed so that drawers can be removed by lifting the front of the drawers and pulling out.
 - .6 Closing action cushioned by two rubber bumpers.
 - .7 Free and quiet operation when drawer fully loaded.
- .6 Leveling devices: 8 mm diameter steel threaded bolt type complete with nylon caps to cover access holes.
- .7 Locks: door locks for storage cabinets as indicated. Provide locks matching existing and key new locks to existing keying system. Provide 2 keys for each lock.

2.7 FABRICATION

- .1 Fabricate steel laboratory casework to details.
- .2 Align end panels, top rails, bottoms and vertical posts, at intersections in same plane, without overlap.
- .3 Grind exposed welds flush and smooth , burnish to match adjacent surfaces.
- .4 Provide 2 mm thick metal for tapping strips, gussets, drawer runners and hinge reinforcements.
- .5 Use 1.5 mm thick metal for cabinet top rails, hanging brackets, frame and base.
- .6 Use 1.2 mm thick metal for cabinet door outer pan and slide support, cross rails, cabinet fronts, scribe strips and fillers.

- .7 Use 0.9 mm thick metal for drawer and door inner panels, drawer bodies and back panels to cabinets.

2.8 CABINETS

- .1 Construct cabinet bodies of sheet metal, flanged and returned at exposed gables to receive flush mounted drawer fronts and doors.
- .2 Flange and set back top rails and bottom panels.
- .3 Provide removable backs, knee space panels or access doors where piping or wiring occur.

2.9 DOORS

- .1 Fabricate doors of double pan construction, 19 mm thick, telescoped inner pan into outer pan with exposed vertical edge formed into channel shape having returned lip over inner pan, offset to receive lip.
- .2 Provide reinforcement for hardware attachment to inner pan and conceal. Install hardware.
- .3 Doors bumpered by felt bumpers installed on vertical reinforcement members of cabinet frame. 25 mm diameter 3 mm thick felt pads adhesive one side, two per door.

2.10 DRAWERS

- .1 Fabricate drawer fronts of double pan construction with continuous sound deadening material, 19 mm thick, telescoped inner pan with exposed vertical edge formed into channel shape having return lip over inner pan, offset to receive lip .
- .2 Weld drawer bodies to front through flanges on sides and bottom, and back through flanges at rear.
- .3 Extend flanges outward or downward, top of side and back rolled. Cove corners to 12 mm radius.
- .4 Reinforce drawers to prevent sagging or binding.
- .5 Provide reinforcements for hardware and install finish hardware.
- .6 Drawer dividers where indicated, front to back removable steel divider, drawers dimpled in three positions for divider, top edge of divider lipped 6 mm with bottom edge encased in white PVC 'U' channel.

2.11 SHELVES

- .1 Form shelves of 1.2 mm steel sheet with front and rear edges flanged down 19 mm and hemmed back at 30 deg to underside of shelf, full depth and width of interior.
- .2 Support shelves with zinc finish shelf clips inserted in slots in front stile and in formed channel in back.
- .3 Notch flanges at sides to match, and engage with embossments on side panels.
- .4 Adjustable on 12 mm increments.

2.12 DUST COVER TOPS

- .1 Provide sloped dust cover tops to wall cabinets where indicated. Return ends where ends are exposed.
- .2 Slope dust covers upward 30 degrees from front to back of cabinet.
- .3 Attach covers from inside of cabinet.

2.13 FLAMMABLE STORAGE CABINETS

- .1 Construction to meet OSHA Standard 1910 106 (d) (3) as organized storage centres for flammable and combustible liquids and NFPA Flammable and Combustible Liquids Code #30.
- .2 Constructed from 1.22 mm steel with double wall welded construction; sides top, bottom and doors.
- .3 Inner and outer walls spaced 38 mm apart.
- .4 Door sill raised 50 mm above bottom of cabinet to form liquid tight well.
- .5 Doors to overlap cabinet frame, continuous piano type hinge, three point locking mechanism, shiplapped at opening stile.
- .6 Adjustable satin coat galvanized metal shelves. All edges turned down 19 mm and returned 12 mm on front and back. Adjustable on 12 mm increments.
- .7 Cabinet with four 25 mm leveling devices.
- .8 50 mm threaded vents, one upper and one lower on sides of cabinet, complete with fire baffle covers on each vent. Vent covers galvanized fine metal, 50 mm space filled with filter media.

- .9 Factory finish interior and exterior of cabinets with safety yellow enamel with red letters warning "FLAMMABLE - KEEP FIRE AWAY" on doors.
- .10 Acceptable product, Mott Manufacturing Insulated Solvent Units (18" Deep), 36" Wide, standing height, 2 door - right hinged, or approved substitution.

2.14 ACID STORAGE CABINETS

- .1 Constructed same as base cabinets, except whole interior to be lined with 6 mm thick composition cement board sheathing.
- .2 Lining on back of doors fitted so that when the door is in a closed position the lining will fit inside the interior lining of the cabinet.
- .3 All acid storage cabinets to contain one full width stainless steel shelf.
- .4 Back panels for above cabinets to be removable and held in place with stainless steel screws to vertical back framing members.
- .5 Provide cabinets under fume hoods with two exhausts ducts that extend up through the top material into the hood side wall and terminate with entry to the hood chamber at a point above the upper baffle. Ducting material, 38 mm diameter O.D. flexible plastic tubing for on site installation.
- .6 Acceptable product, Mott Manufacturing Acid Storage Units (18" Deep), 24" Wide, standing height, 1 door - right hinged, or approved substitution.

2.15 Standard "H" Frame Table

- .1 Acceptable product, Mott Manufacturing Miscellaneous Items - Tables (28" Deep), 60" Wide, standing height, without drawers, or approved substitution.

2.15 FILLER PANELS

- .1 Scribe filler panels to be flanged on one side and flat on the other and fit into double angles secured to wall. Cut on jobsite to suit wall conditions and installed with no visible mounting screws.
- .2 Corner filler panels of two-piece construction, one fixed panel and the other a variable panel to facilitate required dimensions. Each with flanges and integral 100 x 100 mm toe space filler to interlock with its counterpart.

- .3 End filler panels flanged 25 mm on one side and secured to back of cabinet. Edge extending to wall to be flat and fit into a double angle secured to the wall with no visible mounting screws.

2.16 FINISHING

- .1 Painted surfaces to conform to CGSB 1-GP-300 and AAMA 603.8.
- .2 Grind and polish spot weld marks from exposed surfaces.
- .3 Immerse in hot alkaline to remove grease, oil, dirt and foreign matter.
- .4 Neutralize, wash, and apply metal pretreatment coating.
- .5 Apply primer, and bake at 175°C, to minimum dry film thickness of 0.02 mm.
- .6 Apply high temperature polyester enamel and bake at 212°C to min dry film thickness conforming to following requirements:
 - .1 Physical:
 - .1 Gloss (60°) Photovolt - 50, +/- 5 units.
 - .2 Hardness (pencil) - 4H minimum.
 - .3 Impact- 28 inch pounds - no impact.
 - .4 Adhesion (knife and cross hatch) - no film fracture.
 - .5 Flexibility (conical mandrel) - no film fracture.
 - .6 Mar resistance - excellent.
 - .2 Chemical resistance: pass results for chemical spot tests when tested in accordance with SEFA 8 standards for chemical resistance, adhesion and hardness for metal laboratory furniture.
 - .1 Bases and salts: sodium hydroxide 10%, sodium hydroxide 25%, ammonium hydroxide 28%, hydrogen peroxide 5%.
 - .2 Acids: acetics 98%, hydrochloric 37%, nitric 25%, phosphoric 75%, sulphuric 25%, sulphuric 85%.
 - .3 Solvents: acetone, carbon tetrachloride, ethyl acetate, ethyl alcohol, ethyl ether, formaldehyde 37%, methylethyl ketone, xylene.

- .7 Colour: painted custom colour to closely match existing cabinet colours.

PART3 - EXECUTION

3.1 INSTALLATION

- .1 Relocate existing cabinets and countertops as indicated.
- .2 Modify existing cabinets and countertops for relocation where required.
- .3 Install laboratory casework plumb with countertops level to 1.5 mm in 3 m.
- .4 Level base cabinets by adjusting levelling screws.
- .5 Fit closure strips and scribe to irregularities of adjacent surfaces, maximum gap opening 0.5 mm.
- .6 Support wall cabinets on continuous galvanized steel hanging brackets.
- .7 Bolt adjoining cabinets together, maximum width of joint 1 mm.
- .8 Apply small bead of sealant at junction of countertop and adjacent wall finish.
- .9 After installation, adjust operating hardware.

3.2 CLEANING

- .1 On completion, touch up marred or abraded finished surfaces.
- .2 Wipe down surfaces to remove fingerprints and markings and leave in clean condition.

END OF SECTION