Part 1 General

1.1 RELATED SECTIONS

.1 Section 03 30 00 – Cast-in-Place Concrete

.2 Section 03 35 43 – Polishing of concrete slab

.3 Section 04 22 00 – Concrete Unit Masonry

.4 Section 07 92 00 – Joint Sealants

.5 Section 09 21 16 – Gypsum Board and Lightweight Concrete Assemblies

.6 Section 09 30 13 – Ceramic Tiling

.7 Section 09 65 16 – Resilient Sheet Flooring

.8 Section 09 91 23 – Painting - New work

.9 Section 09 96 53 – Epoxy Coatings

1.2 REFERENCE STANDARDS

.1 American National Standards Institute (ANSI)

.1 ANSI A208.1-2009, Particleboard.

.2 ASTM International (ASTM)

.1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.2 ASTM A240/A240M- 11b, Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels.

.3 ASTM A653/A653M- 11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.4 ASTM B117- 11, Standard Practice for Operating Salt Spray (Fog) Apparatus.

.5 ASTM B456- 11e1, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

.6 ASTM E54-80(1996), Standard Test Methods for Chemical Analysis of Special Brasses and Bronzes.

.7 ASTM E478-08, Standard Test Methods for Chemical Analysis of Copper Alloys.

.3 CSA Group

.1 CSA O112.10-08, Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure).

.4 Electrical and Electronic Manufacturers Association of Canada (EEMAC)

.5 National Electrical Manufacturers Association (NEMA)

.1 NEMA LD 3-2005, High-Pressure Decorative Laminates (HPDL).

.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards.

.1 SCAQMD Rule 1113-A2011, Architectural Coatings.

.2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data

.1 Submit required data sheets and manufacturer's instructions and documentation for steel laboratory casework. Data sheets must indicate product characteristics, performance criteria, dimensions, limitations and finishing.

.3 Shop Drawings

.1 Submit drawings stamped and signed by a professional engineer registered or licensed in Quebec, Canada.

.2 Indicate on drawings:

.1 Details of laboratory casework construction and related and dimensional position, with sections.

.2 Location of each casework unit.

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

.4 Samples

.1 Submit duplicate samples of:

.1 300 x 300 mm samples of solid laminate.

.2 Standard cabinet finish colour for painted steel.

.3 Casework hardware.

.2 Submit one standard double sink (furniture item # 112) that will be manufactured upon approval of shop drawings and, if accepted, may be installed in the final work.

.3 20Submit one television housing (furniture item# 102) that will be manufactured upon approval of shop drawings and, if accepted, may be installed in the final work.

.5 Sustainable Design Submittals

.1 Construction Waste Management

.1 Submit project waste reduction workplan highlighting recycling and salvage requirements.

.2 Submit calculations on end-of-project recycling rates, salvage rates and landfill rates demonstrating that 75% of construction waste was diverted from landfills.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 – Common Product Requirements.

.2 Delivery and acceptance: Deliver materials to site in their original packaging, complete with labels indicating the manufacturer's name and address.

.3 Storage and handling

.1 Store materials indoors and off ground in a clean, dry, well-ventilated area in accordance with manufacturer's recommendations.

.2 Store steel laboratory casework so that it is protected from nicks, scratches and blemishes.

.3 Replace defective or damaged materials with new.

Part 2 Products

2.1 MATERIALS

.1 Cold-rolled steel sheet free of scale, roughness, deep scratches or rust to ASTM A366-85, class 1.

.2 Stainless steel sheet: to ASTM A167, Type 304, with #4 satin finish (AISI).

.3 Steel profiles and plates: to CAN/CSA G40.20/G40.21, Type 300W.

.4 Stainless steel tubing: AISI Type 304, commercial grade, seamless welded, 3 mm thick wall.

.5 Steel tubing to ASTM 53M - 18.

.6 Sealing products: to specifications of Section 07 92 00. Be careful when using sealing products in antiligature areas identified in sheet A101 of architectural documents.

.7 6 mm stainless steel rivets.

.8 Floor anchors: internally threaded anchor sleeves, 303 stainless steel. Bolt, 12.7 mm diameter. Sleeves will be machine installed.

.9 Solid laminate: to NEMA LD 3, colour at discretion of Departmental Representative.

.10 19 mm plywood covered with plastic laminate on all exposed surfaces. Colour and finish: At the discretion of Departmental Representative.

.11 Sound-absorbing material: Rockwool insulation as a mattress for soundproofing hollow furniture. Widths and thicknesses according to the items to be soundproofed.

.12 Hardware: Hinges, locks, etc. as required in drawings.

.13 Paint applied in shop. See below for details on type of paint to be used for all painted steel components.

2.2 SERVICE FITTINGS

.1 See mechanical engineer's documents.

2.3 SINKS

.1 See engineer's documents for waste fittings, strainers, plugs and overflows.

.2 Locate waste outlets where indicated.

.3 Stainless steel sinks: To ASTM E54 and ASTM E478, 14 gauge, Type 304, stainless steel welded construction without solder or fill, exposed surface polished No 4 finish.

.1 Apply sound-deadening undercoating to sinks and drainboards.

.2 Include stainless steel waste fittings.

.4 Fabricate steel laboratory casework components details.

.5 Align end panels, top rails, bottoms and vertical posts at intersections in same plane without overlap.

.6 Grind exposed welds flush and smooth, and burnish to match adjacent surfaces.

.7 See architectural documents for all sink components and thicknesses.

2.4 STAINLESS STEEL FURNITURE FIXED TO THE FLOOR

.1 The following minimum thicknesses, unless otherwise specified, in accordance with current standards, must be used in the manufacture of steel components:

.1 Gauge 14 (1.7 mm) for levelling devices, drawer support rails and front top reinforcement rails of furniture

.2 Size 18 (1.2 mm) for all other furniture components

.2 Furniture must have successfully passed all resistance tests required by SEFA-8 standards, with supporting test results.

.3 Element frames must be constructed in complete and integral units of rigid construction

.4 Bolts or screws are only accepted for removable parts.

.5 The exposed welds of the steel elements must be ground so that they are level with the adjacent surface.

.6 Each piece of furniture must include concealed lower and upper rails to ensure the rigidity of the element and recessed at the rear of doors or drawer fronts. Vertical posts and horizontal rails must form a complete frame on which doors and drawers rest, thus preventing people from seeing inside the furniture and allowing dust to pass through.

.7 Furniture side panels must be shaped in one piece with a special folding including front and rear posts to give greater rigidity to the assembly. The front profiles must be perforated to accommodate both left and right hinges and the entire range of standard drawers and reinforced with perforated U-shaped profiles to accommodate the shelf support racks. The rear profiles must be perforated to accommodate the entire range of standard drawers and shelf support racks.

.8 All specific components and assemblies, including doors, drawers, drawer suspension bars and removable rear panels, must be interchangeable without the need for special tools in all types of cabinets,

.9 Each corner of the base cabinets must be equipped with an 8 mm (5/16") leveling bolt, adjustable with a screwdriver from inside the furniture. Black plastic caps must be supplied to cover the holes in the base of the cabinet. A leveller support box, full depth of the furniture, must be welded to the side of the cabinet and the top of the cabinet floor.

.10 Floor furniture must be provided with a kicking space as indicated on the architectural plans.

.11 The front and rear sides must be connected together by a 'U' shaped profile with double reinforcing return in the upper front part of the furniture.

.12 No visible horizontal cross members between drawers and doors are acceptable.

.13 The top front rail, made of 14 gauge steel, must be shaped into a "U" shape with a full return on each leg of the "U", thus forming a rigid structure to support the counter top.

.14 No perforation or mechanical fixing is acceptable on the exposed sides of the furniture**.**

2.5 WALL CABINETS

.1 Gauges and construction details are the same for painted steel laboratory casework and stainless steel laboratory casework.

.2 Frames:

.1 For sides, underside and top, use 1.2 mm (18 gauge) flat panels with a reinforcement bend on the front edges to match base components.

.2 For bottom use a 1.2 mm (18 gauge) flat steel panel turned over by 13 mm (1/2") on all four sides and reinforced by two hat-shaped steel profiles, welded to the panel vertically 125 mm (5") from each side and used as reinforcement for shelf support.

.3 For cabinet floor, use 1.2 mm (18 gauge) steel with reinforcement on all four sides and place in the bottom of the cabinet to make it easy to lift up and out and to conceal the anchors securing the bottom of the cabinet to the wall.

2.6 CABINET AND FURNITURE COMPONENTS

.1 Shelves

.1 Shelves inside the boxes or on the supports must be made of 18 gauge stainless steel (see drawings). The edges must be folded 19 mm (3/4") on all four sides and folded 19 mm (3/4") at the front and rear.

.2 When installed in the cabinets, the shelves must be adjustable every 13 mm (1/2") and must be full width and full depth of the furniture.

.3 When installed on the wall, the 18 gauge shelves will be fixed and equipped with 16 gauge vertical supports spaced according to architectural drawings.

.4 Four stainless steel finish brackets are provided for each of the adjustable shelves.

.2 Doors:

.1 Include solid hinged doors that consist of two interlocking metal panels containing acoustic wool insulation covering the entire interior surface of the door.

.2 Uniformly weld the two side edges of the door over the entire thickness to reinforce the door and prevent improperly fitted joints.

.3 Include removable rear panel that is mechanically attached to the front panel by two fasteners on the bottom of the door to prevent vibration when the door is opened and closed, and form a rigid 19 mm (3/4") thick front. Weld a top hat rail inside the rear panel to ensure rigidity of assembly.

.4 Sufficiently reinforce hinges on the side of the door to ensure the door fits perfectly and to prevent sagging.

.5 The stainless steel surface handle, as specified on the architectural plans, must be installed as indicated on the architectural plans, opposite the hinges, to allow easy and natural opening.

.6 Include a friction latch to hold the door leaf in place.

.3 Drawers

.1 The four sides of the drawers must be raised to form an airtight box and facilitate cleaning of the inside of the drawers.

.2 Drawer fronts must consist of two interlocking metal panels containing acoustic wool insulation covering the entire inner surface of the front.

.3 The outer panel must be removable and mechanically attached to the inner panel, thereby forming an integral part of the drawer and to prevent vibration in the opening and closing of the drawer and to form a rigid 19 mm (3/4") thick front.

.4 The two side edges of the top of the drawers must be welded uniformly over the entire thickness to add strength to the door and prevent improperly fitted joints.

.5 Drawer sides must be reinforced upwards by a 19 mm (3/4") outward bend and a 6 mm (1/4") inward bend. The front and rear drawer panels are reinforced by a 19 mm (3/4") four-sided folding and welded to the raised edges to create a rigid and square drawer.

.6 Drawers will slide on nylon wheels equipped with 25 mm (1") diameter ball bearings. One such wheel will be on each slide and one on each suspension bar, which will be mechanically attached to the vertical uprights of the furniture.

.7 Metal slides must be designed to eliminate direct metal-to-metal contact or surface-to-surface contact. These will automatically close again in the last 178 mm (7") of the drawer stroke.

.8 The two parts of the metal slides, the part mounted on the drawer and the part attached to the cabinets, will have a curved top edge along their entire length, thus eliminating any lateral movement of the drawers once they are fully opened.

.9 Slides must have stops to prevent inadvertent removal of drawers but must be removable by upward and forward movement. The automatic closing system of the drawer will be made silent by the installation of two rubber bumpers in strategic places. The system will work even when filled.

.10 Furniture must be designed to allow the addition of full extension sliders to replace standard sliders without the assistance of modification to the furniture. This can be done at any time, once the cabinets are in place.

.11 A stainless steel surface handle will be installed in the center of the drawer.

2.7 COUNTERTOPS – HORIZONTAL SURFACES

.1 Stainless steel:

.1 Fabricate stainless steel countertops using Type 304 stainless steel sheet in #4 (AISI) satin finish, as shown in drawings.

.2 Use a sheet at least 0.078" thick (14 gauge) for the countertops

.3 Reinforce countertops with 1.6 mm (16 gauge) hat-shaped stainless steel stiffeners placed no more than 400 mm centre-to-centre, welded to the back to prevent twisting and warping.

.4 Exposed edges 6.4 mm high in relation to the horizontal surface, hemmed back 25 mm widthwise and inclined 30° toward the counter surface, or as indicated in the drawings.

.5 Deliver countertops in one piece where possible. If the counter is too long to be delivered in one piece, fabricate mechanical seals and install them in the lab at strategic locations to prevent liquid flow.

.6 Arc weld all welds (electric welding) without discouloration, using materials similar to the sheet metal described above. No other type of welding is authorized. All welds are continuous, free of cracks, sandblasted and polished to a #4 satin finish.

.7 Secure countertops to casework using stainless steel anchors. Apply light-coloured waterproofing sealant between counter dado surfaces and walls. Refer to Section 07 92 00 - Joint Sealants for type of seals to be used.

.2 Solid laminate countertops:

.1 Compact structural laminated plastic: To NEMA LD3-2005 requirements, self-supporting, 25 mm thick unless indicated otherwise.

.2 Both sides of the panels must be coated with a shop-thermofused decorative sheet, colour within standard range at the discretion of the Departmental Representative.

.3 Finish: Matte.

.4 Black core.

.5 Visible edges.

2.8 TELEVISION HOUSINGS

.1 See architectural drawings for details of frame.

.2 Perforated painted steel:

.1 Type of perforation: Round.

.2 Centres offset by ¼ in.

.3 Open area: 51%.

.4 Gauge: See architectural drawings for details.

.3 Polycarbonate:

.1 Transparent polycarbonate sheet with superior properties, including impact and breakage resistance to ANSI Z97.1-2009, 2015.

.1 6 mm thick, unless otherwise indicated in the plans.

.2 Include sheet big enough to cover the entire surface (no joints).

.3 Light transmission @ 0.118'' (ASTM D1003): 86%.

.4 Impact resistance (drop ball test 0.5 lb.): No breakage.

.5 Shading coefficient @ 0.236'' (NFRC 100-2010): 0.97.

.6 Weight of one 0.125'' sheet: 0.78 lb./sq. ft.

2.9 TABLE LEGS

.1 Gauges and construction details are the same for painted steel laboratory casework and stainless steel laboratory casework.

.2 Construct fixed-height freestanding casework using self-supporting H-shaped legs. Fabricate legs using 38 mm x 38 mm x 1.5 mm (1 1/2" x 1 1/2" 16 gauge) thick tubular steel, as complete, fully welded units. Equip each base with front and rear levelling bolts, as specified in the drawings.

2.10 HARDWARE

.1 Stainless steel handle

.1 Stainless steel handle, C-shaped, rear mounted. The corners must be rounded.

.2 Dimensions: ± 100mm length, ± 15mm width and ± 30mm projection.

.2 Stainless steel continuous hinge

.1 Stainless steel continuous hinge: length according to architectural drawings, 32 mm wide, fixed pin, with screws 50 mm on both sides

.3 Lock

.1 Install a lock on each opening cabinet or drawer, unless otherwise specified on furniture elevations

.2 Furniture locks for cabinet doors or drawers: in accordance with ANSI/BHMA A156.11

.1 Cam lock with steel cylinder, chrome finish

.3 Keys:

.1 The key must be the same for all locks in the project. Coordinate this element with the cabinetmaker.

.2 The key must be removable in the locked and unlocked position.

2.11 ACCESSORIES

.1 Keyboard drawer

.1 Ambidextrous keyboard drawer, on slide, adjustable in height, allowing the use of a keyboard and mouse.

.1 The mouse must be able to be placed easily to the left or right of the keyboard. A mouse pad should cover the left and right ends of the tray.

.2 Anti-slip strips or mechanical restraint system must be installed to prevent the keyboard from slipping.

.3 A foam wrist rest must cover the full width of the tray.

.4 Dimensions of the tray: approximately 685mm wide and 270mm deep.

.5 A mechanism must be included to adjust the height of the shelf to an range of approximately 175mm.

.6 The sliding system must allow the drawer to be fully concealed under the counter (when closed) and fully extended from the counter in the open position.

.2 Protective case for computer

.1 Computer dust protection case, 2.3mm thick aluminum (11 gauge) with:

.1 Front door with key lock

.2 Removable panel at the back for access to connections.

.3 Rear opening for wire exit

.4 Two (2) 100mm fans

.5 Air inlets and dust and particle filters

.6 External dimensions: 305mm wide, 610mm deep and 685mm high.

.3 Adjustable monitor holder(s)

.1 Articulated arm(s), supporting the monitor(s), fixed to a vertical column, polished aluminum finish

.1 Desk Mounting System: Clip through the desk counter. Predrill the counter in the location provided by the Departmental Representative and in the diameter recommended by the manufacturer.

.2 Load capacity of 5 kg (11 lb) per monitor.

.3 Arms tested to perform 10,000 movement cycles.

.4 The centre of the monitor must be able to be positioned at a height of 460mm or less.

.5 Number of monitors per bracket: see architecture plans

.4 Rectangular grommet with brush:

.1 Rectangular shape, with cover, in black finished aluminum. Opening of about 225mm x 100mm with brush at the bottom of the opening.

.5 Stainless steel circular wire bushings for desk tops:

.1 Circular shape, stainless steel. Opening diameter between 50 and 76mm.

.6 Sealing agent: in accordance with section 07 92 00- Waterproofing coatings

2.12 FINISHING

.1 Grind and polish spot weld marks from exposed surfaces.

.2 Immerse in hot alkaline to remove grease, oil, dirt and foreign matter.

.3 Chemically neutralize alkaline product; then wash and coat with a metal pretreatment coating.

2.13 FINISHING OF PAINTED STEEL CASEWORK

.1 Once all casework components are fabricated and all welding points are ground and polished, pass through a conveyer to undergo a three-step chemical treatment (spraying, neutralization and cleaning) to remove all traces of grease, oil, dirt and other foreign matter from the steel.

.2 Then coat components with a layer of high durability, chemically resistant thermosetting polyester enamel and bake until product surface is dry, to AAMA 603.8 and CGSB 1-GP 300. Ensure that finish also includes all interior casework components to prevent corrosion.

.3 Required chemical resistance to at least SEFA-8 of the "Scientific Equipment and Furniture Association." Technical performance:

.1	Adhesion to substrate	:	100% 5B (ASTM D-3359B).
.2	Hardness	:	2H-4H (ASTM D-3363).
.3	Gloss:		60% (ASTM D-523).
.4	Flexibility:		3 mm mandrel (ASTM D-522).
.5	Impact resistance:		20 in-lb (ASTM D-2794).
.6	Corrosion resistance:		Excellent.
.7	Moisture resistance	:	Excellent

.4 Colour and finish: At the discretion of Departmental Representative.

Part 3 Execution

3.1 EXAMINATION

.1 Verification of conditions: Verify that conditions of substrate previously installed under other Sections or Contracts is acceptable for steal laboratory casework installation in accordance with the manufacturer's written instructions.

.1 Visually inspect substrates in presence of Departmental Representative.

.2 Inform the Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 INSTALLATION

.1 Install laboratory casework plumb with countertops level to 1.5 mm in 3 m.

.2 Level base cabinets by adjusting levelling screws.

.3 Fit closure strips and scribe to irregularities of adjacent surfaces, maximum gap opening 0.5 mm.

.4 Support wall cabinets.

.5 Bolt adjoining cabinets together, maximum width of joint 1 mm.

.6 For wall mounting, provide and install appropriate anchors approved by the Professional, such as dowels, staples, anchor rods, expansion bolts and bushings and toggle bolts.

.7 Ensure that visible fastening devices are compatible with and have the same finish as the material they are inserted into or attached to.

.8 Apply a small bead of sealant at junction of countertop and wall.

.9 After installation, adjust operating hardware.

3.3 CLEANING

.1 Progress Cleaning: Clean in accordance with Section 01 74 00 – Cleaning.

.1 Leave work area clean at end of each day.

.2 Final Cleaning: Remove surplus materials, rubbish, tools and equipment from the site in accordance with Section 01 74 00 – Cleaning.

.1 Touch up marred or abraded finished surfaces.

.2 Wipe down surfaces to remove fingerprints and markings.

.3 Waste Management: Separate waste materials for reuse and recycling in accordance with Section 01 74 19 – Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by steel laboratory casework installation.

END OF SECTION