SECTION 12 24 00

WINDOW SHADES

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section includes cloth shades, vertical blinds and venetian blinds. Provide window shades complete, including brackets, fittings and hardware.

1.2 RELATED WORK:

A. Color of shade cloth: See Construction documents.

1.3 QUALITY ASSURANCE:

A. Manufacturer's Qualification: Submit evidence that the manufacture has a minimum of three (3) years' experience in providing item of type specified, and that the blinds have performed satisfactorily on similar installations. Submit qualifications.

B. Submit qualifications for installers who are trained and approved by manufacturer for installation of units provided.

C. Electrical Requirements:
   1. NFPA 70 Article 100.
   2. Listed and labeled in accordance with UL 325.
   3. Marked for intended use, and tested as a system.
   4. Individual testing of components is not acceptable in lieu of system testing.

1.4 SUBMITTALS:

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

B. Samples:
   1. Shade cloth, each type, 610 mm (24 inch) square, including cord and ring, showing color, finish and texture.

C. Manufacturer's literature and data; showing details of construction and hardware for:
   1. Cloth and window shades

D. Shop Drawings: Provide fabrication and installation details for cloth shades, including shade cloth materials, their orientation to rollers, and their seam and batten locations.
   1. Motor-Operated Shades: Include details of installation and diagrams for power, signal, and control wiring.

E. Fire Testing: Submit report of flame spread and smoke developed during product material tests by independent testing laboratory.

F. Manufacturer's warranty.

1.5 WARRANTY:

A. Construction Warranty: Comply with FAR clause 52.246-21, "Warranty of Construction".

B. Manufacturer Warranty: Manufacturer shall warranty their window shades for a minimum of five (5) years from date of installation and final acceptance by the Government. Submit manufacturer's warranty.

1.6 APPLICABLE PUBLICATIONS:

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

B. Federal Specifications (Fed. Spec.):
AA-V-00200B ..... Venetian Blinds, Shade, Roller, Window, Roller, Slat, Cord, and Accessories

C. ASTM International (ASTM):
A240/A240M-14 ..... Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
B221-14 ..... Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
B221M-13 ..... Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
G21-13 ..... Determining Resistance of Synthetic Polymeric Materials to Fungi

D. National Electric Manufacturer's Association (NEMA):
ICS 6-93(R2006) ..... Industrial Control and Systems Closures

E. National Fire Protection Association (NFPA):
70-14 ..... National Electrical Code (NEC)
701-15 ..... Fire Tests for Flame Propagation of Textiles and Films

F. Underwriters Laboratories Inc. (UL):
325-06(R2013) ..... Door, Drapery, Gate, Louver, and Window Operators and Systems

PART 2 - PRODUCTS

2.1 CLOTH SHADES:

A. Light-Filtering Shade Cloth: Woven fabric, stain and fade resistant.
1. Type: 75% PVC and 25% polyester.
2. Weave: Basketweave.
3. Thickness: 0.8636 mm (0.034 inches).
4. Weight: 650 grams per square meter (19.17 ounces per square yard).
5. Orientation on Shadeband: Up the bolt.
6. Openness Factor: 3 percent.
7. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Submit report for testing of shade cloth materials identical to products provided.
8. Drive-End Location: Right side of inside face of shade.
9. Shade Cloth Anti-Microbial Characteristics: 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC9677, and ATCC9645.

2.2 MATERIALS:

A. Extruded Aluminum: ASTM B221M (B221).

B. Cords for Cloth roller shades: #10 stainless steel chain having not less than 80 kg (175 pounds) breaking strength.

2.3 FASTENINGS:

A. Zinc-coated or cadmium plated steel or stainless steel fastenings of length and type recommended by manufacturer. Except as otherwise specified, provide fastenings for installation with various structural materials as follows:

Type of Fastening	Structural Material
Wood screw	Wood
Tap screw	Metal
Case-hardened, self-tapping screw in pre-drilled hole	Solid masonry, concrete
Screw or bolt in expansion shields	Solid masonry, concrete
Toggle bolts	Hollow blocks, gypsum wallboard, plaster

2.4 FABRICATION:

A. Fabricate cloth shades to fit measurements of finished openings obtained at site.

B. Cloth Shades: Rolling type, constructed of shade cloth mounted on rollers. Provide shade cloth with plain sides, and with hem at bottom to accommodate weight bar.
   1. Provide separate shades for each individual sash within opening. Provide shade length that exceeds height of window by 305 mm (12 inches) measured from head to sill, in addition to material required to make-up hem:
      a. Provide rollers with spindles, nylon bearings, tempered steel springs, and other related accessories required for positive action.
      b. Provide rollers of diameter and wall thicknesses required to accommodate operating mechanisms, weights, and widths of shadebands indicated without deflection.
      c. Provide rollers with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
      d. Secure shade cloth to rollers to prevent wrinkling or folding, and on line parallel to axis of rollers so that shade hangs plumb.
      e. Secure shade cloth with zinc-coated steel or stainless steel machine screws spaced not over 228 mm (9 inches) on centers.
      f. Do not attach shade cloth to rollers with tacks.
      g. Provide hem bar of extruded aluminum for entire width of shade band. Heat seal hem bar on all sides to prevent removal.
      h. Provide eyelets with clear openings large enough to accommodate cords, without cutting into cloth when set.
      i. Provide cords of sufficient length to permit shades to be drawn to bottom of opening with ends looped and held with cord rings. Attach cords to hems through metal eyelets in center of slats in bottom hems.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Measure openings before fabrication. Do not scale construction documents.

B. Cloth Shades: Mount window shades on end of face brackets, set on metal gussets, or casing of windows as required. Provide extension face brackets where necessary at mullions.
   1. Locate rollers in level position as high as practicable at heads of windows.
   2. Install shades to prevent infiltration of light over rollers.
   3. Where extension brackets are necessary for alignment of shades, provide metal lugs, and rigidly anchor lugs and brackets.
   4. Place brackets and rollers so that shades do not interfere with window and screen hardware.
   5. Mount shades at wire mesh window guards on head rails of hinged frame.

6. Mount shade to allow clearances for window operation hardware.
7. Electrical Connections: Connect motor-operated shade cloth roller shades to building electrical system.
8. Shade installation methods not specifically described, are subject to approval of Contracting Officer Representative (COR).

3.2 ADJUSTING:

A. Adjust and shades to operate smoothly, free from binding or malfunction throughout entire operational range.

3.3 CLEANING AND PROTECTION:

A. Clean shade surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions that ensure that shades are without damage or deterioration at time of Substantial Completion.

C. Replace damaged shades that cannot be repaired, in a manner approved by COR before time of Substantial Completion.

3.4 DEMONSTRATION:

A. Furnish services of factory-authorized service representative to train maintenance personnel to adjust, operate, and maintain motorized shade operation systems.

- - - E N D - - -

SECTION 12 32 00

MANUFACTURED WOOD CASEWORK

PART 1 - GENERAL

1.1 DESCRIPTION:

A. This section specifies plastic laminate casework as detailed on the construction documents, including related components and accessories required to form integral units. Wood casework items shown on the construction documents, but not specified below are to be included as part of the work under this section, and applicable portions of the specification are to apply to these items.

1.2 RELATED WORK:

A. Sealants: Section 07 92 00, JOINT SEALANTS.

B. Color of Casework Finish: See Construction Documents.

C. Resilient Base: Section 09 65 13, RESILIENT BASE AND ACCESSORIES.

D. Backing Plates for Wall Mounted Casework: Section 09 22 16, NON-STRUCTURAL METAL FRAMING.

E. Countertop Construction and Materials and Items Installed in Countertops: Section 12 36 00, COUNTERTOPS.

F. Plumbing Requirements Related to Casework: Division 22, PLUMBING.

G. Electrical Lighting and Power Requirements Related to Casework: Division 26, ELECTRICAL.

1.3 SUBMITTALS:

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

B. Manufacturer's Literature and Data:
   1. Locks for doors and drawers.
   2. Adhesive cements.
   3. Casework hardware.

C. Samples:
   1. Wood Face Veneer or Hardwood Plywood.
   2. Plastic laminate.

D. Shop Drawings (1/2 full size):
   1. Each casework type, showing details of construction, including materials, hardware and accessories.
   2. Fastenings and method of installation.

E. Certification:
   1. Manufacturer’s qualifications specified.
   2. Installer’s qualifications specified.

1.4 QUALITY ASSURANCE:

A. Approval by COR is required of manufacturer and installer based upon certification of qualifications specified.

B. Manufacturer’s qualifications:

1. Manufacturer is regularly engaged in design and manufacture of modular plastic laminate casework, casework components and accessories of scope and type similar to indicated requirements for a period of not less than five (5) years.
2. Manufacturer has successfully completed at least three (3) projects of scope and type similar to indicated requirements.
3. Submit manufacturer's qualifications and list of projects, including owner contact information.

C. Installer Qualifications:
1. Installer has completed at least three (3) projects in last five (5) years in which these products were installed.
2. Submit installer qualifications.

1.5 WARRANTY:

A. Construction Warranty: Comply with FAR clause 52.246-21 "Warranty of Construction".

B. Manufacturer Warranty: Manufacturer shall warranty their wood casework for a minimum of five (5) years from date of installation and final acceptance by the Government. Submit manufacturer warranty.

1.6 APPLICABLE PUBLICATIONS:

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

B. ASTM International (ASTM):
a. A240/A240M-14 Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
b. A1008/A1008M-13 Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength Low Alloy
c. C1036-11E1(R2012) Flat Glass

C. Builders Hardware Manufacturers Association (BHMA):
a. A156.1-13 Butts and Hinges
b. A156.9-10 Cabinet Hardware
c. A156.5-14 Auxiliary Locks and Associated Products
d. A156.11-14 Cabinet Locks

D. Composite Panel Association (CPA):
a. A208.1-09 Particleboard
b. A208.2-09 Medium Density Fiberboard (MDF) for Interior Applications

E. U.S. Department of Commerce Product Standards (Prod. Std):
a. PS 1-09 Construction and Industrial Plywood

F. Hardwood, Plywood and Veneer Association (HPVA):
a. HP-1-09 Hardwood and Decorative Plywood

G. Architectural Woodwork Institute (AWI):
a. Architectural Woodwork Standards, Edition 2 Certification Program - 2014

H. American Society of Mechanical Engineers (ASME):
a. A112.18.1-12 Plumbing Fixture Fittings

I. National Electrical Manufacturers Association (NEMA):
a. LD 3-05 High Pressure Decorative Laminates

J. Underwriters Laboratories Inc. (UL):
a. 437-08(R2013) Key Locks

K. Scientific Equipment and Furniture Association (SEFA):
a. 2.3-10 Installation of Scientific Laboratory Furniture and Equipment

PART 2 - PRODUCTS

2.1 PLYWOOD, HARDWOOD FACE VENEER:

A. HPVA HP-1, Premium Grade Rotary cut Select White Birch .

2.2 PLASTIC LAMINATE:

A. NEMA LD 3.

B. Exposed decorative surfaces, both sides of cabinet doors, and for items having plastic laminate finish. General purpose Type HGL.

C. Cabinet Interiors Including Shelving: Both of following options to comply with NEMA LD 3 as a minimum.
   1. Plastic laminate clad plywood or particleboard, MDF (excluding shelves).
   2. Thermafoil.
   3. Low pressure laminate (LPL).

D. Backing sheet on bottom of plastic laminate covered wood tops. Backer Type BKL.

E. Post Forming Fabrication, Decorative Surface: Post forming Type HGP.

2.3 PLYWOOD, SOFTWOOD:

A. Prod. Std. PS1, five (5) ply construction from 13 mm to 28 mm (1/2 inch to 1-1/8 inch) thickness, and seven (7) ply for 31 mm (1 1/4 inch) thickness.

2.4 PARTICLEBOARD:

A. CPA A208.1, Type 1, Grade M or medium density.

2.5 MEDIUM DENSITY FIBERBOARD (MDF):

A. Fully waterproof bond conforming to CPA A208.1 and CPA A208.2.

2.6 GLASS:

A. ASTM C1048 Kind FT Type I, Class 1, Quality q3.

B. For Doors: 6 mm (1/4 inch) thick; except where laminated glass is shown on construction documents.

C. For Shelves: 6 mm (1/4 inch) thick.

D. Laminated Glass: Fabricate of two (2) sheets of 3 mm (1/8 inch) thick clear ASTM C1172 Kind LT glass, laminated together with a 1.5 mm (0.060 inch) thick vinyl interlayer, to a total overall thickness of 8 mm (5/16 inch).

2.7 HARDWARE:

A. Cabinet Locks:
   1. Provide where locks are indicated on construction documents.
   2. Locked pair of hinged door over 915 mm (36 inches) high:
      a. ANSI/BHMA A156.5, key one side.
      b. On active leaf use three (3) point locking device, consisting of two (2) steel rods and lever controlled cam at lock, to operate by lever having lock cylinder housed therein.
      c. On inactive leaf provide dummy lever of same design.
      d. Provide keeper holes for locking device rods and cam.
   3. Door and Drawer: ANSI/BHMA A156.11 cam locks. Provide one (1) type for each condition as follows:
      a. Drawer and Hinged Door up to 915 mm (36 inches) high: E07261.
      b. Drawer and Hinged Door: Pin-tumbler, cylinder type lock with not less than four (4) pins or a UL 437 rated wafer lock with brass working parts and case.

c. Sliding Door: E07161.

4. Key locks differently for each type casework and master key for each service, such as Nursing Units, Administrative.
   a. Key drug locker inner door different from outer door.
   b. Furnish two (2) keys per lock.
   c. Furnish six (6) master keys per service or Nursing Unit.
5. 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.

B. Hinged Doors:
1. Provide doors 915 mm (36 inches) and more in height with three (3) hinges and doors less than 915 mm (36 inches) in height is to have two (2) hinges. Each door is to close against two (2) rubber bumpers.
2. Concealed Hinges: BHMA A156.9, Type B01602, 100 degrees of opening , self-closing
3. Fasteners: Provide full thread wood screws to fasten hinge leaves to door and cabinet frame. Finish screws to match finish of hinges.

C. Door Catches:
1. Friction or Magnetic type, fabricated with metal housing.
2. Provide one (1) catch for cabinet doors 1220 mm (48 inches) high and under, and two (2) for doors over 1220 mm (48 inches) high.

D. Drawer and Door Pulls:
1. Doors and drawers to have flush pulls, fabricated of either chromium-plated brass, chromium plated steel, stainless steel, or anodized aluminum. Drawer and door pulls to be of a design that can be operated with a force of 22.2 N (5 pounds) or less, with one (1) hand and not require tight grasping, pinching or twisting of the wrist.

E. Drawer Slides:
1. Full extension steel slides with nylon ball-bearing rollers.
2. Slides to have positive stop.
3. Equip drawers with rubber bumpers.

F. Shelf Standards (Except For Fixed Shelves):
1. Bright zinc-plated steel for recessed mounting with screws, 16 mm (5/8 inch) wide by 5 mm (3/16 inch) high providing 13 mm (1/2 inch) adjustment, complete with shelf supports.

G. Gate Bolt:
1. Surface mounted barrel type with strike.

H. Hinged Gates:
1. Gates to have two (2) double-acting pivots, size as required for gate size and weight.

I. Castors:
1. Locking type rated for 79 kg (175 lbs.) each.

J. Floor Glides:
1. Non-skid material minimum 25 mm (1 inch) diameter with minimum 16 mm (5/8 inch) height adjustment.

2.8 MANUFACTURED PRODUCTS:

A. When two (2) or more units are required, use products of one (1) manufacturer.

B. Manufacturer of casework assemblies is to assume complete responsibility for the final assembled unit.

C. Provide products of a single manufacturer for parts which are alike.

2.9 FABRICATION:

A. Casework to be of the flush overlay design and, except as otherwise specified, be of Premium Grade construction and of component thickness in conformance with AWI Quality Standards.

B. Fabricate casework of plastic laminated covered plywood or particleboard as follows:
1. Where shown, gates ,doors , drawers , shelves , all semi-concealed surfaces , to be plastic laminated.
2. Horizontal and vertical reveals between doors and drawer for reveal overlay design to be 19 mm (3/4 inch) unless otherwise shown.

C. Provide 1.2 mm (18 gage) sheet steel sloping tops for casework where shown on construction drawings. Fasten sloping tops with oval-head screws inserted from interior. Exposed ends of sloping tops to have flush closures fastened as recommended by manufacturer.

D. Support Members for Tops of Tables and Countertops:
1. Construct as detailed on construction documents.
2. Provide miscellaneous steel members and anchor as shown on construction drawings.

E. Legs For Counters:
1. Fabricate legs for counters of 1.6 mm (0.0635 inch) thick, 38 mm (1-1/2 inch) square tubular steel.
2. Secure legs to counter tops and provide legs at bottom with shoes not less than 25 mm (1 inch) in height.
3. 3. Fabricate shoes of stainless steel, aluminum or chromium plated brass.

F. Cantilever Table Supports:
1. Wall mounted steel supports to carry 609 mm (24 inch) wide table and supported load of 68.03 kg (150 lbs.).

2.10 PRODUCTS OF OTHER COMPONENTS DIRECTLY RELATED TO CASEWORK:

A. Refer to Section 07 92 00, JOINT SEALANTS for work related to sealants used in conjunction with joints of countertops, casework systems, and adjacent materials.

B. Refer to Section 09 65 13, RESILIENT BASE AND ACCESSORIES for work related to rubber base adhered to casework systems.

C. Refer to Section 09 22 16, NON-STRUCTURAL METAL FRAMING for backing plates used in conjunction with wall assemblies for the attachment of casework systems.

D. Refer to Section 12 36 00, COUNTERTOPS for work related to plastic laminate, acid-resistant plastic laminate, metal, molded resin, wood, and methyl methacrylic polymer countertops and/or shelving used in conjunction with casework systems. When countertop materials are provided by the casework manufacturer, they are to include the following features:
1. Capable of being suspended from vertical support rails or horizontal wall strips or service modules.
2. Provided with rounded corners and impact resistant material on exposed edges.
3. Capable of being easily relocated and installed without tools.
4. Capable of being suspended and easily changed under counter mounted storage units.
5. Provide leveling adjustment capability so units can be brought into a level position.
6. Secured using fasteners. Show detail on shop drawings.

E. Refer to Section 12 36 00, COUNTERTOPS for work related to and integral with countertop systems such as pegboards, funnel and graduate racks.

F. Refer to Division 22, PLUMBING for the following work related to casework systems:
1. Sinks, faucets and other plumbing service fixtures, venting, and piping systems.
2. Compressed air, gas, vacuum and piping systems.

G. Refer to Division 26, ELECTRICAL for the following work related to casework systems:
   1. Connections and wiring devices.
   2. Connections and lighting fixtures except when factory installed by the manufacturer.

PART 3 - EXECUTION

3.1 COORDINATION:

A. Begin only after work of other trades is complete, including wall and floor finish completed, ceilings installed, light fixtures and diffusers installed and connected and area free of trash and debris.

B. Verify location and size of mechanical and electrical services as required and perform cutting of components of work installed by other trades.

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

D. Coordinate with other Divisions and Sections of the specification for work related to installation of casework systems to avoid interference and completion of service connections.

3.2 INSTALLATION:

A. Install casework in accordance with manufacturer's written instructions .
   1. Install in available space; arranged for safe and convenient operation and maintenance.
   2. Align cabinets for flush joints except where shown otherwise.
   3. Install with bottom of wall cabinets in alignment and tops of base cabinets aligned level, plumb, true, and straight to a tolerance of 3.2 mm in 2438 mm (1/8 inch in 96 inches).
   4. Install corner cabinets with hinges on corner side with filler or spacers sufficient to allow opening of drawers.

B. Support Rails:
   1. Install true to horizontal at heights shown on construction documents; maximum tolerance for uneven floors is plus or minus 13 mm (1/2 inch).
   2. Shim as necessary to accommodate variations in wall surface not exceeding 5 mm (3/16 inch) at fastener.

C. Wall Strips:
   1. Install true to vertical and spaced as shown on construction documents.
   2. Align slots to assure that hanging units will be level.

D. Plug Buttons:
   1. Install plug buttons in predrilled or pre-punched perforations not used.
   2. Use chromium plate plug buttons or buttons finish to match adjacent surfaces.

E. Seal junctures of casework systems with mildew-resistant silicone sealants as specified in Section 07 92 00, JOINT SEALANTS.

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.

C. Secure filler plates to casework top members, unless shown otherwise on construction documents.

D. Secure filler plates more than 152 mm (6 inches) in width top edge to a continuous 25 x 25 mm (1 x 1 inch) 0.889 mm (1/16 inch) thick steel formed steel angle with screws.

E. Anchor angle to ceiling with toggle bolts.

F. Install closure strips at exposed ends of pipe space and offset opening into concealed space.

G. Finish closure strips and fillers with same finishes as cabinets.

3.4 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 305 mm (12 inches) on center with minimum of three (3) fasteners in 915 or 1220 mm (3 or 4 foot) unit width.

H. Anchor floor mounted cabinets with a minimum of four (4) 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 on construction documents or specified, show on shop drawings proposed fastenings and method of installation.

3.5 ADJUSTMENTS:

A. Adjust equipment to insure proper alignment and operation.

B. Replace or repair damaged or improperly operating materials, components or equipment.

3.6 CLEANING:

A. Immediately following installation, clean each item, removing finger marks, soil and foreign matter.

B. Remove from job site trash, debris and packing materials.

C. Leave installed areas clean of dust and debris.

3.7 INSTRUCTIONS:

A. Provide operational and cleaning manuals and verbal instructions in accordance with Article INSTRUCTIONS, SECTION 01 00 00, GENERAL REQUIREMENTS.

B. Provide in service training both prior to and after facility opening. Coordinate in service activities with COR.

C. Commencing at least seven (7) days prior to opening of facility, provide one (1) four (4) hour day of on-site orientation and technical instruction on use and cleaning procedures application to products and systems specified herein.

- - - E N D - - -

SECTION 12 36 00

COUNTERTOPS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies casework countertops with integral accessories and window stools.

B. Integral accessories include:
1. Sinks with traps and drains.
2. Eye and Face Wash Units.
3. Mechanical Service fixtures.
4. Electrical Receptacles.
5. Hot Plates (Range)

1.2 RELATED WORK

A. Color and patterns of plastic laminate: See Construction Documents

B. DIVISION 22, PLUMBING.

C. DIVISION 26, ELECTRICAL.

D. Equipment Reference Manual for SECTION 12 36 00, COUNTERTOPS.

1.3 1SUBMITTALS

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

B. Shop Drawings
1. Show dimensions of section and method of assembly.
2. Show details of construction at a scale of ½ inch to a foot.

C. Samples:
1. 150 mm (6 inch) square samples each top.
2. Front edge, back splash, end splash and core with surface material and booking.

1.4 APPLICABLE PUBLICATIONS

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

B. American Hardboard Association (AHA):
A135.4-95.....Basic Hardboard

C. Composite Panel Association (CPA):
A208.1-09.....Particleboard

D. American Society of Mechanical Engineers (ASME):
A112.18.1-12.....Plumbing Supply Fittings

A112.1.2-12.....Air Gaps in Plumbing System

A112.19.3-08(R2004).....Stainless Steel Plumbing Fixtures (Designed for Residential Use)

E. American Society for Testing and Materials (ASTM):
A167-99 (R2009).....Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip

A1008-10.....Steel, Sheet, Cold-Rolled, Carbon, Structural, High Strength, Low Alloy

D256-10.....Pendulum Impact Resistance of Plastic

D570-98(R2005) .....Water Absorption of Plastics

D638-10.....Tensile Properties of Plastics

D785-08.....Rockwell Hardness of Plastics and Electrical Insulating Materials

D790-10.....Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

D4690-99(2005) .....Urea-Formaldehyde Resin Adhesives

F. Federal Specifications (FS):
A-A-1936 .....Adhesive, Contact, Neoprene Rubber

G. U.S. Department of Commerce, Product Standards (PS):
PS 1-95 .....Construction and Industrial Plywood

H. National Electrical Manufacturers Association (NEMA):
LD 3-05.....High Pressure Decorative Laminates

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plastic Laminate: NEMA LD 3.
1. Concealed backing sheet Type BKL.
2. Decorative surfaces:
a. Flat components: Type GP-HGL.
b. Post forming: Type PF-HGP.
3. 3. Chemical Resistant Surfaces
a. Flat components: Type GP-HGL.
b. Post forming: Type PF-HGP.
c. Resistance to reagents:
1) Test with five 0.25 mil drops remaining on surface for 16 hours followed by washing off with tap water, then cleaned with liquid soap and water, dried with soft cotton cloth and then cleaned with naphtha.
2) No change in color, surface texture, and original protectability remaining from test results of following reagents:

98% Acetic Acid	Butyl Alcohol	Acetone
90% Formic Acid--	Benzine	Chloroform
28% Ammonium Hydroxide	Xylene	Carbon Tetrachloride
Zinc Chloride (Sat.)	Toluene	Cresol
Sodium Carbonate (Sat.)	Gasoline	Ether
Calcium Hypochlorite (Sat.)	Kerosene	Cottonseed Oil
Sodium Chloride (Sat.)	Mineral Oil	40% Formaldehyde
Methyl Alcohol	Ethyl Acetate	Trichlorethylene
Ethyl Alcohol	Amyl Acetate	Monochlorobenzine

3) Superficial effects only: Slight color change, spot, or residue only with original protectability remaining from test results of following reagents:

77% Sulfuric Acid	37% Hydrochloric Acid	85% Phenol
33% Sulfuric Acid	20% Nitric Acid	Furfural

85% Phosphoric Acid 30% Nitric Acid Dioxane

4) Minimum height of impact resistance: 300 mm (12 inches).

B. Molded Resin:
1. Non-glare epoxy resin or furan resin compounded and cured for minimum physical properties specified:

Flexural strength	70 MPa (10,000 psi)	ASTM D790
Rockwell hardness	105	ASTM D785
Water absorption, 14 hours (weight)	.01%	ASTM D570

2. Material of uniform mixture throughout.

C. Stainless Steel: ASTM A167, Type 304.

D. Sheet Steel: ASTM A1008, cold rolled, Class 1 finish, stretcher leveled.

E. Particleboard: CPA A208.1, Grade 2-M-2.

F. Plywood: PS 1, Exterior type, veneer grade AC not less than five ply construction.

G. Hardwood Countertop: Solid maple, clear grade except where otherwise specified.

H. Hardboard: ANSI/AHA A135.4, Type I, tempered, fire retardant treated, smooth surface one side.

I. Adhesive
1. For plastic laminate FS A-A-1936.
2. For wood products: ASTM D4690, unextended urea resin or unextended melamine resin, phenol resin, or resorcinol resin.
3. For Field Joints:
   a. Epoxy type, resistant to chemicals as specified for plastic laminate laboratory surfaces.
   b. Fungi resistant: ASTM G-21, rating of 0.

J. Fasteners:
1. Metals used for welding same metal as materials joined.
2. Use studs, bolts, spaces, threaded rods with nuts or screws suitable for materials being joined with metal splice plates, channels or other supporting shape.

K. Solid Polymer Material:
1. Filled Methyl Methacrylic Polymer.
2. Performance properties required:

Property	Result	Test
Elongation	0.3% min.	ASTM D638
Hardness	90 Rockwell M	ASTM D785
Gloss (60^0 Gordon)	5-20	NEMA LD3.1
Color stability	No change	NEMA LD3 except 200 hour
Abrasion resistance	No loss of pattern Max wear depth 0.0762 mm (0.003 in) - 10000 cycles	NEMA LD3

Property	Result	Test
Water absorption weight (5 max)	24 hours 0.9	ASTM D-570
Izod impact	14 N·m/m (0.25 ft-lb/in)	ASTM D256 (Method A)
Impact resistance	No fracture	NEMA LD-3 900 mm (36") drop 1 kg (2 lb.) ball
Boiling water surface resistance	No visible change	NEMA LD3
High temperature resistance	Slight surface dulling	NEMA LD3

3. Cast into sheet form and bowl form.
4. Color throughout with subtle veining through thickness.
5. Joint adhesive and sealer: Manufacturers silicone adhesive and sealant for joining methyl methacrylic polymer sheet.
6. Bio-based products will be preferred.

L. Laminar Flow Control Device
1. Smooth bright stainless steel or satin finish, chrome plated metal laminar flow device shall provide non-aeration, clear, coherent laminar flow that will not splash in basin. Device shall also have a flow control restrictor and have vandal resistant housing.
2. Flow Control Restrictor:
   a. Capable of restricting flow of 7.5 to 8.5 Lpm (2.0 to 2.2 gpm) for sinks provided in paragraph 2.2D.
   b. Compensates for pressure fluctuation maintaining flow rate specified above within 10 percent between 175 and 550 kPa (25 and 80 psi).
   c. Operates by expansion and contraction, eliminates mineral/sediment building up with self clearing action, and is capable of easy manual cleaning.

2.2 SINKS

A. Molded Resin:
1. Cast or molded in one piece with interior corners 25 mm (one inch) minimum radius.
2. Minimum thickness of sides and ends 13 mm (1/2 inch), bottom 16 mm (5/8 inch).
3. Molded resin outlet for drain and standpipe overflow.
4. Provide clamping collar permitting connection to 38 mm (1-1/2 inch) or 50 mm (2 inch) waste outlet and trap, making sealed but not permanent connection.

B. Stainless Steel:
1. ANSI/ASME A112.19.3, Type 304.
2. Self rim for plastic laminate or similar tops with concealed fasteners.
3. Flat rim for welded into stainless steel tops.
4. Ledge back or ledge sides with holes to receive required fixtures when mounted on countertop.
5. Apply fire resistant sound deadening material to underside.

C. Stainless steel circular or oval shaped bowl.

D. Sinks of Methyl Methacrylic Polymer:
1. Minimum 19 mm (3/4 inch) thick, cast into bowl shape with overflow to drain.
2. 2Provide for underhung installation to countertop.
3. Provide openings for drain.

2.3 TRAPS AND FITTINGS

A. Material as specified in DIVISION 22, PLUMBING.

B. For Molded Resin Sinks:
   1. Chemical resisting P-traps and fittings for chemical waste service.
   2. Provide traps with cleanout plug easily removable without tools.

C. For Stainless Steel Sinks:
   1. Either cast or wrought brass or stainless steel P-traps and drain fittings; ASME A112.18.1
   2. Flat strainer, except where cup strainer or overflow standpipe specified.
      a. Provide cup strainer in cabinet type 1B.
      b. Provide stainless steel overflow stand pipe to within 38 mm (1-1/2 inches) of sink rim.
   3. Exposed surface chromium plated finish.

D. Plaster traps:
   1. Cast iron body with porcelain enamel exterior finish.
   2. 50 mm (2 inch) female threaded side inlet and outlet.
   3. Removable galvanized cage having integral baffles and replaceable brass screens.
   4. Removable gasketed cover.
   5. Minimum overall dimensions: 350 x 350 x 400 mm high (14 x 14 x 16 inches) with 175 mm (7 inch) water seal.
   6. Non-siphoning and easily accessible for cleaning.

E. Air Gap Fittings: ASME A112.1.2.

F. Methyl Methacrylic Polymer Sink Traps:
   1. Cast or wrought brass with flat grid strainer, off-set tail piece, adjustable 38 x 32 mm (1-1/2 x 1 1/4-inch) P trap.
   2. Chromium plated finish.

2.4 WATER FAUCETS

A. ASME A112.18.1.
   1. Cast or forged brass, compression type with replaceable seat and stem assembly or replaceable cartridge.
   2. Indexed lever handles either with or without head.
   3. Gooseneck minimum clearance above countertop of 190 mm (7-1/2 inches), bent 180 degrees for vertical discharge.
   4. Swing spouts elevated to clear handles.
   5. Exposed brass surfaces chromium plated.
   6. Cast combination hot and cold fixture with one piece body for multiple outlets.
   7. Adapter type connection which will permit field conversion of swing spouts to fixed or gooseneck grouts or vice versa.
   8. Pedestals Top for Laboratory or Pharmacy:
      a. Modern design tapered to a round base, factory assembled and tested.
      b. Brass shanks, locknuts and washers for attaching to top or curbs.

B. Laminar flow control device on spouts.

C. Automatic Controlled Faucets.
   1. Infra-red photocell sensor and a solenoid valve to control water flow automatically.
   2. Breaking light beam activates water flow.
   3. Water stops when user moves away from light beam.

D. Eye and Face Wash Unit Pull-Out-Type:
   1. Deck mounted.
   2. Designed for vandal resistant push-down control valve and 6 foot hose.
   3. Eye and face wash head, provide a soft stream for flushing action.

4. Valve, when opened; remain open until manually closed.

E. Vanity or Lavatory Faucets in Methyl Methacrylic Polymer tops:
1. Extra long center set single lever handle control.
2. Cast or wrought copper alloy, vandal resistant.
3. Stainless steel ball type with replaceable non-metallic seats, stainless steel lined sockets.
4. Handle always returning to the neutral position or cartridge body construction.
5. Provide laminar flow control device.

2.5 FIXTURE IDENTIFICATION

A. Code fixtures with full view plastic index buttons.

B. Use following colors and codes:

SERVICE	COLOR	CODE	COLOR OF LETTERS
Cold Water	Dark Green	CW	White
Hot Water	Red	HW	White
Laboratory Air	Orange	AIR	Black
Fuel Gas	Dark Blue	GAS	White
Laboratory Vacuum	Yellow	VAC	Black
Distilled Water	White	DW	Black
Deionized Water	White	DI	Black
Oxygen	Light Green	OXY	White
Hydrogen	Pink	H	Black
Nitrogen	Gray	N	Black
All Other Gases	Light Blue	CHEM.SYM.	Black

2.6 COUNTERTOPS

A. Fabricate in largest sections practicable.

B. Fabricate with joints flush on top surface.

C. Fabricate countertops to overhang front of cabinets and end of assemblies 25 mm (one inch) except where against walls or cabinets.

D. Provide 1 mm (0.039 inch) thick metal plate connectors or fastening devices (except epoxy resin tops).

E. Join edges in a chemical resistant waterproof cement or epoxy cement, except weld metal tops.

F. Fabricate with end splashes where against walls or cabinets.

G. Splash Backs and End Splashes:
1. Not less than 19 mm (3/4 inch) thick.
2. Height 100 mm (4 inches) unless noted otherwise.
3. Laboratories and pharmacy heights or where fixtures or outlets occur: Not less than 150 mm (6 inches) unless noted otherwise.
4. Fabricate epoxy splash back in maximum lengths practical of the same material.

H. Drill or cutout for sinks, and penetrations.
1. Accurately cut for size of penetration.
2. Cutout for VL 81 photographic enlarger cabinet.

a. Finish cutout to fit flush with vertical side of cabinet, allowing adjustable shelf to fit into cutout space of cabinet at counter top level. Finish cutout surface as an exposed edge.
b. Provide braces under enlarger space to support not less than 45 kg (100 pounds) centered on opening side along backsplash.

I. Plastic Laminate Countertops:
1. Fabricate plastic laminate on five-ply plywood or particleboard core 19 mm (3/4 inch) thick with plastic laminate backing sheet.
2. Front edge over cabinets not less than 38 mm (1-1/2 inches) thick except where plastic "T" insert is used, not less than 19 mm (3/4 inch) thick.
3. Exposed Surface and edges of decorative laminated plastic or laboratory chemical resistant surface.
a. Use chemical resistant surface on tops 6A, 6B, and 6C.
b. Use decorative surface tops when noted plastic laminate, for tops 10A, 10B and 10C.

J. Methyl Methacrylic Polymer Tops:
1. Fabricate countertop of methyl methacrylic polymer cast sheet, 13 mm (1/2 inch) thick.
2. Fabricate back splash and end splash to height shown.
3. Fabricate skirt to depth shown.
4. Fabricate with marine edge where sinks occur.
5. Fabricate in one piece for full length from corner to corner up to 3600 mm (12 feet).
6. Join pieces with adhesive sealant.
7. Cut out countertop for lavatories, plumbing trim.
8. Provide concealed fasteners and epoxy cement for anchorage of sinks to countertop.
9. Fabricate window stoop of methyl methacrylic polymer cast sheet, 13 mm (1/2 inch) thck.
10. Fabricate in one piece for full length from corner to corner up to 3600 mm (12 feet).
11. Fabricate skirt to depth shown.
a.

K. Counter Tops for Interchangeable Furniture: Counter tops, unless otherwise shown, are to be capable of vertical adjustment of 150 mm (6 inches). Fabricate tops, except CRS, in increments of units over which they fit with maximum length not to exceed 1950 mm (78 inches). Top section shall cover as many cabinet units as possible. Horizontal joints in counter tops at service strip and across depth of counter are be watertight when in place but of a type that can be easily separated and reset when counter top is moved up or down. Fabricate CRS tops in maximum lengths practicable, with field joints welded and ground smooth to match adjacent surfaces. Securely fasten to supporting rails with heavy metal fastening devices, or with screws, through pierced slots in such rails. Fabricate vertical splash back and reagent shelf in maximum length practicable of same material as working surface, except finish thickness shall be 19 mm (3/4 inch).

S. Countertop products shall comply with following standards for biobased materials:

Material Type	Percent by Weight
Composite Panel	89 percent biobased material
Hardwood	89 percent biobased material
Particleboard	89 percent biobased material
Plywood	89 percent biobased material

The minimum-content standards are based on the weight (not the volume)

of the material in the insulating core only.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installing countertops verify that wall surfaces have been finished as specified and that mechanical and electrical service locations are as required.

B. Secure countertops to supporting rails of cabinets with metal fastening devices, or screws through pierced slots in rails.
   1. Where type, size or spacing of fastenings is not shown or specified, submit shop drawings showing proposed fastenings and method of installation.
   2. Use round head bolts or screws.
   3. Use epoxy or silicone to fasten the epoxy resin countertops to the cabinets.
   4. Use wood or sheet metal screws for wood or plastic laminate tops; minimum penetration into top 16 mm (5/8 inch), screw size No 8, or 10.

C. Rubber Moldings:
   1. Where shown install molding with butt joints in horizontal runs and mitered joints at corners where ceramic tile occurs omit molding.
   2. Fasten molding to wall and to splashbacks and splashends with adhesive.

D. Sinks
   1. Install stainless steel sink in plastic laminate tops with epoxy compound to form watertight seal under shelf rim.
      a. In laboratory and pharmacy fit stainless steel sink with overflow standpipe.
      b. Install faucets and fittings on sink ledges with watertight seals where shown.
   2. Install molded resin sinks with epoxy compound to form watertight seal with underside of molded resin top.
      a. Install sink with not less than two channel supports with threaded rods and nuts at each end, expansion bolted to molded resin top.
      b. Design support for a twice the full sink weight.
      c. Install with overflow standpipes.
   3. Install methyl methacrylic polymer sinks in manufacturers recommended adhesive sealer or epoxy compound to underside of methyl methacrylic polymer countertop.
      a. Bolt or screw to countertop to prevent separation of bowl and fracture of adhesive sealant joint.
      b. Install drain and traps to sink.

E. Faucets, Fixtures, and Outlets:
   1. Seal opening between fixture and top.
   2. Secure to top with manufacturers standard fittings.

F. Range Tops, Electrical Outlets, Film Viewer:
   1. Set in cutouts with manufacturers gasket sealing joint with top to prevent water leakage.
   2. Install control unit and electric outlets where shown. Seal escutcheon plate at lap if on counter or top to prevent water leakage.

3.2 PROTECTION AND CLEANING

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

B. Clean at completion of work.

- - - E N D - - -

This page intentionally left blank.

This page intentionally left blank.

SECTION 12 93 00

EXTERIOR SITE FURNISHINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This section covers work necessary for installing all site furnishings listed herein and as indicated on the Construction Documents and details in accordance with the Contract Documents.

1.2 DESCRIPTION OF WORK

B. The work shall include, but is not limited to, all labor, material procurement, equipment, tools, transportation, and services required for complete installation and permanent mounting of all site furnishing items as shown on the Construction Documents and/or specified herein.

C. Contractor shall retain a copy of the Construction Documents on-site until Final Acceptance of project.

D. If any discrepancies exist between the Construction Documents and the Specifications, the Specifications will prevail.

E. The site furniture is to be installed per manufacturer's specifications unless more stringent requirements are stated in the Construction Documents.

1.3 RELATED SECTIONS

A. Examine all sections related to the project work.

1.4 SUBMITTALS

A. Product Data
   1. Submit product data for site furnishings and equipment as shown on the plans and/or listed herein.
   2. Information to include dimensions, finish, color, model number, and the manufacturer and/or distributor’s contact information.

B. Product Warranty
   1. Provide all product warranty information to the Owner’s Representative.

C. Shop Drawings
   1. Submit complete installation and layout shop drawings for equipment as shown on the Construction Documents and/or listed herein as part of this Section.

D. Samples
   1. Submit color samples and or manufacturer’s cuts sheets for products specified herein.

E. Contract Closeout Submittals
   1. Project Record Documents
   2. Operation and Maintenance Manuals
   3. All tools and accessories
   4. Extra parts or materials

F. Maintenance Instructions
   1. Submit manufacturer's printed specifications/instructions for installation and maintenance of all site furnishings specified herein or on the Construction Documents, including methods and frequency recommended for maintaining optimum condition under anticipated use conditions.
   2. Include precautions against materials and method that may be detrimental to finishes and performances.

1.5 DELIVERY, STORAGE AND HANDLING

A. Delivery
   1. Deliver purchased materials to project site in original factory wrappings and containers, clearly labeled with identification of manufacturer, brand name, and lot number.
   2. The products shall be inspected and inventoried by the Contractor and the Owner's Representative at the time of delivery as well as at the time of installation. Defective products will be removed and replaced at no additional cost to the Owner.

B. Storage
   1. Store materials in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity; laid flat and blocked off the ground to prevent sagging and warping.
   2. Store all site furnishings in a secure location or container to protect from theft or vandalism. If items are stolen or damaged prior to Final Acceptance, the Contractor shall be required to repair or replace said materials to the satisfaction of the owner's Representative at no additional cost to the Owner.

C. Special Handling
   1. Comply with recommendations of manufacturer for special delivery, storage, and handling requirements.

1.6 SEQUENCE AND SCHEDULING

A. Sequence installation with other trades to minimize the possibility of damage and soiling during remainder of construction period.

B. Final location of all site furnishings requires approval by Owner's Representative prior to installation of site furnishings and adjacent concrete flatwork.

1.7 WARRANTY

A. Manufacturer shall warranty all materials against defects for a period of one year from date of Final Acceptance (whichever is a greater time period). The Contractor shall warranty all workmanship for similar period.

B. Contractor shall guarantee that all work is compliant with the Construction Documents and Specifications and is free from defects in materials and workmanship for a period of one (1) year after the date of Final Acceptance. Ordinary wear and tear is expected. Contractor shall be responsible for coordinating material warranty items with the

   manufacturer/distributor.

C. Expenses due to vandalism before substantial completion shall be borne by Contractor.

D. Contractor shall make such repairs or replacements within a reasonable time after receipt of notice from the Owner's Representative. Contractor shall authorize the Owner's Representative to proceed to have said repairs or replacements made at Contractor's expense and we will pay the costs and charges therefore upon demand if repairs or replacements are not completed by the Contractor within a reasonable time frame.

PART 2 - PRODUCTS

2.1 MATERIALS

Note: All quantities are per Construction Documents.

A. 6' Bench

B. 4' Bench

C. Trash Receptacle

D. ADA 3 Seat Table

E. Pet Station

F. Removable Bollard

G. Landscape Container A

H. Landscape Container B

I. Landscape Container C

PART 3 - EXECUTION

3.1 Pre-Installation / Examination

A. Verify that materials are those specified before installing.
B. Install materials after other finishing operations, including site preparation, grading, paving, and landscaping, have been completed.
C. Installation of all in-ground mounted site furnishings to be done prior to installation of all adjacent concrete flatwork.
D. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance.
E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Installation

A. Install site furnishings at locations shown on the drawings and in accordance with approved shop drawings or manufacturer's written instructions.
B. Final locations of all site furnishings require Owner's Representative approval prior to installation of all site furnishings and adjacent concrete flatwork.
C. Contractor to provide permanent mounting for the site furnishings per manufacturer's requirements and details on the various designated types of surfaces in accordance with the Drawings.
D. Complete field assembly of furnishings, as required.
E. Install furnishings level, plumb, true, and at locations indicated on drawings.

3.3 Cleaning

A. After completing site and street furnishing installation, inspect components. Remove spots, dirt, and debris. Repair damaged finishes to match original finish or replace component.

3.4 Maintenance and Protection

A. The Contractor will provide maintenance and protection of the site furnishing during remainder of construction period, complying with manufacturer's specifications.

- - - E N D - - -