

**SECTION 12 35 70**  
**STAINLESS STEEL CASEWORK & COUNTERTOPS V1.1**

**PART 1: DESCRIPTION OF WORK**

**1.1 SUMMARY AND SCOPE**

- .1 Section Includes:  
Based on **Provincial Lab Systems SI [SO] Series** metal casework design, furnish and install all casework and work tops. Furnishing and installing all filler panels, knee space panels and scribes as shown on drawings.
- .2 Accessorizing:
  - .1 Furnishing and delivering all service outlets, accessory fittings, electrical receptacles and switches, as listed in these specifications, equipment schedules or as shown on drawings
- .3 Removal of all debris, dirt and rubbish accumulated as a result of the installation of the metal casework to an on-site container provided by others, leaving the premises clean and orderly.
- .4 Related Divisions:
  - .1 Division 11: Laboratory Fume Hoods
  - .2 Division 15: Plumbing and Exhaust Ducting
  - .3 Division 16: Electrical Fittings and Connections

**1.2 BASIS OF WORK**

- .1 .It is the intent of this specification to use **Provincial Lab Systems**, as the standard of construction for stainless steel casework. The construction standards of the **Provincial Lab Systems SI [SO] Series** product line shall provide the basis for quality and functional installation.
- .2 Supply all equipment in accordance with this specification. The offering of a product differing in materials and construction from this specification requires written approval. This approval must be obtained seven (7) days before the proposal deadline.
- .3 General Contractors should secure a list of approved casework manufacturers from the architect as a protection against non-conformance to these specifications.
- .4 The owner/architect reserves the right to reject qualified or alternate proposals and to award based on product value where such action assures the owner greater integrity of product.
- .5 Shop Drawings: For metal laboratory casework. Include plans, elevations, sections, details, and attachments to other work.

- .1 Indicate locations of blocking and other supports required for install of casework.
- .2 Indicate locations and types of service fittings, together with associated service supply connection required.
- .3 Include details of utility spaces showing supports for conduits and piping.
- .4 Show adjacent walls, doors, windows, other building components, and other laboratory equipment. Indicate clearances from above items.
- .5 Include coordinated dimensions for laboratory equipment specified in other Sections.

### **1.3 QUALITY ASSURANCE**

- .1 Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated without delaying the Work, as documented according to ASTM # 548.
- .2 Source Limitations: Obtain laboratory casework, including tops, sinks, service fittings, and accessories, through one source from a single manufacturer.
  - .1 Obtain through same source from the same manufacturer as fume hoods specified in Division 11 Section "Laboratory Fume Hoods"
- .3 Product Designations: Drawings indicate sizes and configurations of casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes, similar door and drawer configurations, and complying with the Specifications may be considered.
- .4 Product Standard: Comply with SEFA 8, "Laboratory Furniture-Casework, Shelving and Tables-Recommended Practices"
- .5 Flammable Liquid Storage: Where cabinets are indicated for solvent or flammable liquid storage, provide units that are listed and labeled as complying with the requirements of NFPA 30 for design, construction, and capacity of storage cabinets by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction.
- .6 Manufacturers shall have at least (5) years experience manufacturing projects of similar size and complexity.

### **1.4 DELIVERY, STORAGE AND HANDLING**

- .1 Do not deliver laboratory casework until painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in location other than installation areas, store only in areas whose environmental conditions meet requirements specified in "Project Conditions" Article below.
- .2 Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering. After fabrication and polishing, surfaces of stainless steel tops shall be given a strippable protective coating for protection during shipment and installation.

## 1.5 PROJECT CONDITIONS

- .1 Environmental Limitations: Do not deliver or install laboratory casework until building is enclosed, wet-work is completed, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels through remainder of construction period.

## 1.6 COORDINATION

- .1 Coordinate layout and installation of metal framing and reinforcement in gypsum board assemblies for support of metal laboratory casework.

## PART 2: PRODUCTS

### 2.1 MANUFACTURERS

- .1 Manufacturers: Subject to compliance with requirements, provide products by the one of the following:
  - .1 Metal Laboratory Casework:
    - .1 Provincial Lab Systems
    - .2 ICScientific
    - .3 Kewaunee Scientific Corp
  - .2 Epoxy Tops, Sinks, and Troughs:
    - .1 Durcon Company, Inc.
    - .2 Laboratory Tops, Inc.

### 2.2 MATERIALS

- .1 Metal: Commercial-quality, T304 [*T316-Lab Grade*] stainless steel with #4 finish, suitable for exposed applications; and stretcher leveled or roller leveled to stretcher-leveled flatness.
- .2 Minimum Metal Thickness: Provide metal laboratory furniture components of the following minimum thicknesses:
  - .1 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 1.2mm (18 ga) for door and drawer fronts, cabinet floor, cabinet sides, vertical front members, cabinet toe kick, service cover panels, table and knee-hole frames, front rails, gable legs and dust caps, false panels, furring and filler panels.
  - .3 1.5mm (16 ga) for tubular rails, legs for tables, gusset plates, cabinet top and intermediate horizontal rails.

- .4 1.9mm (14 ga) drawer slides and side suspension channels.
- .5 3mm (11 ga) leveling bolt gusset plates.

## 2.3 FABRICATION

- .1 General: Complete assembly and finish work at point of manufacture. Perform assembly on precision jigs to provide units which are square; fully reinforced with angles, gussets, and channels; and integrally framed and welded to form a dirt and vermin-retardant enclosure. Where applicable, reinforce base cabinets for sink support. Maintain uniform clearance around door and drawer fronts of 1/16 to 3/32 inch. Doors, drawers, tracks and back panels shall be replaceable in the field without requiring special tools. All standard double door cabinets shall be designed without center stiles to maximize access to the cabinet.
- .2 Fabricate units on precision dies for interchangeability of like-size drawers, doors, and similar parts.
- .3 Provide removable back panels for cupboard 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.
- .4 Cabinet Frame:
  - .1 Provide one-piece die-formed cabinet bottom construction with return side flanges turned down. Spot weld flanges to cabinet sides.
  - .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 levelers and to accept PVC press plugs. It shall be possible to access levelers from above cabinet without removing drawers or drawer supports.
  - .3 Provide additional vertical 75mm (3") "HAT" shaped channels, spot-welded to or formed with the rear vertical corner. Channel shall be provided with pre-punched 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 front corner posts shall be pre-punched 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 rear closure channels shall be "J" shaped 9mm (11/32") x 33mm (1-5/16") x 49mm (1-15/16"). Provide channel with pre-punched holes to receive shelf clips.
  - .5 Doors and drawers shall overlay top intermediates and floor horizontal 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 50mm (2”) 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.
- .5 Stainless Inset [*Stainless Overlay*] Doors: Fabricate doors of 2 telescoping metal panels, 19mm (3/4”) thick, with a sound deadening material extending continuously full-width, and top to bottom.
- .6 Hinged Doors: Reinforce hinged side of door adequately with hinge machine screws to prevent sagging. Secure recessed hinges to cabinet posts with machine screws and concealed self-locking nuts. Provide nylon roller friction catches, mounted on horizontal top or intermediate members pull side of doors. Provide each hinged door with 2 rubber bumpers.
- .7 Stainless Inset [*Stainless Overlay*] Drawers: Fabricate drawer fronts of 2 telescoping metal panels and totally filled with sound deadening material to eliminate possible drumming effect. Form removable outside panel with lip to fit over inside panel on top edge, and to lock into position at bottom with rivets to form a rigid, one-piece 19mm (3/4”) thick drawer front. Drawer body shall consist of one-piece stainless steel construction including the bottom, two sides, back and inner front flanged end which shall be welded to the interior drawer front head. The exterior drawer front shall have a channel formation on the top edge with ground smooth and fully finished return edges telescoping together to form fully sounded-deadened drawer front. Drawer bodies shall have a reinforcing bend on top edges. 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. Provide drawer pulls in central location of drawer face. Two handles shall be provided on units 762mm (30”) and larger. Provide drawers with rubber bumpers, runners, and positive stops to prevent metal-to-metal contact or accidental removal.
- .8 Adjustable Shelves: 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.
- .9 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 Table Legs: Not less than 2-inch square, electrically welded tubing. Provide leg stretchers where necessary to comply with structural performance requirements. Weld or bolt leg stretchers to legs and cross-stretchers. Securely bolt legs to table aprons. Provide leveling device welded to bottom of each leg.
- .11 Leg Shoes: Vinyl or rubber, black, open-bottom type.
- .12 Utilities: Provide space, cutouts, and holes for pipes, conduits, and fitting in cabinet bodies to accommodate utility services and their support-strut assemblies.

- .13 Utility-Space Framing: Manufacturer's standard steel framing units consisting of 2 T304 [T316- Lab grade] C-channel uprights, not less than 1-5/8 inches square by 0.10 inch thick, connected together at the top and bottom by U-shaped brackets made from 1-1/4-by-1/4-inch flat bars. Framing units may be made by welding C-channel material specified for uprights into rectangular frames instead of using U-shaped brackets.
- .14 Base Molding: Extruded vinyl or rubber, black, 4 inches high. Provide on fronts and exposed ends and backs of floor-mounted casework.
- .15 Filler Strips: Provide as needed to close space between cabinets and walls, ceilings, and indicated equipment. Fabricate from the same material and with the same finish as cabinets. Hem exposed edges.

## 2.4 FINISH FOR STAINLESS STEEL LABORATORY CASEWORK

- .1 Tops and Sinks: Underside of tops and sinks shall be coated with a sound-deadener. This material shall be waterborne and non-flammable in its liquid state. Material to contain clay, which will act as a flame retardant. Material shall contain no volatile organic compounds (VOC).
- .2 Stainless steel casework, tops and sinks shall maintain manufacturer's standard #4 satin finish unless specified otherwise.

## 2.5 CASEWORK HARDWARE

- .1 Hardware, General: Provide manufacturer's standard #4 finish, commercial quality, heavy-duty complying with requirements indicated for each type.
- .2 Hinges: Provide five knuckle-type barrel door hinges of 1.9mm (14 ga) steel screwed into door and fastened to cabinet side stile with two counter sunk #8-32 zinc plated machine screws & captive serrated tooth washer nuts. Hinge finish shall be stainless steel. Provide 2 for doors less than 48 inches high and 3 for doors more than 48 inches high.
- .3 Pulls: 100mm (4") T304 stainless steel fastened from back with 2 screws. For sliding doors, provide stainless steel recessed flush pulls. Provide 2 pulls for drawers more than 24 inches wide.
- .4 Door Catches: Nylon-roller spring catch or dual, self-aligning, permanent magnet catches. Provide 2 catches on doors more than 48 inches high.
- .5 Drawer Guides: Provide drawer operation on Full Extension Drawer Slides, 508mm (20") extension, load capacity 45kg (100 pounds), equal to: Knap & Vogt #8400B.
- .6 Label Holders: Stainless-steel or chrome-plated, sized to receive standard label card approximately 1 by 2 inches, attached with screws or rivets. [Provide on all drawers].
- .7 Drawer and Cupboard Locks: Half-mortise or cylindrical type, 5-pin tumbler and dead bolt or cam, only cylinder exposed, brass with chrome-plated finish, complying with BHMA A156.11, Grade 1. Provide minimum of 2 keys per lock and 6 master keys. [Provide as indicated on drawings]

## 2.6 TOPS, SINKS, AND TROUGHS

- .1 Tops, General: Type 304 [T316- Lab Grade] with #4 finish. Provide smooth, clean exposed tops and edges in uniform plane free of defects. Make exposed edges and corners uniformly eased. All exposed surfaces shall be 16-gauge stainless steel reinforced on the underside by 16- gauge galvanized-steel channels, so spaced as to prevent twisting, oil-canning or buckling. Exposed edges of tops shall be formed into a 1¼"-thick Marine edged channel shape. Splash rails and curbs shall be formed from the same sheet as the top or so welded thereto that they form integral parts thereof. Top edges of curbs and splash-backs shall be formed into a channel shape.
- .2 Sinks, General: Provide sizes indicated or manufacturer's closest standard size of equal or greater volume, as approved by Architect.
  - .1 Sink bowl shall be so welded to the top as to form an integral part thereof. All welds shall be ground smooth and polished to a uniform satin finish over the entire top and sink assembly. Soldering of the sinks, curbs or splash-rails to the top shall not be permitted.
  - .2 Outlets: 1-1/2-inch NPS outlets with strainers and tailpieces a minimum of 6 inches long, of the same material as sink, or as otherwise approved by CM.
  - .3 Overflows: For each sink, except cup sinks, provide overflow of standard beehive or open-top design and with separate strainer. Height 2 inches less than sink depth. Provide in the same material as sink.
- .3 Troughs: Stainless steel; comply with requirements for materials and construction as specified for tops or sinks. Pitch to drain not less than 1/8 inch/foot.

## 2.7 ACCESSORIES

- .1 Upright Rod Assembly and Metal Crossbar: Aluminum or stainless steel. Two vertical rods and 1 horizontal crossbar, ¾ inch diameter and 36 inches long, unless otherwise indicated; 2 flush socket receptacles and 2 crossbar clamps. Taper ends of vertical rods to fit receptacles; all other rod ends are rounded.
- .2 Burette Rods: Aluminum or stainless steel rods, ½ inch diameter and 18 inches long, threaded on 1 end to fit tapered plug adapter for flush socket receptacle. Provide with tapered plug adapter and receptacle.
- .3 Lattice Assembly: Aluminum or stainless steel, vertical and horizontal rod lattice assembly with ¾ inch diameter rods at approximately 12 inches o.c. with 2 flush socket receptacles for mounting.
- .4 Pegboards: T304 stainless steel pegboards with polypropylene pegs, stainless-steel drip troughs [complete with funnel rack, drain basket and screen insert and CS-30 Utility Shelf]

## 2.8 PERFORMANCE REQUIREMENTS

- .1 Structural Performance: Provide metal laboratory casework capable of withstanding the following loads without permanent deformation, excessive deflection, or binding of drawers and doors.

- .1 Shelves of Base, Wall, and Storage Cabinets: 200 lbs.
- .2 Drawers: 150 lbs.
- .3 Wall Cabinets: 150lbs/ft.
- .4 Floor-Supported Base Cabinets: 100 lbs/ft/ within cabinets, 75-lbs/ft. countertop.

### **Part 3: EXECUTION**

#### **3.1 CASEWORK INSTALLATION**

- .1 Install plumb, level, and true; shim as required, using concealed shims. Where laboratory case work abuts other finished work, apply filler strips and scribes for accurate fit, with fasteners concealed where practical.
- .2 Utility-Space Framing: Secure to floor with 2 fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.
- .3 Base Cabinets: Set cabinets straight, plumb, and level. Adjust subtops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking or reinforcements in partitions with fasteners spaced 24 inches o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.
  - .1 Where base cabinets are not installed adjacent to walls, fasten to floor at toe space with fasteners spaced 24 inches o.c. Secure sides of cabinets to floor, where they do not adjoin other cabinets, with not less than 2 fasteners.
- .4 Wall Cabinets: Hang cabinets straight, plumb, and level. Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.
- .5 Install hardware uniformly and precisely. Set hinges snug and flat in mortises, unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
- .6 Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

#### **3.2 INSTALLATION OF TOPS**

- .1 Tops shall be as long as practical to permit access to building or room. Field joints shall be provided to join oversize tops with welded channels and angles with bolting arrangements for pulling tops together to produce a hair-line, water-resistant seam with flat, level surfaces each side of the joint.
- .2 There shall be no evidence of spot welds in any area of the countertop

- .3 Upon completion of installation inspect work of this Section and touch-up, where required, minor damaged surface finish to restore it to original condition. All other damaged components shall be replaced.

### **3.3 INSTALLATION OF ACCESSORIES**

- .1 Install accessories according to approved Shop Drawings and manufacturer's written instructions.
- .2 Securely fasten adjustable shelving supports, stainless-steel shelves, and pegboards to partition framing, wood blocking, or reinforcements in partitions.
- .3 Install shelf standards plumb and at heights to align shelf brackets for level shelves. Install shelving level and straight, closely fitted to other work where indicated.

### **3.4 CLEANING AND PROTECTING**

- .1 Repair or remove and replace defective work as directed on completion of installation.
- .2 Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Construction Manager.
- .3 Protection: Provide 6-mil plastic or other suitable water-resistant covering over all countertop surfaces. Tape to underside of countertop at minimum of 48 inches o.c.

**END OF SECTION**