SECTION 12359
METAL MEDICAL CASEWORK

PART I - GENERAL

1.01 DESCRIPTION

A. Scope: Work under this Section shall include all materials and installation necessary to provide Metal Medical Casework including standard stainless-steel medical casework, standard enameled-steel medical casework, stainless-steel countertops, integral sinks, stainless-steel shelving as shown and detailed on the Drawings and specified herein,

B. Related Sections include the following:

1. Division 12, Section 12347 – Metal Laboratory Casework for metal casework used in hospital laboratories.

2. Division 15 **(**Consultant to Specify**)** for plumbing connection, fittings, and trim for sinks specified in this Section.

3. Division 16 **(**Consultant to Specify**)** for electrical connection of light fixtures and other electrical devices built into metal medical casework.

1.02 SUBMITTALS

A. Product Data: For each type of product specified.

B. Shop Drawings: For metal medical casework. Include plans, elevations, sections, details, and attachments to other work.

1. Indicate locations of blocking and other supports required for installing casework.

2. Indicate hardware locations.

3. Show adjacent walls, doors, windows, other building components, and equipment. Indicate clearances from above items.

4. Indicate locations of seams in stainless-steel countertops.

C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for casework.

D. Samples for Verification: Full-size units of each type of exposed hardware indicated.

1.03 QUALITY ASSURANCE

A. Source Limitations: Obtain metal medical casework through one source from a single manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Cover finished surfaces with polyethylene film or other protective covering during delivery and storage.

1.05 COORDINATION

A. Coordinate layout and installation of metal framing and reinforcement in gypsum board assemblies for support of metal medical casework.

PART II - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Subject to compliance with requirements,

1. American Sterilizer Co.

2. Blickman Health Industries, Inc.

3. Continental Metal Products Co., Inc.

4. MDT Biologic Co.

5. St. Charles Manufacturing Co.

6. Or Equal.

2.02 MATERIALS

A. Steel Sheet: ASTM A 366 (ASTM A 366M), matte finish, suitable for exposed applications, and stretcher leveled or roller leveled to stretcher-leveled flatness.

B. Steel Thickness: For enameled-steel medical casework, provide components of the following thicknesses:

1. Sides, ends, fixed backs, bottoms, cabinet tops, soffits, and items not otherwise indicated: 0.0478” (1.2 mm).

2. Back panels, doors, drawer fronts and bodies, and shelves: 0.0359” (0.9 mm). For shelves more than 36” (900 mm) long, use 0.0478” (1.2-mm) thick metal or provide suitable reinforcement.

3. Intermediate horizontal rails, center posts, and top gussets: 0.0598” (1.5 mm).

4. Drawer runners and hinge reinforcements: 0.0747” (1.9 mm).

5. Leveling and corner gussets: 0.1046” (2.7 mm).

C. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.

D. Stainless-Steel Thickness: For stainless-steel medical casework, provide components of the following thicknesses:

1. Sides, ends, fixed backs, bottoms, cabinet tops, soffits, and items not otherwise indicated: 0.0500” (1.3 mm).

2. Back panels, doors, drawer fronts and bodies, and shelves: 0.0375” (0.95 mm). For shelves more than 36” (900 mm) long, use 0.0500” (1.3-mm) thick metal or provide suitable reinforcement.

3. Intermediate horizontal rails, center posts, tubular legs, and top gussets: 0.0625" (1.6 mm).

4. Drawer runners and hinge reinforcements: 0.0781" (2.0 mm).

5. Leveling and corner gussets: 0.1094" (2.8 mm).

E. Clear Tempered Glass for Glazed Doors: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 5.5 mm thick.

F. Clear Tempered Glass Shelves: ASTM C 1048, Kind FT, Condition A, Type I, Class 1, Quality q3, 6.0 mm thick.

G. Pegboard: ¼" (6.4-mm) perforated hardboard, complying with AHA A135.4, Class 1 Tempered, with painted finish sealing faces, edges, and perimeter of holes.

H. Pegboard: Perforated stainless steel, 0.0500" (1.3 mm) thick.

2.03 FABRICATION

A. General: Complete assembly and finish work at point of manufacture. Perform assembly on precision jigs to provide units that are square; fully reinforced with angles, gussets, and channels; and integrally framed and welded to form a dirt-and vermin-retardant enclosure. Maintain uniform clearance around door and drawer fronts of $^{1}/_{16}$ to $^{3}/_{32}$-inch (1.5 to 2.4 mm).

B. Fabricate units on precision dies for interchangeability of like-size drawers, doors, and similar parts.

C. Flush Doors: Outer and inner pans formed and telescoped into box formation, with channel reinforcements full height on center of each pan. Fill doors solid with noncombustible, sound-deadening material.

D. Glazed Doors: Hollow-metal stiles and rails of similar construction as flush doors, with glass held in resilient channels or gasket material.

E. Hinged Doors: Mortise at flanges for hinges and reinforce with angles, welded inside inner pans at hinge edge.

F. Drawers: Assemble fronts from telescoping outer and inner pans, designed to eliminate raw edge at top. Fabricate sides, back, and bottom of one piece with rolled or formed top of sides for stiffening and comfortable grasp for drawer removal. Weld drawer front to sides, back, and bottom to form a single, integral unit. Provide drawers with rubber bumpers, runners, and positive stops to prevent metal-to-metal contact or accidental removal.

G. 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.

H. Adjustable Shelves: Front, back, and ends formed down with returned lip at front and back.

I. Sloping Tops: Unless tops are concealed by other construction, provide sloping tops on cabinets with tops 60" (1524 mm) or more above the finished floor. Slope tops 25º or more and construct of same material and with same finish as cabinets.

J. Toe Space: Unless casework is indicated to be built-in, provide metal toe space, fully enclosed, 4" (100 mm) high by 3" (75 mm) deep, with no open gaps or pockets.

K. Narcotics Cabinets: Construct of stainless steel as individual, freestanding units with finished sides and top and double-walled bottom. Provide with double-pan flush outer door and 0.0625" (1.6-mm) thick, single-pan inner door, both with locks, each individually keyed and not master keyed.

L. Warming Cabinets: Recessed units covered on back, top, and sides with 1" (25-mm) thick, semirigid glass-fiber-board insulation. Insulate double-pan door and equip with heat-resistant gasket. Provide with thermostatically controlled heating system to maintain temperature within 10ºF (5.5ºC) of temperature setting that can be varied from 97 to 160ºF (36 to 71ºC).

1. Equip units with steam heating system.

M. Desk Units: Recessed units with sloped stainless-steel writing surface, magnetic stainless-steel back panel, and built-in fluorescent light fixture. Provide drawers under writing surface as indicated.

N. Computer Desk Units: Recessed units with keyboard drawer under sloped stainless-steel writing surface and with monitor rack over writing surface. Provide drawers and space for CPU under keyboard drawer as indicated.

2.04 ENAMELED-STEEL FINISH

A. Pretreatment: After assembly, thoroughly clean surfaces of grease, dirt, oil, flux, and other foreign matter by physical and chemical means. Treat entire unit with metallic phosphate process, leaving surfaces with uniform, fine-grained, crystalline phosphate coating to provide bond for finish.

B. Chemical-Resistant Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard 2-coat, chemical-resistant, baked-enamel finish consisting of prime coat and thermosetting topcoat with a minimum dry film thickness of 1 mil (0.025 mm) for topcoat and 2 mils (0.05 mm) for system.

C. Chemical and Physical Resistance of Finish System: Provide finish system complying with the following requirements for chemical and physical resistance:

1. Chemical Resistance: Capable of withstanding application of not less than 5 drops (0.25 mL) of the following reagents applied to finish surface; covered with a watch glass for 60 minutes, rinsed, and dried; with no permanent change in gloss, color, film hardness, adhesion, or film protection.

a. Acetic acid (98%)

b. Hydrochloric acid (37%)

c. Nitric acid (10%)

d. Phosphoric acid (75%)

e. Sulfuric acid (25%)

f. Acetone

g. Benzene

h. Carbon tetrachloride

i. Ethyl acetate

j. Ethyl alcohol

k. Ethyl ether

l. Formaldehyde (37%)

m. Methyl ethyl ketone

n. Toluene

o. Xylene

p. Ammonium hydroxide (28%)

q. Potassium hydroxide (40%)

r. Sodium carbonate (saturated)

s. Sodium chloride (saturated)

t. Sodium hydroxide (25%)

2. Moisture Resistance: No visible effect when exposed to the following:

a. Hot water at a temperature of 190 to 205ºF (88 to 96ºC) trickled down the surface at a 45º angle for 5 minutes.

b. Constant moisture using a 2-by-3-by-1-inch (51-by-76-by-25-mm) cellulose sponge, soaked with water, in contact with surface for 100 hours.

3. Cold Crack: No effect when subjected to 10 cycles of temperature change from 20ºF (-7ºC) for 60 minutes to 125ºF (52ºC) for 60 minutes.

4. Adhesion and Flexibility: No peeling or cracking or exposure of metal when metal is bent 180º over a ½" (13-mm) diameter mandrel.

D. Colors: Comply with the following requirements for colors of enameled-steel, metal medical casework finish:

1. Colors: Provide University's Representative's full range of colors and finishes.

2.05 STAINLESS-STEEL FINISH

A. Grind and polish surfaces to produce uniform, directional, textured, polished finish free of cross scratches and matching No. 4 finish.

B. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.06 CASEWORK HARDWARE

A. Hardware, General: Provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.

B. Hinges: Stainless-steel, 5-knuckle hinges complying with BHMA 56.9, Grade, with antifriction bearings and hospital tips. Provide 2 for doors less than 48” (1200 mm) high and 3 for doors more than 48” (1200 mm) high.

C. Pulls: Solid aluminum, stainless-steel, or chrome-plated-brass wire pulls; 4” (100 mm) long; $^{5}/_{16}$” (8 mm) in diameter; and fastened from back with 2 screws. Provide 2 pulls for drawers more than 24” (600 mm) wide. Pulls to meet ADA standards.

D. Sliding-Door Pulls: Stainless-steel or chrome-plated-brass, recessed flush pulls complying with BHMA A156.9, Type B02201.

E. Door Catches: Nylon-roller spring catch or dual, self-aligning, permanent magnet catch. Provide 2 catches on doors more than 48” (1200 mm) high.

F. Drawer Guides: Metal-channel, self-closing drawer guides, designed to prevent rebound when drawers are closed, with nylon-tired, ball-bearing rollers, and complying with BHMA A156.9, Type B05091.

1. Guides for file drawers shall have 100-lb (45-kg) capacity.

G. Label Holders: Stainless steel or chrome plated, sized to receive standard label cards approximately 1 by 2 inches (25 by 51 mm), attached with screws or rivets.

1. Provide on all drawers.

H. Drawer and Door 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.

1. Provide where indicated.

I. Sliding-Door Hardware Sets: Manufacturer's standard, to suit type and size of sliding-door units.

2.07 COUNTERTOPS, SINKS, AND SHELVING

A. Countertops, General: Provide smooth, clean exposed tops and edges in uniform plane free of defects. Ease exposed edges and corners. Provide front and end overhang of 1” (25 mm) over base cabinets.

B. Stainless-Steel Tops: Made from 0.0625” (1.6-mm) thick, stainless-steel sheet, ASTM 666, Type 316 with No. 4 satin finish, and complying with the following:

1. Form backsplash coved to and integral with top surface.

2. Provide rolled edge, unless otherwise indicated.

3. Provide raised marine edge around perimeter of tops containing sinks; pitch 2 ways to sink to provide drainage without channeling or grooving.

4. Where stainless-steel sinks occur in stainless-steel tops, factory weld into one integral unit, grind welds smooth, polish, passivate, and rinse.

C. Stainless-Steel Sinks: Made from 0.050" (1.27-mm) thick, stainless-steel sheet, ASTM A 666, Type 316. Fabricate with corners rounded and coved to at least ⅝" (16-mm) radius. Slope sink bottoms to outlet. Provide double-wall construction for sink partitions with top edge rounded to at least ½" (13-mm) diameter. Provide continuous butt-welded joints, grind smooth, and polish surfaces to produce finish indicated, free of cross scratches. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

1. Provide factory punchings for fittings.

2. Apply approximately ⅛" (3-mm) thick, heat-resistant, sound-deadening coating to undersink surfaces.

D. Stainless-Steel Shelving: Shelves made from 0.050" (1.27-mm) thick, stainless-steel sheet, ASTM A 666, Type 304 with No. 4 satin finish. Fold down front edge ¾" (19 mm) and hem; turn up back edge 3" (76 mm). Provide integral stiffening brackets, formed by folding up ends and welding to upturned back edge. Weld shop-made joints, grind smooth, and finish.

2.08 WATER AND COMPRESSED-AIR SERVICE FITTINGS

A. Service Fittings: Provide units that comply with SEFA 7, "Laboratory and Hospital Fixtures Recommended Practices." Provide fittings complete with washers, locknuts, nipples, and other installation accessories. Include wall and deck flanges, escutcheons, handle extension rods, and similar items.

B. Material and Finish: Fabricate service fittings from cast or forged red brass, unless otherwise indicated.

1. Finish exposed surfaces, including fittings, escutcheons, and trim, with a polished chrome-plating, unless otherwise indicated.

2. For reagent-grade water service fittings, provide polypropylene, PVC, or polyvinylidene fluoride for parts in contact with water.

C. Water Valves and Faucets: Provide units complying with ASME A112.18.1M, with renewable seats, designed for working pressure up to 125 psig (860 kPa).

1. Vacuum Breakers: Provide vacuum breakers on water fittings with serrated outlets.

2. Aerators: Provide aerators on water fittings without serrated outlets.

3. Handles: Provide 3-or-4-arm, forged-brass handles for valves, unless otherwise indicated.

D. Needle Valves for Compressed Air: Provide units with renewable, self-centering, floating cones and renewable seats of stainless steel or Monel metal.

1. Provide units designed for working pressure up to 100 psig (690 kPa).

2. Handles: Provide knurled nylon handles.

E. Service-Outlet Identification: Provide color-coded plastic discs, with embossed identification, secured to each service-fitting handle to be virtually tamperproof.

PART III - EXECUTION

3.01 EXAMINATION

A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of reinforcement, and other conditions affecting performance of metal medical casework installation.

1. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 CASEWORK INSTALLATION

A. Install level, plumb, and true; shim as required, using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.

B. Recessed Cabinets: Set cabinets in openings and shim to make installation straight, level, and plumb. Fasten cabinets to partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24” (600 mm) o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of $^{1}/_{16}$” (1.5 mm).

C. Base Cabinets: Set cabinets straight, level, and plumb. Adjust subtops within $^{1}/_{16}$” (1.5 mm) of a single plane. Fasten cabinets to partition framing, wood blocking, or reinforcements in partitions with fasteners spaced 24” (600 mm) o.c. Bolt adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of $^{1}/_{16}$” (1.5 mm).

D. Wall Cabinets: Hang cabinets straight, level, and plumb. Adjust fronts and bottoms within $^{1}/_{16}$” (1.5 mm) 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 more than 24” (600 mm) o.c. Align similar adjoining doors to a tolerance of $^{1}/_{16}$” (1.5 mm).

E. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.03 INSTALLATION OF COUNTERTOPS

A. Field Jointing: Provide flush welded joints in tops. Grind and polish surfaces to produce uniform, directional, textured, polished finish indicated, free of cross scratches. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

B. Fastenings: Secure tops to cabinets with Z-type fasteners or equivalent, using 2 or more fasteners at each front, end, and back.

C. Abut top and edge surfaces in one true plane, with internal supports placed to prevent deflection.

D. Provide chemical-resistant, permanently elastic sealing compound for closures at junctures of top, curb, and splash, with walls as recommended by manufacturer for materials involved.

3.04 CLEANING AND PROTECTING

A. Repair or remove and replace defective work as directed on completion of installation.

B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by University's Representative.

C. Protection: Provide 6-mil (0.15-mm) plastic or other suitable water-resistant covering over countertop surfaces. Tape to underside of countertop at minimum of 48” (1200 mm) o.c.

END OF SECTION 12359