SECTION 12 31 00
MANUFACTURED METAL CASEWORK

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies metal casework and related accessories, including full height cabinets.

B. Items specified in this section:

1. Metal casework of the following types:

a. Wardrobe Cabinet, Metal, 5A (SD123100-02).

1.2 RELATED WORK

A. Color of casework finish: Section 09 06 00, SCHEDULE FOR FINISHES.

1.3 QUALITY ASSURANCE

A. Approval by Contracting Officer of proposed manufacturer, or suppliers, will be based upon submission by Contractor certification that, manufacturer regularly and presently manufactures casework specified as one of their principal products.

B. Installer has technical qualifications, experience, trained personnel, and facilities to install specified items.

C. Furnish supervision of installation at construction site by a qualified technician regularly employed by casework installer.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Certificates:

1. Manufacturer's Certificate of qualifications specified and finish on casework.
2. Contractor's Certificate of installer’s qualifications specified.

C. Manufacturer's Literature and Data:

1. Brochures showing name and address of manufacturer, and catalog or model number of each item incorporated into the work.
2. Manufacturer's illustration and detailed description.
3. List of deviations from contract specifications.
4. Locks.

D. Shop Drawings (1/2 Full Scale):

1. Showing details of casework construction, including kinds of materials and finish, hardware, accessories and relation to finish of adjacent construction, including specially fabricated items or components.

2. Fastenings and method of installation.
3. Location of service connections and access.

E. Samples:
1. Metal plate, 150 mm (six inch) square, showing chemical resistant finish, in each color.
2. One complete casework assembly.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in the text by basic designation only.

B. American Society for Testing and Materials (ASTM):
A36/A36M-08.....Carbon Structural Steel
A167-99(R 2009).....Stainless and Heat-Resisting Chromium Steel Plate Sheet and Strip
A283/A283M-03(R 2007)...Low and Intermediate Tensile Strength Carbon Steel Plates
A568/A568M-09.....Steel, Sheet, Carbon and High-Strength, Low-Alloy Hot-Rolled and Cold-Rolled, General Requirements
A794/A794M-09.....Standard Specification for Commercial Steel (CS), Sheet, Carbon (0.16% Maximum to 0.25% Maximum) Cold Rolled
B456-03(R2009).....Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium
C1036-06.....Flat Glass

C. American National Standard Institute:
Z97.1-09.....Safety Glazing Material used In Buildings

D. Builders Hardware Manufacturers Association (BHMA):
A156.1-06.....Butts and Hinges
A156.9-10.....Cabinet Hardware
A156.5-10.....Auxiliary Locks and Associated Products
A156.11-10.....Cabinet Locks
A156.16-02.....Auxiliary Hardware

E. American Welding Society (AWS):
D1.1-10.....Structural Welding Code Steel
D1.3-08.....Structural Welding Code Sheet Steel

F. National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500-505-06 Series...Metal Finishes Manual

G. U.S. Department of Commerce, Product Standard (PS):

PS 1-95.....Construction and Industrial Plywood

H. Federal Specifications (Fed. Spec.):

FF-N-836D.....Nut, Square, Hexagon Cap, Slotted, Castle Knurled, Welding and Single Ball Seat

A-A-55615.....Shield, Expansion; Nail Expansion (Wood Screw and Lag Bolt Self-Threading Anchors)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sheet Steel:
   1. ASTM A794, cold rolled, Class 1 finish, stretcher leveled.
   2. Other types of cold rolled steel meeting requirements of ASTM A568 may be used for concealed parts.

B. Stainless Steel: ASTM A167, Type 302B.

D. Fasteners:
   1. Exposed to view, chrome plated steel or stainless steel, or finished to match adjacent surface.
   2. Use round head or countersunk fasteners where exposed in cabinets.
   3. Expansion Bolts: Fed Spec. A-A-55615. Do not use lead or plastic shields.
   4. Nuts: Fed Spec FF-N-836. Type III, Style 15 where exposed.
   5. Sex Bolts: Capable of supporting twice the load.

2.2 MANUFACTURED PRODUCTS

A. When two or more units are required, use products of one manufacturer.

B. Manufacturer of equipment assemblies, which include components made by other, shall assume complete responsibility for the final assembled unit.

C. Constituent parts which are alike, use products of a single manufacturer.

2.3 CASEWORK FABRICATION

A. General:
   1. Welding: Comply with AWS Standards.
   2. Reinforce with angles, channels, and gussets to support intended loads, notch tightly, fit and weld joints.
   3. Constructed of sheet steel, except where reinforcing required.

B. Minimum Steel Thickness:

1.20 mm (0.047 inch) (18 gage)	Base pedestals, casework top sides, back, and bottom panels, closure scribe and filler strips 75 mm (three inches) or more. Reinforcement for drawers with locks. Tables legs, spreaders and stretchers, when fabricated of cold rolled tubing. Metal for desks; except legs and aprons. Door exterior and interior panels, flush or glazed. Cross rails of base units. Front bottom rails, back bottom rails; rails may be 1.49 mm (0.059 inch) (16 gage) thick. Uprights or posts. Top corner gussets.
1.49 mm (0.059 inch) (16 gage)	Aprons, apron division, reinforcing gussets, table legs, desk legs and aprons, spreaders and stretchers when formed without welding. Toe base gussets, drawer slides, and other metal work. Front top rails and back rails except top back rails may be 1.2 mm (0.047 inch) (18 gage) thick.
2.64 mm (0.104 inch) (12 gage)	Base unit bottom corner gussets and leg sockets.
3 mm (0.12 inch) (11 gage)	Reinforcement for hinge reinforcement inside doors and cabinets.

C. Casework Construction:

1. Welded assembly.
2. Fabricate with enclosed uprights or posts full height or width at front, include sides, backs, bottoms, soffits, ceilings under sloping tops, headers and rail, assembled to form an integral unit.
3. Form sides to make rabbeted stile 19 to 28 mm (3/4 to 1-1/8 inch) wide, closed by channel containing shelf adjustment slots.
4. Make bottom of walls units flush, double panel construction.
5. Make top and cross rails of "U" shaped channel.
6. Provide enclosed backs and bottoms in cabinets, including drawer units.
7. Provide finish panel on exposed cabinet backs.
8. Do not use screws and bolts in construction or assembly of casework, except to secure hardware, applied door stops, accessories, removable panels and where casework is required to fastened end to end or back to back.
9. Fabricate casework, except benches, and desks with finished end panels.
10. Close flush exposed soffits of wall hung shelving, knee spaces in counters, and toe spaces at bases.

11. Provide reinforcing for hardware.
12. Size Dimensions:
    a. Used dimensions shown or specified within tolerances specified.
    b. Tolerance:
        1) Manufacturer's tolerance for the same length, depth or height: Not to exceed 1.58 mm (0.0625 inches).

D. Base Pedestals:
1. Provide adjustable leveling bolts accessible through stainless steel plugs, or notch in the base concealed when resilient base is applied.
2. Except where flush metal base is shown, provide toe space at front recessed 75 mm (3 inches).

E. Doors:
1. Hollow metal type, flush and not less than 16 mm (5/8 inch) thick.
2. Fabricate flush metal doors of two panels formed into pans with corners welded and ground smooth. Provide flush doors with a sound deadening core.
3. Provide sheet steel hinge reinforcement inside doors.

F. Sloping Tops:
1. Provide sloping tops for casework where shown.
2. Where ceilings interfere with installation of sloping tops. Provide filler plates as specified.
3. Omit sloping tops or filler plates whenever ceiling material is turned down and furred-in at face of casework.
4. Provide exposed ends of sloping tops with flush closures.
5. Fasten sloping tops with sheet metal screws inserted from cabinet interior; space fastener as recommended by manufacturer.

G. Shelves:
1. Provide means of positive locking shelf in position, and to permit adjustment without use of tools.

H. Closures and Filler Strips at Pipe Spaces:
1. Flat steel strips or plates.
2. Openings less than 200 mm (8 inches) wide: 1.2 mm (0.047 inch) thick.
3. Openings more than 200 mm (8 inches wide 0.9 mm (0.359 inches) wide.

2.4 ACCESSORIES

A. Card or Label Holders for Shelves:
1. Fabricate of 0.6 mm (0.0239 inch) thick steel approximately 125 mm (five inches) long, or continuous where shown, having top and bottom edges bent over on face and welded to shelf.
2. Finish exposed surfaces in same color as shelf.

B. Labels Holders for Doors and Drawers:
   1. Cast or wrought brass or aluminum, 50 mm (2 inch) by 88 mm (3-1/2 inch).
   2. Fasten to casework as recommended by manufacturer.

2.5 HARDWARE

A. Factory installed.

B. Exposed hardware, except as specified otherwise, satin finished chromium plated brass or nickel plated brass or anodized aluminum.

C. Cabinet Locks:
   1. Where locks are shown.
   3. Door: ANSI/BHMA A156.11 cam locks.
      b. Pin-tumbler, cylinder type lock with not less than four pins. Disc tumbler lock "duo A" with brass working parts and case, as manufactured by Illinois Lock Company are acceptable.
   4. Marking of Locks and Keys:
      a. Name of manufacturer, or trademark which can readily be identified legibly marked on each lock and key change number marked on exposed face of lock.
      b. Key change numbers stamped on keys.
      c. Key change numbers to provide sufficient information for manufacturer to replace key.

2.6 METAL FINISHES

A. Comply with NAAMM 500 series and as specified.

B. Steel Cabinets including Closures and Filler Strips:
   1. After fabrication of cabinet submerge in a degreasing bath, and thoroughly rinse to remove dirt and grease, and other foreign matter.
   2. Apply non-metallic phosphate coating, then finish with baked-on acid resisting enamel not less than one mil thick.
   3. Color of finish is specified in Section, INTERIOR/EXTERIOR FINISHES, MATERIALS, AND FINISH SCHEDULES.

PART 3 - EXECUTION

3.1 COORDINATION

A. Before installing casework, verify wall and floor surfaces covered by casework have been finished.

B. Verify reinforcement of walls and partitions for support and anchorage of casework.

3.2 FASTENINGS AND ANCHORAGE

A. Do not anchor to wood ground strips.

B. Provide hat shape metal spacers where fasteners span gaps or spaces.
C. Use 6 mm (1/4 inch) diameter toggle or expansion bolts, or other appropriate size and type fastening device for securing casework to walls or floor. Use expansion bolts shields having holding power beyond tensile and shear strength of bolt and breaking strength of bolt head.
D. Use 6 mm (1/4 inch) diameter hex bolts for securing cabinets together.
E. Use 6 mm (1/4 inch) by minimum 38 mm (1-1/2 inch) length lag bolt anchorage to wood blocking for concealed fasteners.
F. Use not less than No. 12 or 14 wood screws with not less than 38 mm (1-1/2 inch) penetration into wood blocking.
G. Space fastening devices 300 mm (12 inches) on center with minimum of three fasteners in 900 or 1200 mm (three or four foot) unit width.
H. Anchor floor mounted cabinets with a minimum of four bolts through corner gussets. Anchor bolts may be combined with or separate from leveling device.
I. Secure cabinets in alignment with hex bolts or other internal fastener devices removable from interior of cabinets without special tools. Do not use fastener devices which require removal of tops for access.
J. Where units abut end to end anchor together at top and bottom of sides at front and back. Where units are back to back anchor backs together at corners with hex bolts placed inconspicuously inside casework.
K. Where type, size, or spacing of fastenings is not shown or specified, show on shop drawings proposed fastenings and method of installation.

3.3 CLOSURES AND FILLER PLATES

A. Close openings larger than 6 mm (1/4 inch) wide between cabinets and adjacent walls with flat, steel closure strips, scribed to required contours, or machined formed steel fillers with returns, and secured with sheet metal screws to tubular or channel members of units, or bolts where exposed on inside.
B. Where ceilings interfere with installation of sloping tops, omit sloping tops and provide flat steel filler plates.
   1. Secure filler plates to casework top members, unless shown otherwise.
   2. Secure filler plates more than 150 mm (six inches) in width top edge to a continuous 25 by 25 mm (one by one inch) 0.889 mm thick steel formed steel angle with screws.
   3. Anchor angle to ceiling with toggle bolts.
C. Install closure strips at exposed ends of pipe space and offset opening into concealed space.
D. Paint closure strips and fillers with same finishes as cabinets.

E. Caulk and seal laboratory furniture as specified in Section 07 92 00, JOINT SEALANTS.

3.4 CABINETS

A. Install in available space; arranged for safe and convenient operation and maintenance.

B. Align cabinets for flush joints except where shown otherwise.

3.5 PROTECTION TO FIXTURES, MATERIALS, AND EQUIPMENT

A. Tightly cover and protect cabinets against dirt, water chemical or mechanical injury.

B. Thoroughly clean interior and exterior of cabinets, at completion of all work.

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