SECTION 10 14 00

SIGNAGE

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies interior signage for room numbers, directional signs exterior signage, code required signs and temporary signs.

B. This section specifies exterior signage.

1.2 RELATED WORK

A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

B. Electrical Work: Division 26, ELECTRICAL.

C. Lighted EXIT signs for egress purposes are specified under Division 26, ELECTRICAL.

D. Color and Finish of Interior Signs: See Construction Documents..

E. Structural Steel Supports: Section 05 12 00, STRUCTURAL STEEL FRAMING.

F. Concrete Post Footings: Section 03 30 00, CAST-IN-PLACE CONCRETE.

1.3 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Provide signage that is the product of one manufacturer, who has provided signage as specified for a minimum of three (3) years. Submit manufacturer’s qualifications.

B. Installer’s Qualifications: Minimum three (3) years’ experience in the installation of signage of the type as specified in this Section. Submit installer’s qualifications.

1.4 SUBMITTALS

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

B. Sustainable Design Submittals, as described below:
   1. Volatile organic compounds per volume as specified in PART 2 - PRODUCTS.

C. Interior Sign Samples: Sign panels and frames, with letters and symbols, for each sign type.
   1. Sign Panel, 203 x 254 mm (8 x 10 inches), with letters.
   2. Color samples of each color, 152 x 152 mm (6 x 6 inches. Show anticipated range of color and texture.
   3. Sample of typeface, arrow and symbols in a typical full size layout.

D. Exterior Sign Samples: 152 x 152 mm (6 x 6 inches) samples of each color and material.

E. Manufacturer's Literature:
   1. Showing the methods and procedures proposed for the anchorage of the signage system to each surface type.
   2. Manufacturer’s printed specifications and maintenance instructions.

F. Sign Location Plan, showing location, type and total number of signs required.

G. Shop Drawings: Scaled for manufacture and fabrication of sign types. Identify materials, show joints, welds, anchorage, accessory items, mounting and finishes.

H. Full size layout patterns for dimensional letters.

I. Manufacturer's qualifications.

J. Installer's qualifications.

K. Structural calculations.

1.5 DELIVERY AND STORAGE

A. Deliver materials to job in manufacturer's original sealed containers with brand name marked thereon. Protect materials from damage.

B. Package to prevent damage or deterioration during shipment, handling, storage and installation. Maintain protective covering in place and in good repair until removal is necessary.

C. Deliver signs only when the site and mounting services are ready for installation work to proceed.

D. Store products in dry condition inside enclosed facilities.

1.6 WARRANTY

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

1.7 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 the basic designation only.

B. American Architectural Manufacturers Association (AAMA):
611-14 ..... Anodized Architectural Aluminum

2603-13 ..... Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels

C. American National Standards Institute (ANSI):
A117.1-09..... Accessible and Usable Buildings and Facilities

D. ASTM International (ASTM):
A36/A36M-14 ..... Carbon Structural Steel

A240/A240M-15 ..... Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

A666-10..... Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar

A1011/A1011M-14 ..... Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

B36/B36M-13 ..... Brass Plate, Sheet, Strip, and Rolled Bar

B152/B152M-13 ..... Copper Sheet, Strip, Plate, and Rolled Bar

B209-14..... Aluminum and Aluminum-Alloy Sheet and Plate

B209M-14..... Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

B221-14..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes

B221M-13..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)

C1036-11(R2012) ..... Flat Glass

C1048-12.....Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass

C1349-10.....Architectural Flat Glass Clad Polycarbonate

D1003-13.....Test Method for Haze and Luminous Transmittance of Transparent Plastics

D4802-10.....Poly(Methyl Methacrylate) Acrylic Plastic Sheet

E. Code of Federal Regulation (CFR):
40 CFR 59 .....Determination of Volatile Matter Content, Water Content, Density Volume Solids, and Weight Solids of Surface Coating

F. Federal Specifications (Fed Spec):
MIL-PRF-8184F.....Plastic Sheet, Acrylic, Modified.

MIL-P-46144C .....Plastic Sheet, Polycarbonate

G. National Fire Protection Association (NFPA):
70-14 .....National Electrical Code

PART 2 - PRODUCTS

2.1 SIGNAGE GENERAL

A. Provide signs of type, size and design shown on the construction documents.

B. Provide signs complete with lettering, framing and related components for a complete installation.

C. Provide graphics items as completed units produced by a single manufacturer, including necessary mounting accessories, fittings and fastenings.

D. Do not scale construction documents for dimensions. Verify dimensions and coordinate with field conditions. Notify Contracting Officer Representative (COR) of discrepancies or changes needed to satisfy the requirements of the construction documents.

2.2 EXTERIOR SIGNAGE PERFORMANCE REQUIREMENTS

A. Structural Calculations: Engage a Professional Engineer (PE) who is registered in the state where the work is located to design sign structure and anchorage to withstand design loads.

B. Thermal Movements: For exterior signs, allow for thermal movements from ambient and surface temperature changes 67 degrees C (120 degrees F) ambient and 100 degrees C (180 degrees F) material surfaces.

C. Provide installed electrical components and sign installations bearing the label and certifications of Underwriter’s Laboratories, Inc., and comply with NFPA 70 as well as applicable federal codes for installation techniques, fabrication methods and general product safety.

2.3 INTERIOR SIGN MATERIALS

A. Aluminum:
1. Sheet and Plate: ASTM B209M (B209).
2. Extrusions and Tubing: ASTM B221M (B221).

B. Cast Acrylic Sheet: MIL-PRF-8184F; Type II, class 1, Water white non-glare optically clear. Matt finish water white clear acrylic shall not be acceptable.

C. Polycarbonate: MIL-P-46144C; Type I, class 1.

D. Vinyl: Premium grade 0.1 mm (0.004 inch) thick machine cut, having a pressure sensitive adhesive and integral colors.

E. Adhesives:
1. Adhesives for Field Application: Mildew-resistant, nonstaining adhesive for use with specific type of panels, sheets, or assemblies; and for substrate application; as recommended in writing by signage manufacturer.
2. Adhesives to have VOC content of 50 g/L or less when calculated according to 40 CFR 59, (EPA Method 24).

F. Typography: Comply with VA Signage Design Guide.
1. Type Style: Helvetica Medium and Helvetica Medium Condensed. Initial caps or all caps, as indicated in Sign Message Schedule .
2. Arrow: Comply with graphic standards in construction documents.
3. Letter spacing: Comply with graphic standards in construction documents.
4. Letter spacing: Comply with graphic standards in construction documents.
5. Provide text, arrows, and symbols in size, colors, typefaces and letter spacing shown in construction documents. Text shall be a true, clean, accurate reproduction of typeface(s). Text shown in construction documents is for layout purposes only; final text for signs is listed in Sign Message Schedule .

2.4 EXTERIOR SIGN MATERIALS

A. Aluminum Sheet and Plate: ASTM B209M (B209).

B. Aluminum Extrusions: ASTM B221M (B221).

C. Brass Sheet (Yellow Brass): ASTM B36/B36M.

D. Bronze Plate: ASTM B36/B36M.

E. Copper Sheet: ASTM B152/B152M.

F. F. Steel Products: Structural steel products that conform to ASTM A36/A36M. Sheet and strip steel products that conform to ASTM A1011/A1011M.

G. Stainless Steel Sheet: ASTM A240/A240M, stretcher leveled standard of flatness.

H. Acrylic Sheet: ASTM D4802; category as standard with manufacturer for each sign. Provide type UVF.

I. Fiberglass Sheet: Multiple laminations of glass fiber reinforced polyester resin with UV light stabilized, colorfast, nonfading, weather and stain resistant, colored polyester gel coat with manufacturer’s standard finish.

J. Polycarbonate Sheet: ASTM C1349, Appendix X1, Type II (coated, mar resistant, UV stabilized polycarbonate) with coating on both sides.

K. Finish:
1. Aluminum Finishes:
   a. Clear Anodic Finish: AAMA 611.
   b. Color Anodic Finish: AAMA 611.
   c. Baked Enamel or Powder Coat Finish: AAMA 2603 with a minimum dry film thickness of 0.04 mm (1.5 mils).
2. Metallic Coated Steel Finish:
   a. Baked Enamel or Powder Coat Finish: After cleaning and pretreating, apply manufacturer’s standard two (2) coat baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 0.05 mm (2 mils).

2.5 INTERIOR SIGN TYPES

A. Conform to the VA Signage Design Guide.

B. Provide insert and frame component system.

C. Component System Signs:

1. Provide interior sign system as follows:
   a. Interchangeable system that allows for changes of graphic components of the installed sign, without changing sign in its entirety.
   b. Provide sign system comprised of following primary components:
      1) Rail Back: Horizontal rails, spaced to allow for uniform, modular sizing of sign types.
      2) Rail Insert: Mount to back of Copy Panels to allow for attachment to Rail Back.
      3) Copy Panels: Fabricate of acrylic materials to allow for different graphic needs.
      4) End Caps: Interlock to Rail Back to enclose and secure changeable Copy Panels.
      5) 5Joiners and Accent Joiners: To connect separate Rail Backs together.
      6) Top Accent Bars: To provide decorative trim cap that encloses the top of sign.
   c. Provide rail back, rail insert and end caps in anodized extruded aluminum.
   d. Provide signs in system that are convertible in the field to allow for enlargement from one (1) size to another in height and width through use of joiners or accent joiners, which connect rail back panels together blindly, providing a butt joint between copy panels. Connect accent joiners to rail backs with a visible 3 mm (1/8") horizontal rib, flush to the adjacent copy insert surfaces.
   e. Provide sign configurations as indicated on construction documents that vary in width from 228 mm (9 inches) to 2032 mm (80 inches), and have height dimensions of 50 mm (2 inches), 76 mm (3 inches), 152 mm (6 inches), 228 mm (9 inches) and 305 mm (12 inches). Height that can be increased beyond 305 mm (12 inches), by repeating height module in full or in part.
2. Provide rail back functions as internal structural member of sign. Fabricate of 6063T5-extruded aluminum,anodized black.
   a. Fabricate to accept an extruded aluminum or plastic insert on either side, depending upon sign type.
   b. Provide components that are convertible in field to allow for connection to other rail back panels.
   c. Provide mounting devices including wall mounting for screw-on applications , wall mounting with pressure sensitive tape , freestanding mount , ceiling mount and other mounting devices as needed.
3. Provide rail insert functions as mounting device for copy panels on to the rail back. The rail insert mounts to the back of the copy panel with adhesive suitable for attaching particular copy insert material.
   a. Provide copy panels that slide or snap into the horizontal rail back.
4. Provide copy panels that accept various forms of copy and graphics, and attach to the rail back with the rail insert. Provide copy panels fabricated of ABS plastic with integral color or an acrylic lacquer finish .
   a. Provide copy panels that are interchangeable by sliding horizontally from either side of sign, and to other signs in system of equal or greater width or height.
   b. Provide materials that are cleanable without use of special chemicals or cleaning solutions.
   c. Copy Panel Materials.
      1) 1ABS Inserts: 2.3 mm (.090 inches) extruded ABS plastic core with .07 mm (.003 inches) acrylic cap bonded during extrusion/texturing process.
         a) Pressure bonded to extruded rail insert with adhesive.
         b) Background Color: Integral or painted in acrylic lacquer.
         c) Finished: Texture pattern.
      2) Photopolymer Inserts: 3.2 mm (.125 inches) phenolic photo polymer with raised copy etched to 2.3 mm (.0937 inches), bonded to an ABS plastic or extruded aluminum insert with adhesive.

a) Background Color: Painted, acrylic enamel.

3) Changeable Paper/ Insert Holder: Extruded insert holder with integral rail insert for connection with structural back panel in 6063T5 aluminum with a black anodized finish.
   a) Inserts into holder are paper with a clear 0.76 mm (.030 inches) textured cover.
   b) Background Color: Painted, acrylic lacquer.

5. Acrylic - 2 mm (.080 inches) non-glare acrylic.
   a) Pressure bonded to extruded rail insert using adhesive.
   b) Background Color: Painted in acrylic lacquer or acrylic enamel.
6. Extruded 6063T5 aluminum with a black anodized finish insert holder with integral rail insert for connection with structural back panel to hold 0.76 mm (.030 inches) textured polycarbonate insert and a sliding tile which mounts in the inset holder and slides horizontally.
7. End Caps: Extruded using 6063T5 aluminum with a black anodized finish. End caps interlock with rail back with clips to form an integral unit, enclosing and securing the changeable copy panels, without requiring tools for assembly.
   a. Interchangeable to each end of sign and to other signs in signage system of equal height.
   b. Provide mechanical fasteners that can be added to the end caps that will secure it to rail back to make sign tamper resistant.
8. Joiners: Extruded using 6063T5 aluminum with a black anodized finish. Rail joiners connect rail backs together blindly, providing a butt joint between copy inserts.
9. Accent Joiners: Extruded using 6063T5 aluminum with a mirror polished finish. Connect joiner and rail backs together with a visible 3 mm (.125 inches) horizontal rib, flush to the adjacent copy panel surfaces.
10. Top Accent Rail: Extruded rail using 6063T5 aluminum with a mirror polished finish that provides a 3.2 mm (.125 inches) high decorative trim cap. Cap butts flush to adjacent copy panel and encloses top of rail back and copy panel.
11. Typography:
    a. Vinyl First Surface Copy (non-tactile): Applied vinyl copy.
    b. Subsurface Copy Inserts: Textured 1 mm (.030 inches) clear polycarbonate face with subsurface applied vinyl copy.
       1) Spray face back with paint and laminated to extruded aluminum carrier insert.
    c. Integral Tactile Copy Inserts: Phenolic photopolymer etched with 2.3 mm (.0937 inches) raised copy.
    d. Silk-screened First Surface Copy (non-tactile): Aluminum insert with first surface applied enamel silk-screened copy.

D. Tactile Sign:
1. Tactile sign made from a material that provides for letters, numbers and Braille to be integral with sign. Photopolymer etched metal, sandblasted phenolic or embossed material. Do not apply letters, numbers and Braille with adhesive.
2. Numbers, letters and Braille to be raised 0.8 mm (1/32 inches) from the background surface. The draft of the letters, numbers and Braille to be tapered, vertical and clean.
3. Braille Dots: Conform with ANSI A117.1 for Braille position and layout; (a) Dot base diameter: 1.5 mm (.059 inches) (b) Inter-dot spacing: 2.3 mm (.090 inches) (c) Horizontal separation between cells: 6.0 mm (.241 inches) (d) Vertical separation between cells: 10.0 mm (.395 inches)
4. Paint assembly specified color. After painting, apply white or other specified color to surface of the numbers and letters. Apply protective clear coat sealant to entire sign.
5. Finish: Eggshell, 11 to 19 degree on a 60 degree glossmeter.

E. Provide cork or felt on bottom or mounting bracket when sign is mounted on counter or desk.

F. For ceiling mounted signs, provide mounting hardware on the sign that allows for sign disconnection, removal, reinstallation, and reconnection.

G. Dimensional Letters:
1. Provide dimensional letters that are mill or laser cut acrylic in size and thickness indicated in construction documents.
2. Provide draft of letters perpendicular to letters face.
3. Fabricate letters with square corners, such as where a letter stem and bar intersect.
4. Paint letters with acrylic polyurethane.

H. Specialty Signs:
1. Small Freestanding Stanchion Sign: 57 mm (2.25 inches) polished aluminum tube mounted to weighted 356 mm (14 inches) diameter polished aluminum base. Sign bracket to hold a 6 mm (.25 inches)copy panel.
2. Freestanding Informational Sign: 57 mm (2.25 inches) polished aluminum tube vertical support mounted to a weighted 356 mm (14 inches) diameter 57 mm (2.25 inches) polished aluminum base. Provide rail back mechanically connected to vertical supports with copy panel attached to front and back.
3. Freestanding Informational Signs for Changeable Messages: 57 mm (2.25 inches) polished aluminum tube vertical support mounted to a weighted 365 mm (14 inches) 57 mm (2.25 inches) polished aluminum base. Provide rail back mechanically connected to vertical supports with hinged locking glass door. Provide interior surface with grooved felt covered changeable letter board or vinyl impregnated tackboard.
4. Card or Paper Holder: Extruded aluminum clip anodized black containing rollers to pinch and release paper.
    a. End caps are black plastic.
5. Patient Information Holder: Provide chart, file, or binder holder constructed of 18 gauge formed. Galvanized steel or aluminum painted in specified color in Construction Documents.
    a. Provide polished aluminum connecting rods and buttons. Provide button covers for mounting screws that permanently attach and securely conceal screws.

I. Temporary Interior Signs:
1. Fabricated from 50 kg (110 pound) matte finished white paper cut to 101 mm (4 inch) wide by 305 mm (12 inch) long.
    a. Punched 3.2 mm (.125 inch) hole with edge of hole spaced 13 mm (.5 inch) in from edge and centered on 101 mm (4 inch) side.
    b. Reinforce hole on both sides with suitable material that prevents tie from pulling through hole.
    c. Ties: Steel wire 0.3 mm (0.120 inch) thick attached to tag with twist leaving 152 mm (6 inch) long free ends.
2. Mark architectural room number on sign, with broad felt marker in clearly legible numbers or letters that identify room, corridor or space as shown on construction documents.
3. Install temporary signs to rooms that have a room, corridor or space number. Attach to door frame, door knob or door pull.
    a. Doors that do not require signs are: corridor doors in corridor with same number, folding doors or partitions, toilet doors, bathroom doors within and between rooms, closet doors within rooms, communicating doors in partitions between rooms with corridor entrance doors.
    b. Replace and missing, damaged or illegible signs.

2.6 EXTERIOR SIGN TYPES

A. General:
1. Fabricate signs that comply with VA Signage Design Guide.

B. B. Text and Graphics:

1. Illuminated Signs: Form graphics with router and backed with 3 mm (0.0125 inch) thick minimum translucent white acrylic diffuser. Mechanically fasten diffuser and letter voids to sign face.
2. Non-illuminated Signs: Provide surface applied reflective white opaque vinyl graphics.

C. Illuminated Signs:
1. Construct UL approved cabinet from aluminum extrusion system with internal lamping 239 mm (9 inches) on center, maximum.
2. Provide energy saving fluorescent lamps that are turned on or off by photocell.
3. Provide power disconnect switch mounted on bottom or side away from traffic thoroughfare. Select lockable disconnect in accordance with Division 26, ELECTRICAL.
4. The sign face and changeable sign strips are to be 2.3 mm (0.090 inch) minimum to 3.2 mm (0.125 inch) thick aluminum. Mount aluminum faces and changeable strips into framed extruded cabinet face to allow for removal from top or side, so that faces can be changed without affecting extruded sign structure.
5. Changeable Strip Sign Text Modules: Extruded aluminum sliding panels which are retained by a horizontal aluminum channel mounted behind the insert panel joints. Text module heights are 101 mm (4 inches), 152 mm (6 inches) and 203 mm (8 inches).
6. Provide underground power in accordance with construction documents, and up through base or post. Exposed electrical conduit runs are not acceptable.

D. Post and Panel Signs:
1. Construct Sign of extruded Aluminum System Including the Following Integral Features: Water relief channel, integral flanges for attachment of additional structural supports and mounting to posts with minimum 3 mm (0.125 inch) wall thickness. Weld post caps or mechanically attach with concealed fasteners.
2. Reveal Between the Post and Sign Cabinet: Extruded aluminum.
    a. Provide adjustable extruded connector to allow for flush reveal between the sign post and cabinet or tube.

E. Illuminated Monument Sign:
1. Provide sign with an illuminated sign cabinet mounted on a concrete base with a reveal between the base and the cabinet.
2. Construct sign of an aluminum extrusion system including the following integral features:
    a. Concealed hinge for lamp access.
    b. Water relief channel.
    c. Ballast bracket channel and enclosed electrical raceway with cover.
    d. Internal flanges for attachment of additional structural supports and mounting to base.
    e. Frame retainer, maximum 25 mm (1 inch) face dimension, to allow for sign face removal.

F. Illuminated Monument with Stacking Text Modules:
1. Provide sign with an illuminated sign cabinet mounted to a concrete base with a reveal between the base and the cabinet.
2. Construct sign with an aluminum extrusion system including the following integral features:
    a. Concealed hinge for lamp access.
    b. Water relief channel for proper drainage.
    c. Ballast bracket channel and enclosed electrical raceway with cover.
    d. Internal flanges for attachment of additional structural supports and mounting to base.
    e. Inter-changeable side loading sign text modules to allow for individual sign panel removal without the removal of the entire face.

G. Illuminated Monument with Electronic Message Center:

1. Provide sign with an illuminated sign cabinet mounted to a concrete base with a reveal between the base and the cabinet.
2. Construct sign of an aluminum extrusion system including the following integral features:
   a. Concealed hinge for lamp access.
   b. Water relief channel for proper drainage.
   c. Ballast bracket channel and enclosed electrical raceway with cover.
   d. Internal flanges for attachment of additional structural supports and mounting to base.
3. Display:
   a. Character Height: 7 pixel font.
   b. The Estimated LED Lifetime: 100,000+ hours.
   c. The viewing angle to be 90 degrees horizontal x 40 degrees vertical.
   d. Provide allowance for service access to the sign to be from the front.
   e. Provide graphic capability to include text, graphics, logos, basic animation, multiple font styles and sizes.
   f. Power: 120/208 VAC three phase .
   g. Display Dimming: 64 levels with automatic .
   h. Communication Connections: Ethernet Fiber and Radio .

H. Illuminated Post and Panel Sign:
1. Provide illuminated sign cabinet mounted to extruded aluminum posts with adjustable reveal between posts and cabinet.
2. Construct sign of aluminum extrusion system including:
   a. Concealed hinge for lamp access.
   b. Water relief channel for proper drainage.
   c. Ballast bracket channel and enclosed electrical raceway with cover.
   d. Internal flanges for attachment of additional structural supports and mounting to posts.
   e. Extruded aluminum posts and extruded aluminum reveal which is adjustable. Frame retainer, maximum 25 mm (1 inch) face dimension to allow for sign face removal.

I. Illuminated Post with Stacking Text Modules:
1. Provide illuminated sign cabinet mounted to extruded aluminum posts with an adjustable reveal between the posts and the cabinet.
2. Construct sign of an aluminum extrusion system including following integral features:
   a. Concealed hinge for lamp access.
   b. Water relief channel for proper drainage.
   c. Ballast bracket channel and enclosed electrical raceway with cover.
   d. Internal flanges for attachment of additional structural supports and mounting posts.
   e. Extruded aluminum posts and extruded aluminum reveal which is adjustable in dimension.
   f. Interchangeable side loading sign text modules to allow for individual sign panel removal without removal of entire face.

J. Illuminated Wall Panel Sign:
1. Provide extruded aluminum illuminated sign cabinet configured for wall mounting.
2. Construct sign of an aluminum extrusion system including the following integral features:
   a. Concealed hinge for lamp access.
   b. Water relief channel for proper drainage.
   c. Ballast bracket channel and enclosed electrical raceway with cover.
   d. Internal flanges for attachment of additional structural supports and mounting to wall.
   e. Frame retainer maximum 25 mm (1 inch) face dimension to allow for sign face removal.

K. Halo Illuminated Dimensional Letters:
   1. Halo illuminated fabricated aluminum letter, fully welded construction, utilizing minimum 3.2 mm (0.125 inch) wall aluminum for letter faces and edges and 6.4 mm (0.25 inch) acrylic back diffuser.
   2. Internal Illumination: 13 mm (0.5 inch) minimum glass luminous tube, with two strokes minimum per letter. Tubing illuminates white.
   3. Letters painted with acrylic polyurethane. Paint inside of letters high gloss white.

L. Non-illuminated Monument with Stacking Text Modules:
   1. Provide non-illuminated sign cabinet mounted to concrete base with reveal between base and cabinet.
   2. Constructed of aluminum extrusion system including the following integral features:
      a. Water relief channel for proper drainage.
      b. Internal flanges for attachment of additional structural supports and mounting to base.
      c. Interchangeable side loading sign text modules to allow for individual sign panel removal without the removal of the entire face.

M. Non-illuminated Post and Panel Sign:
   1. Provide non-illuminated sign cabinet mounted to extruded aluminum posts with adjustable reveal between posts and cabinet.
   2. Construct sign of aluminum extrusion system including the following integral features:
      a. Water relief channel for proper drainage.
      b. Internal flanges for attachment of additional structural supports and mounting to posts.
      c. Extruded aluminum posts.
      d. Extruded aluminum reveal which is adjustable and frame retainer (maximum 25 mm (1 inch) face dimension) to allow for sign face removal.
   3. Weld sign cabinet at mitered corners and provide internal bracing to ensure structural rigidity. Shop weld and grind exposed welds smooth so surface is consistent with surrounding surface, and accepts paint finish in like manner.
   4. Sign Faces: 2.3 mm (0.090 inch) thick aluminum. Mount aluminum faces into the framed extruded cabinet to allow for removal from the top or side, so faces can be changed without affecting extruded sign structure.

N. Non-illuminated Post and Stacking Bar Sign:
   1. Provide sign with aluminum tubes mounted to extruded aluminum posts with adjustable reveal between the posts and tubes.
   2. Construct sign of aluminum extrusion system including the following integral features:
      a. Water relief channel for proper drainage.
      b. Internal flanges for attachment of additional structural supports and mounting to posts.
      c. Extruded aluminum posts.
      d. Extruded aluminum reveal which is adjustable and interchangeable aluminum tube text modules to allow for individual stacking bar removal.
   3. Sign Text Stacking Bar Modules: Extruded aluminum sliding tubes retained by a reveal. Mounted to allow for removal from top, so tubes can be changed without affecting sign structure.
      a. Stacking bar (tube) module height is 152 mm (6 inches).

O. Non-illuminated Single Post Sign:
   1. Provide sign constructed of an extruded aluminum square post with aluminum plate sign panel.
   2. Sign Panel: 3.2 mm (0.125 inch) aluminum plate. Mechanically fasten panel to support post with tamper resistant fasteners.
   3. Posts: Aluminum, minimum 3.2 mm (0.125 inch) wall thickness.
      a. Post Caps: Welded or mechanically attached with concealed fasteners.

P. Non-illuminated Single Post Traffic Regulatory Sign:
   1. Construct sign of extruded aluminum square post with aluminum plate sign panel.
   2. Sign Panel: 3.2 mm (0.125 inch) aluminum plate with surface applied reflective vinyl traffic regulatory decals. Mechanically fasten to support post with tamper resistant fasteners.
   3. Posts: Aluminum with minimum 3.2 mm (0.125 inch) wall thickness. Post caps to be welded or mechanically attached with concealed fasteners.
   4. Provide reflective traffic control symbols complying to Department of Transportation, Manual for Uniform Traffic Control Devices in color, shape, proportions, text and symbols.

Q. Non-illuminated Single Post & Panel Street Sign:
   1. Provide sign constructed of extruded aluminum square post, cast or fabricated aluminum post cap and panel retainers and aluminum plate sign panels.
   2. 2. Sign Panels: 3.2 mm (0.125 inch) aluminum plate. Mechanically fasten panel to panel retainers with tamper resistant fasteners.
   3. Provide cast or fabricated aluminum post cap and panel retainers, with a minimum 3.2 mm (0.125 inch) wall thickness.
      a. Provide post cap element that slides over square sign post and mechanically fastens to post with tamper resistant fasteners.
   4. Aluminum Post: Minimum 3.2 mm (0.125 inch) wall thickness.

R. Non-illuminated Single Post Street Sign:
   1. Provide sign constructed of extruded aluminum square post.
   2. Posts: Extruded aluminum with minimum 3.2 mm (0.125 inch) wall thickness.

S. Non-illuminated Wall Panel Sign:
   1. Provide sign constructed of an aluminum extrusion system including:
      a. Internal flanges for attachment of additional structural supports and mounting to wall.
      b. Frame retainer maximum 25 mm (1 inch) face dimension to allow for sign face removal.
   2. Weld sign cabinet at mitered corners and provide internal bracing to ensure structural rigidity. Shop weld and grind smooth exposed welds so that surface is consistent with surrounding surface, and accepts paint finish in a like manner.
   3. Sign Faces: 2.3 mm (0.090 inch) thick aluminum with surface applied reflective white vinyl graphics.
      a. Mount aluminum face in extruded cabinet frame to allow for removal from top or side, so that faces can be changed without affecting extruded sign structure.

T. Non-illuminated Wall Panel Sign:
   1. Constructed of flat sheet of aluminum for wall mounting.
   2. Sign Face: 3.2 mm (0.125 inch) thick aluminum with surface applied reflective white vinyl graphics.
   3. Installed with mechanical fasteners into wall surface. Exposed support brackets are not acceptable.

U. Non-Illuminated Cut Out Dimensional Letters:
   1. Provide cut out aluminum letters which are mill cut (vertical sides) out of 12 mm (0.5 inch) plate as required by sign type.
   2. Letters: Studded and mounted with 9 mm (.375 inch) spacers to wall surface using adhesive appropriate to the surface.
   3. Paint letters with acrylic polyurethane in specified color and finish on construction documents.

2.7 FABRICATION

A. Design interior signage components to allow for expansion and contraction for a minimum material temperature range of 38 degrees C (100 degrees F), without causing buckling, excessive opening of joints or over stressing of adhesives, welds and fasteners.

B. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Provide concealed fasteners wherever possible.

C. Shop fabricate so far as practicable. Fasten joints flush to conceal reinforcement, or weld joints, where thickness or section permits.

D. Level and assemble contract surfaces of connected members so joints will be tight and practically unnoticeable, without applying filling compound.

E. Signs: Fabricate with fine, even texture to be flat and sound.
   1. Maintain lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern.
   2. Plane surfaces to be smooth, flat and without oil-canning, free of rack and twist.
   3. Maximum variation from plane of surface plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.

F. Finish extruded members to be free from extrusion marks. Fabricate square turns, sharp corners, and true curves.

G. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Mitere edge joints to give appearance of solid material.

H. Do not manufacture signs until final sign message schedule and location review has been completed by the COR and forwarded to contractor.

I. Drill holes for bolts and screws. Mill smooth exposed ends and edges with corners slightly rounded.

J. Form joints exposed to weather to exclude water.

K. Movable Parts, Including Hardware: Cleaned and adjusted to operate as designed without binding or deformation of members. Center doors and covers in opening or frame.
   1. Align contact surfaces fit tight and even without forcing or warping components.

L. Pre-assemble items in shop to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.

M. Prime painted surfaces as required. Apply finish coating of paint for complete coverage with no light or thin applications allowing substrate or primer to show.
   1. Finish surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate signs as shown on the construction documents .

B. Conform to the VA Signage Design Guide for installation requirements.

C. At each sign location there are no utility lines behind each sign location that will be affected by installation of signs.
   1. Correct and repair damage done to utilities during installation of signs at no additional cost to Government.

D. Provide inserts and anchoring devices which must be set in concrete or other material for installation of signs. Submit setting drawings, templates, instructions and directions for installation of anchorage devices, which may involve other trades.

E. Refer to Sign Message Schedule for mounting method. Mount signs in proper alignment, level and plumb according to the Sign Location Plan and the dimensions given on elevation and Sign Location Plans. When exact position, angle, height or location is not clear, contact COR for resolution.

F. When signs are installed on glass, provide blank glass back up to be placed on opposite side of glass exactly behind sign being installed. Provide blank glass back that is the same size as sign being installed.

G. Touch up exposed fasteners and connecting hardware to match color and finish of surrounding surface.

H. At completion of sign installation, clean exposed sign surfaces. Clean and repair adjoining or adjacent surfaces that became soiled or damaged as a result of installation of signs.

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SECTION 10 21 23

CUBICLE CURTAIN TRACKS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies cubicle curtain track (C.C.T.) , shower curtain tracks .

1.2 RELATED WORK

A. Steel shapes for suspending track assembly: Section 05 50 00, METAL FABRICATIONS.

B. Acoustical ceiling tile and suspension systems Section 09 51 00, ACOUSTICAL CEILINGS.

1.3 SUBMITTALS

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

B. Samples:
1. 305 mm (12 inch) long piece of cubicle curtain track with carrier access and end stop.
2. Clip anchor for fastening track to grid system of acoustical ceilings.
3. Curtain carrier for attaching curtain to track.

C. Shop Drawings: Showing layout of tracks and method of anchorage.

D. Manufacturer's Literature and Data:
1. Cubicle curtain track.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver material in original package marked to identify the contents, brand name, and the name of the manufacturer or supplier.

B. Store in dry and protected location. Store so as to not bend or warp the tracks.

C. Do not open packages until contents are needed for installation, unless verification inspection is required.

1.5 WARRANTY

A. Construction Warranty: Cubicle curtain tracks are subject to the terms of the Article “Warranty of Construction,” FAR clause 52.246-21.

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 the basic designation only.

B. ASTM International (ASTM):

B221-14	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
B221M-13	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
B456-11	Electrodeposited Coatings for Copper Plus Nickel Plus Chromium and Nickel Plus Chromium

C. Aluminum Association (AA):

DAF 45-09	Designation System for Aluminum Finishes

D. American Architectural Manufacturers Association (AAMA):

2603-13 .....Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels

E. The National Association of Architectural Metal Manufacturers (NAAMM):
AMP 500 Series .....Metal Finishes Manual

PART 2 - PRODUCTS

2.1 CUBICLE CURTAIN TRACKS

A. Channel Tracks (Surface Mounted Type): Extruded aluminum, ASTM B221M (B221), alloy 6063, temper T5 or T6, channel shaped, with smooth inside raceway for curtain carriers.

B. Curtain Carriers: Nylon carriers, with nylon wheels on metal or nylon axles.
1. Equip each carrier with either stainless steel, chromium plated brass or steel hooks with swivel, or nickel chromium plated brass or stainless steel bead chain
2. Hook for bead chain may be the same material and finish as the bead chain or may be chromium plated steel.
3. Provide 2.2 carriers for every 305 mm (1 foot) of each section of each track length, plus one (1) additional carrier.

C. End Stop Connectors, Ceiling Flanges and Other Accessories: Fabricate from the same material with the same finish as the tracks or from nylon.

D. Hangers and Fittings: Fabricate from the same material with the same finish as the tracks. Hangers may be round or square for channel tracks and round for tubular tracks. Design fittings to be compatible with design of tracks and to safely transmit the track load to the hangers.

E. At end of each section of track, make provision for insertion and removal of carriers. Design to prevent accidental removal of carrier. Provide operating mechanism shall be removable with common tools.

2.2 SHOWER CURTAIN TRACK

A. Provide water/corrosion resistant aluminum surface mounted track system and glider hooks at 10 per meter (3.28 feet).

2.3 FASTENERS

A. Exposed Fasteners, Screws and Bolts: Stainless steel or chromium/nickel plated brass.

B. Concealed Fasteners, Screws and Bolts: Stainless steel .

C. Metal Clips: Anchor curtain tracks to exposed grid of lay-in acoustical tile ceilings, with concealed metal (butterfly) type or two piece snap locking type ceiling clip of high strength spring steel.
1. When it is not possible to install the metal ceiling clip, the cubicle curtain track may be screwed to the ceiling grid.

2.4 FINISHES

A. Aluminum: Finish numbers for aluminum specified are in accordance with AA DAF 45. AA-C22A31 finish, chemically etched medium matte with clear anodic coating, Class II Architectural, .01 mm (0.4 mils) thick.

B. Chrome/Nickel Plating: Satin or polished finish, ASTM B546, minimum thickness of chromium plate as follows:
1. 0.005 mm (0.2 mil) on copper alloys.
2. 0.01 mm (0.4 mil) on steel.

C. Stainless Steel: No. 4 in accordance with NAAMM AMP 500.

D. Baked Enamel or Powder Coat Finish: AAMA 2603.

2.5 FABRICATION

A. Weld and grind smooth joints of fabricated components.

B. Form tracks and bends of lengths that will produce the minimum number of joints. Make track sections up to 4877 mm (16 feet) without joints. Form corner bend on a 305 mm (12 inch) radius.

C. Provide steel anchor plates, supports, and anchors for securing components to building construction.

D. Form flat surface without distortion.

E. Shop assemble components and package complete with anchors and fittings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install tracks after finish painting and ceiling finishing operations are complete.

B. Install track level and hangers plumb and securely anchor to the ceiling or suspend from above to form a rigid installation.

C. Anchor surface mounted curtain tracks directly to exposed grid of lay-in acoustical tile ceilings with suitable fasteners, spaced approximately 610 mm (24 inches) on center.

D. Anchor surface mounted curtain tracks to concrete, plaster and gypsum board ceilings with a minimum of 3 mm (1/8-inch) diameter fastenings or concealed clips spaced not more than 914 mm (3 feet) on center.

E. Install suspended track 2210 mm (87 inches) above the finished floor, with hangers spaced no more than 1219 mm (4 feet) on center. At ceiling line, provide flange fittings secured to hangers with set screws. Secure track to walls with flanged fittings and to hangers with special fittings.

F. Fasten end stop caps to prevent them from being forced out by the striking weight of carriers.

G. Remove damaged or defective components and replace with new components or repair to the original condition.

H. Install track rigid, plumb, level and true, and securely anchored to the overhead construction.

I. Verify that carrier units operate smoothly and easily over the full range of travel.

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SECTION 10 26 00

WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies wall guards, handrail/wall guard combinations, corner guards and door/door frame protectors and high impact wall covering/.

1.2 RELATED WORK

A. Sustainable Design Requirements: Section 01 81 13, SUSTAINABLE CONSTRUCTION REQUIREMENTS.

B. Structural Steel Corner Guards: Section 05 50 00, METAL FABRICATIONS.

C. Armor plates and kick plates not specified in this section: Section 08 71 00, DOOR HARDWARE.

D. Color and texture of aluminum and resilient material: See Construction Documents.

1.3 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Manufacturer with a minimum of three (3) years’ experience in providing items of type specified.
   1. Obtain wall and door protection from single manufacturer.

B. Installer’s Qualifications: Installers are to have a minimum of three (3) years’ experience in the installation of units required for this project.

1.4 SUBMITTALS

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

B. Sustainable Design Submittals, as described below:
   1. 1. Volatile organic compounds per volume as specified in PART 2 - PRODUCTS.
   2. 2. For composite wood products, submit documentation indicating product contains no added urea formaldehyde.

C. Shop Drawings: Show design and installation details.

D. Manufacturer's Literature and Data:
   1. Handrail/Wall Guard Combinations.
   2. Wall Guards.
   3. Corner Guards.
   4. Door/Door Frame Protectors.
   5. High Impact Wall covering.

E. Test Report: Showing that resilient material complies with specified fire and safety code requirements.

F. Manufacturer’s qualifications.

G. Installer’s qualifications.

H. Manufacturer’s warranty.

1.5 DELIVERY AND STORAGE

A. Deliver materials to the site in original sealed packages or containers marked with the name and brand, or trademark of the manufacturer.

B. Protect from damage from handling and construction operations before, during and after installation.

C. Store in a dry environment of approximately 21 degrees C (70 degrees F) for at least 48 hours prior to installation.

1.6 WARRANTY

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

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

1.7 APPLICABLE PUBLICATIONS

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

B. 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 and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- B221M-13 ..... Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
- D256-10 ..... Impact Resistance of Plastics
- D635-10 ..... Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position
- E84-14 ..... Surface Burning Characteristics of Building Materials

C. Aluminum Association (AA):
- DAF 45-09 ..... Designation System for Aluminum Finishes

D. American Architectural Manufacturers Association (AAMA):
- 611-14 ..... Anodized Architectural Aluminum

E. Code of Federal Regulation (CFR):
- 40 CFR 59 ..... Determination of Volatile Matter Content, Water Content, Density Volume Solids, and Weight Solids of Surface Coating

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

G. National Fire Protection Association (NFPA):
- 80-13 ..... Standard for Fire Doors and Windows

H. SAE International (SAE):
- J 1545-05(R2014) ..... Instrumental Color Difference Measurement for Exterior Finishes.

I. Underwriters Laboratories Inc. (UL):
- Annual Issue ..... Building Materials Directory

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: A240/A240M, Type 304.

B. Aluminum Extruded: ASTM B221M (B221), Alloy 6063, Temper T5 or T6.

C. Resilient Material:
1. Provide resilient material consisting of high impact resistant extruded acrylic vinyl, polyvinyl chloride, or injection molded thermal plastic conforming to the following:
   a. Minimum impact resistance of 960.8 N-m/m (18 ft.-lbs./sq. inch) when tested in accordance with ASTM D256 (Izod impact, ft.-lbs. per inch notched).
   b. Class 1 fire rating when tested in accordance with ASTM E84, having a maximum flame spread of 25 and a smoke developed rating of 450 or less.
   c. Rated self-extinguishing when tested in accordance with ASTM D635.
   d. Provide material labeled and tested by Underwriters Laboratories or other approved independent testing laboratory.
   e. Provide resilient material for protection on fire rated doors and frames assemblies that is listed by the testing laboratory performing the tests.
   f. Provide resilient material installed on fire rated wood/steel door and frame assemblies that have been tested on similar type assemblies. Test results of material tested on any other combination of door and frame assembly are not acceptable.
   g. Provide integral color with colored components matched in accordance with SAE J 1545 to within plus or minus 1.0 on the CIE-LCH scales.

2.2 CORNER GUARDS

A. Resilient, Shock-Absorbing Corner Guards: Flush mounted type.
1. Snap-on corner guard formed from resilient material, minimum 1.98 mm (0.078-inch) thick, free floating on a continuous 1.52 mm (0.060-inch) thick extruded aluminum retainer. Provide appropriate mounting hardware, cushions and base plates as required.
2. Profile: Minimum 76 mm (3 inch) long leg and 6 mm (1/4 inch) corner radius
3. Height: 2.43 m (8 feet) .
4. Retainer Clips: Provide manufacturer's standard impact-absorbing clips.
5. Provide factory fabricated end closure caps at top and bottom of surface mounted corner guards.
6. Flush mounted corner guards installed on any fire rated wall to be installed in a manner that maintains the fire rating of the wall. Provide fire test of proposed corner guard system to verify compliance.
   a. Where insulating materials are an integral part of the corner guard system, provide insulating materials furnished by the manufacturer of the corner guard system.

2.3 WALL GUARDS AND HANDRAILS

A. Resilient Wall Guards and Handrails:
1. Handrail/Wall Guard Combination:
   a. Snap-on covers of resilient material, minimum 2 mm (0.078-inch) thick.
   b. Free-floating on a continuous, extruded aluminum retainer, minimum 1.82 mm (0.072-inch) thick.
   c. Anchor to wall at maximum 762 mm (30 inches) on center.
2. Wall Guards:
   a. Snap-on covers of resilient material, minimum 2.54 mm (0.100-inch) thick.
3. Provide handrails and wall guards with prefabricated end closure caps, inside and outside corners, concealed splices, cushions, mounting hardware and other accessories as required. End caps and corners to be field adjustable to assure close alignment with handrails and wall guards. Screw or bolt closure caps to aluminum retainer in a concealed manner.

B. Aluminum Wall Guards: Extruded aluminum, closed tubular bumper assembly mounted on wall brackets.

1. Provide wall bumper with factory fabricated end closure caps, and inside and outside corner assemblies, concealed splice plates, and other accessories standard with the manufacturer.
2. Fabricate tubular wall guards from material with a nominal wall thickness of 6.35 mm (0.250-inch), form grooves for and provide two (2) strips of continuous polyvinyl chloride cushion bumper inserts.
3. Fabricate adjustable wall brackets from aluminum having a nominal wall thickness of 5.08 mm (0.20-inch). Fasten bumper to brackets with 6.35 mm (1/4-inch) diameter aluminum or stainless steel bolts with locknuts.

C. Stainless Steel Wall Guards: Construct wall guard, including brackets, of minimum 4.76 mm (0.1875-inch) thick stainless steel.

2.4 DOOR AND DOOR FRAME PROTECTION

A. Fabricate door and door frame protection items from vinyl acrylic or polyvinyl chloride resilient material, minimum 1.52 mm (0.060-inch) thick, for doors.

B. Provide adhesive as recommended by resilient material manufacturer.

2.5 HIGH IMPACT WALL COVERING

A. Provide wall covering/panels consisting of high impact rigid acrylic vinyl or polyvinyl chloride resilient material.

B. Panel sizes to be 1.22mx2.44 m (4 x 8 ft.) .

C. Submit fire rating and extinguishing test results for resilient material.

D. Submit statements attesting that the items comply with specified fire and safety code requirements.

E. Rigid Vinyl Acrylic Wall Covering: Wall covering thickness to be 1/16” (1.5mm).

F. Provide adhesive as recommended by the wall covering manufacturer.

2.6 FASTENERS AND ANCHORS

A. Provide fasteners and anchors as required for each specific type of installation.

B. Where type, size, spacing or method of fastening is not shown or specified in construction documents, submit shop drawings showing proposed installation details.

2.7 FINISH

A. Resilient Material: Embossed textures and color in accordance with SAE J1545.

PART 3 - INSTALLATION

3.1 RESILIENT CORNER GUARDS

A. Install corner guards on walls in accordance with manufacturer's instructions.

3.2 RESILIENT WALL GUARDS , HANDRAILS , WALL GUARD HANDRAIL COMBINATION

A. Secure guards to walls with brackets and fasteners in accordance with manufacturer's details and instructions.

3.3 DOOR, DOOR FRAME PROTECTION AND HIGH IMPACT WALL COVERING

A. Surfaces to receive protection to be clean, smooth and free of obstructions.

B. Install protectors after frames are in place but preceding installation of doors in accordance with approved shop drawings and manufacturer’s specific instructions.

C. Apply with adhesive in controlled environment according to manufacturer’s recommendations.

D. Protection installed on fire rated doors and frames to be installed according to NFPA 80 and installation procedures listed in UL Building Materials Directory; or, equal listing by other approved independent testing laboratory establishing the procedures.

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SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 - GENERAL

1.1 DESCRIPTION

A. SUMMARY:
1. Section Includes: Toilet and bath accessories at dressing rooms, toilets, baths, locker rooms and other areas indicated on drawings.

1.2 RELATED WORK

A. Color of finishes: See Construction documents

B. Section 05 50 00 METAL FABRICATIONS: Supports for Swing up Grab Bars.

C. Ceramic Toilet and Bath Accessories: Section 09 30 13, CERAMIC/PORCELAIN TILING.

D. Shower Curtain Break Away Pendant Chain Hooks: Section 10 21 23, CUBICLE CURTAIN TRACKS.

1.3 APPLICABLE PUBLICATIONS

A. Comply with references to extent specified in this section.

B. American Society of Mechanical Engineers (ASME):
1. B18.6.4-98(R2005) - Thread Forming and Thread Cutting Tapping Screws and Metallic Drive Screws inch.

C. American Welding Society (AWS):
1. D10.4-86(2000) - Welding Austenitic Chromium-Nickle Stainless Steel Piping and Tubing.

D. ASTM International (ASTM):
1. A269/A269M-15 - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
2. A312/A312M-15b - Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes.
3. A653/A653M-15 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4. A666-15 - Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
5. A1011/A1011M-14 - Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
6. B30-14a - Copper Alloys in Ingot Form.
7. B75/B75M-11 - Seamless Copper Tube.
8. B221-14 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
9. B221M-13 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).
10. B456-11e1 - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
11. B824-14 - General Requirements for Copper Alloy Castings.
12. C1036-11e1 - Flat Glass.
13. C1048-12e1 - Heat-Strengthened and Fully Tempered Flat Glass.
14. D635-14 - Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
15. F446-85(2009) - Grab Bars and Accessories Installed in the Bathing Area.

E. Federal Specifications (Fed. Spec.):
1. A-A-3002 - Mirror, Glass.
2. FF-S-107C(2) - Screws, Tapping and Drive.
3. WW-P-541/8B(1) - Plumbing Fixtures (Accessories, Land Use).

F. National Architectural Metal Manufacturers(NAAMM):
1. AMP 500-06 - Metal Finishes Manual.

1.4 SUBMITTALS

A. Submittal Procedures: Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Submittal Drawings:
1. Show size, configuration, and fabrication, anchorage and installation details.
2. Show mounting locations and heights.

C. Manufacturer's Literature and Data:
1. Description of each product.
2. Installation instructions.

D. Samples:
1. Full sized, complete assembly of each product specified.
2. Approved samples may be incorporated into project.

E. Certificates: Certify each product complies with specifications.
1. Soap dispensers: Certify soap dispensers are fabricated of material that will not be affected by liquid soap, aseptic detergents, and hexachlorophene solutions.

F. Qualifications: Substantiate qualifications comply with specifications.
1. Manufacturer with project experience list .

G. Operation and Maintenance Data:
1. Care instructions for each exposed finish product.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:
1. Regularly manufactures specified products.

1.6 DELIVERY

A. Deliver products in manufacturer's original sealed packaging.

B. Mark packaging, legibly. Indicate manufacturer's name or brand, type, production run number, and manufacture date.

C. Before installation, return or dispose of products within distorted, damaged, or opened packaging.

1.7 STORAGE AND HANDLING

A. Store products indoors in dry, weathertight facility.

B. Protect products from damage during handling and construction operations.

1.8 WARRANTY

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

PART 2 - PRODUCTS

2.1 MATERIALS

A. Aluminum: ASTM B221M (ASTM B221), Alloy 6063-T5 and Alloy 6463-T5.

B. Stainless Steel:
   1. Plate Or Sheet: ASTM A666, Type 304, 0.8 mm (0.031 inch) thick unless otherwise specified.
   2. Tubing: ASTM A269/A269M, Grade TP 304, seamless or welded.
   3. Pipe: ASTM A312/A312M; Grade TP 304.

C. Steel Sheet: ASTM A653/A653M, zinc-coated (galvanized) coating designation G90.

D. Chrome Plating (Service Condition Number SC 2): ASTM B456.

E. Brass Castings: ASTM B30.

F. Copper:
   1. Tubing: ASTM B75/B75M.
   2. Castings: ASTM B824.

G. Glass:
   1. ASTM C1036, Type 1, Class 1, Quality q2, for mirrors, and for mirror doors in medicine cabinets.
   2. ASTM C1036, Type 1 Class 1 Quality q3, for shelves in medicine cabinets.
   3. ASTM C1048, Kind FT, Condition A, Type 1, Class 1 for glass and mirrors in Mental Health and Behavior Patient Care Units, and Security Examination Rooms.

2.2 PRODUCTS - GENERAL

A. Basis of Design: See Construction documents..

B. Provide each product from one manufacturer.

2.3 PAPER TOWEL DISPENSERS

A. Surface mounted type with sloping top.

B. Dispensing capacity for 300 sheets of any type of paper toweling.

C. Fabricate of stainless steel.

D. Provide door with continuous hinge at bottom, and spring tension cam lock or tumbler lock, keyed alike, at top, and refill sight slot in front.

2.4 COMBINATION PAPER TOWEL DISPENSER AND DISPOSAL UNITS

A. Recessed and semi-recessed type.

B. Dispensing capacity for 400 sheets of any type of paper toweling.

C. Fabricate of stainless steel.

D. Form face frames, from one piece.

E. Provide each door with continuous stainless steel piano hinge and tumbler lock, keyed alike.

F. Provide removable waste receptacle approximately 40 L (10.5 gal.) capacity, fabricated of 0.45 mm (0.02 inch) thick stainless steel.

2.5 WASTE RECEPTACLES

A. Semi-recessed type, without doors. Fed. Spec. WW-P-541, Type II.

B. Fabricate of stainless steel.

C. Form face frame from one piece.

D. Provide removable waste receptacle of approximately 45 L (12 gal.) capacity, fabricated of stainless steel.

E. Waste receptacle key locked in place.

2.6 TOILET TISSUE DISPENSERS

A. Double roll surface mounted type.

B. Mount on continuous backplate.

C. Removable spindle ABS plastic or chrome plated plastic.

D. Wood rollers are not acceptable.

E. .

2.7 GRAB BARS

A. Fed. Spec. WW-P-541/8B, Type IV, bars, surface mounted, Class 2, grab bars and complying with ASTM F446.

B. Fabricate from stainless steel or nylon coated steel, use one type throughout project:
   1. Stainless steel: Grab bars, flanges, mounting plates, supports, screws, bolts, and exposed nuts and washers.

C. Mounting:
   1. Swing Up Grab Bars: Exposed type.
   2. Other Types and Locations: Concealed type.

D. Bars:
   1. Fabricate to 38 mm (1-1/2 inch) outside diameter.
      a. Stainless steel, minimum 1.2 mm (0.05 inch) thick.
      b. Nylon coated bars, minimum 1.5 mm (0.06 inch) thick.
   2. Fabricate in one continuous piece with ends turned toward walls.
      a. Swing up grab bars and grab bars continuous around three sides of showers may be fabricated in two sections, with concealed slip joint between.
   3. Continuously weld intermediate support to grab bar.
   4. Swing Up Bars: Manually operated; designed to prevent bar from falling when in raised position.

E. Flange for Concealed Mounting:
   1. Minimum 2.65 mm (0.1 inch) thick, maximum 79 mm (3-1/8 inch) diameter by 13 mm (1/2 inch) deep, with minimum three set screws for securing flange to back plate.
   2. Insert grab bar through center of flange and continuously weld perimeter of grab bar flush to back side of flange.
   3. In lieu of providing flange for concealed mounting, and back plate as specified, grab bar may be welded to back plate covered with flange.

F. Flange for Exposed Mounting:
   1. Minimum 5 mm (3/16 inch) thick, maximum 79 mm (3-1/8 inch) diameter.
   2. Insert grab bar through flange and continuously weld perimeter of grab bar flush to backside of flange.
   3. Where mounted on toilet shower partitions, provide three equally spaced, countersunk holes, sized to accommodate 5 mm (3/16 inch) diameter bolts.
   4. Where mounted on floor, provide four equally spaced holes, sized to accommodate 5 mm (3/8 inch) diameter bolts, maximum 5 mm (3/8 inch) from edge of flange.

G. Back Plates:
   1. Minimum 2.65 mm (0.1046 inch) thick metal.
   2. Fabricate in one piece, maximum 6 mm (1/4 inch) deep, with diameter sized to fit flange. Provide slotted holes to accommodate anchor bolts.
   3. Provide spreaders, through bolt fasteners, and cap nuts, where grab bars are mounted on partitions.

2.8 SHOWER CURTAIN RODS

A. Stainless steel tubing, minimum 1.27 mm (0.050 inch) wall thickness, 32 mm (1-1/4 inch) outside diameter.

B. Flanges, stainless steel rings, 66 mm (2.6 inch) minimum outside diameter, with 2 holes opposite each other for 6 mm (1/4 inch) stainless steel fastening bolts. Provide set screw within curvature of each flange for securing rod.

C. Intermediate Support: For rods over 1800 mm (72 inches) long. Provide adjustable ceiling flanges with set screws, tubular hangers and stirrups.

D. Shower curtain rods in Mental Health and Behavioral Nursing Units:
   1. Chrome plated plastic rods capable of supporting 22.6 kg (50 pounds) before pulling free of wall flanges.
   2. Option: Ceiling mounted hospital cubicle curtain tracks as specified in Section 10 21 23, CUBICLE CURTAIN TRACKS, with break-away pendant chain hooks. Chain hooks located at 2000 mm (79 inches) above floor.

2.9 CLOTHES HOOKS, ROBE OR COAT

A. Fabricate hook units from chromium plated brass with satin finish, or stainless steel, using 6 mm (1/4 inch) minimum thick stock, with edges and corners rounded smooth to thickness of metal, or 3 mm (1/8 inch) minimum radius.

B. Fabricate each unit as a double hook on a single shaft, integral with or permanently fastened to wall flange, provided with concealed fastenings.

2.10 TOWEL BARS

A. Fed. Spec. WW-P-541/8B, Type IV, Bar, Surface mounted; Class 1, towel.

B. Stainless steel, or chromium plated copper alloy.

C. Bar Length: 450 and 600 mm (18 and 24 inches) as shown.

D. Finish brackets and supports to match bar.

2.11 METAL FRAMED MIRRORS

A. Fed. Spec. A-A-3002 metal frame; anodized aluminum, .

B. Mirror Glass:
   1. Minimum 6 mm (1/4 inch) thick.
   2. Set mirror in a protective vinyl glazing tape.

C. Frames:
   1. Channel or angle shaped section with face of frame minimum 9 mm (3/8 inch) wide. Fabricate with square corners.
   2. Metal Thickness 0.9 mm (0.035 inch).
   3. Filler:
      a. Where mirrors are mounted on walls having ceramic tile wainscots not flush with wall above, provide fillers contoured to conceal void between back of mirror and wall surface.
      b. Fabricate fillers from same material and finish as mirror frame.
   4. Attached Shelf for Mirrors:
      a. Fabricate shelf of same material and finish as mirror frame.
      b. Make shelf maximum 150 mm (6 inches) in depth, and extend full width of mirror.
      c. Close ends and front edge of shelf to same thickness as mirror frame width.
      d. Form shelf for aluminum framed mirror as integral part of bottom frame member.
      e. Form stainless steel shelf with concealed brackets to attach to mirror frame.

D. Back Plate:

1. Fabricate backplate for concealed wall hanging from zinc-coated, or cadmium plated 0.9 mm (0.036 inch) thick sheet steel, die cut to fit face of mirror frame.
2. Provide set screw type theft resistant concealed fastening system for mounting mirrors.

E. Mounting Bracket:
1. Designed to support mirror tight to wall.
2. Designed to retain mirror with concealed set screw fastenings.

2.12 MEDICINE CABINETS

A. Fed. Spec. WW-P-541/8B, Type III Medicine cabinets, Style R, Recessed.
1. Mirror Glass: Minimum 5 mm (3/16 inch) thick. Set mirror in protective vinyl glazing tape.
2. Glass Shelves: Minimum 6 mm (1/4 inch) thick, with bulb-edges at front. Support shelves on adjustable aluminum brackets. Provide three shelves for each cabinet.
3. Cabinet Body: Fabricate from 0.9 mm (0.036 inch) thick sheet steel, with baked enamel finish, or 0.9 mm (0.036 inch) thick stainless steel. Form body in one piece, without seams, and with rounded inside corners.

B. Hinged Door:
1. Swing door.
2. Fabricate mirror door approximately 400 by 560 mm (16 by 22 inches).
3. Cabinet concealed when doors are closed.
4. Mirror Door Frame: Channel shape, 15 mm (0.060 inch) thick chromium plated brass, or 0.9 mm (0.036 inch) thick stainless steel.
5. Provide door with full length stainless steel piano hinge, magnetic or friction catches, rubber bumpers, and 90 degree restraining arm with spring type stop.

C. Sliding Door:
1. Slide door.
2. Fabricate sliding doors for approximately 660 by 560 mm (26 by 22 inch) opening.
3. Provide nylon glides in stainless steel tracks, door pulls and rubber bumpers.
4. Entire contents of cabinet concealed when doors closed.

2.13 FOOT OPERATED SOAP DISPENSER

A. Wall mounted, liquid soap dispenser, designed with adjustable needle valve allowing dispensing of two milliliters of liquid with each depression of foot pump.

B. Connect foot pump by 1800 mm (6 foot) air tube, to 1 liter (34 ounce) liquid container. Provide air intake tube with feature to prevent liquid from dripping after release of pedal.

C. Operate pump by slip resistant, rubber padded, pedal.

D. Provide complete unit not adversely affected by liquid soap, aseptic detergent, or hexachlorophene solutions.

E. Provide removable gummed label, attached to container, stating soap or detergent is acceptable in dispensers.

2.14 SOAP DISHES

A. Fed. Spec. WW-P-541/8B, Type VI, Holder.

B. Class 1, Soap, Surface Mounted:
1. One piece with provisions for exposed fasteners.
2. Fabricate from chromium plated brass approximately 115 by 95 mm (4 1/2 by 3-3/4 inches) overall size with drainage openings at bottom.

C. Soap, Recessed:
1. One piece seamless shell and flange with provisions for concealed fasteners.
2. Fabricate from 0.8 mm (0.031 inch) thick stainless steel or chromium plated brass.

3. Form surface of soap tray with raised ridges or patterned dimples to provide gripping surface for soap bar, or provide flush soap tray with a retaining lip. Plastic soap trays or tray inserts are not acceptable.

D. Soap Dishes in Mental Health and Behavioral Patient Care Units: Provide recessed units.

2.15 PAPER CUP DISPENSER

A. Fabricate of stainless steel.

B. Provide door with concealed stainless steel pivoting rod or piano hinge, and spring tension cam lock, or tumbler lock, keyed alike when more than one accessory unit is provided, and with cup level refill sight slot in door front.

C. Fabricate for flat bottom cups.

D. 90 Milliliters (3 ounce) Dispenser Unit:
1. Surface mounted single stack dispenser unit having a capacity of maximum one hundred fifty cups.
2. Form door from one piece to cover front and sides warp free.

E. 120 Milliliters (4 ounce) Dispenser Unit:
1. Recessed type single stack dispenser unit having a capacity of Maximum one hundred cups.
2. Form face frame in one piece.
3. Fabricate door double-pan warp free.

F. Combination 90 to 180 Milliliters (3 to 6 ounce) Dispenser and Disposal Unit:
1. Recessed type, having a capacity of Maximum 170 cups.
2. Fabricate as twin stack dispenser unit with adjustable dispensing mechanism to dispense any size cup.
3. Fabricate face frames in one piece and doors double pan warp free.
4. Fabricate recessed disposal unit with removable waste receptacle having a capacity of minimum 11 L (3.1 gallons).

2.16 MOP RACKS

A. Minimum 1016 mm (40 inches) long with five holders.

B. Clamps:
1. Minimum of 1.3 mm (0.05 inch) thick stainless steel bracket retaining channel with hard rubber serrated cam; pivot mounted to channel.
2. Clamps to hold handles from 13 mm (1/2 inch) minimum to 32 mm (1-1/4 inch) maximum diameter.

C. Support:
1. Minimum 1 mm (0.04 inch) thick stainless steel hat shape channel to hold clamps away from wall as indicated.
2. Drill wall flange for 3 mm (1/8 inch) fasteners above and below clamp locations.

D. Secure clamps to support with oval head machine screws or rivets into continuous reinforcing back of clamps.

2.17 STAINLESS STEEL SHELVES (TYPE 44)

A. Shelves:
1. Fabricate shelves of 1.2 mm (0.0478 inch) thick sheet to size and design indicated on Drawings.
2. Fabricate shelves of hollow metal type construction, forming a depressions indicated, with closed fronts, backs, ends and bottoms. Reinforce shelves with 1.2 mm (0.05 inch) thick sheet steel hat channel stiffeners, full depth, welded to underside of top at bracket locations.

3. Miter cuts, where made at corners of shelves, continuously welding.

B. Form brackets of 3 mm (1/8 inch) thick steel as shown. Drill brackets for 6 mm (1/4 inch) anchor bolts.

C. Weld or Screw brackets to shelves.

2.18 STAINLESS STEEL SHELVES(TYPES 45, 45C)

A. Fabricate shelves and brackets to design shown of 1.2 mm (0.05 inch) thick stainless steel.

B. Round and finish smooth projecting corners of shelves and edge corners of brackets. Drill brackets for 6 mm (1/4 inch) anchor bolts.

C. Screw or weld brackets to shelves.

2.19 STAINLESS STEEL SHELVES AT WHEELCHAIR LAVATORY

A. Side wall mounted:
1. Fabricate to size and shape indicated of 1.2 mm (0.05 inch) thick sheet.
2. Turn up edges and weld corners closed.
3. Fabricate brackets and weld to shelf. Drill brackets for 6 mm (1/4 inch) anchor bolts.

B. Back wall mounted:
1. Fabricate to size and shape shown of plate and tube.
2. Turn up edges and weld corners of shelf.
3. Weld tube to back plate and shelf, weld back plate to shelf, filler plate to tube, and corners of shelf with continuous welds.
4. Drill back plate for 6 mm (1/4 inch) anchor bolts.

2.20 FABRICATION - GENERAL

A. Welding, AWS D10.4.

B. Grind, dress, and finish welded joints to match finish of adjacent surface.

C. Form exposed surfaces from one sheet of stock, free of joints.

D. Provide steel anchors and components required for secure installation.

E. Form flat surfaces without distortion. Keep exposed surfaces free from scratches and dents. Reinforce doors to prevent warp or twist.

F. Isolate aluminum from dissimilar metals and from contact with building materials as required to prevent electrolysis and corrosion.

G. Hot-dip galvanized steel or stainless steel, anchors and fastening devices.

H. Shop assemble accessories and package with components, anchors, fittings, fasteners and keys.

I. Key items alike.

J. Provide templates and rough-in measurements.

K. Round and deburr edges of sheets to remove sharp edges.

2.21 FINISH

A. Steel Paint Finish:
1. Powder-Coat Finish: Manufacturer's standard two-coat finish system consisting of the following:
   a. One coat primer.
   b. One coat thermosetting topcoat.
   c. Dry-film Thickness: 0.05 mm (2 mils) minimum.
   d. Color: Refer to See Construction documents.

B. Nylon Coated Steel: Nylon coating powder formulated for fluidized bonding process to steel to provide hard smooth, medium gloss finish, minimum 0.3 mm (0.012 inch) thick, rated as self-extinguishing when tested according to ASTM D635.

C. Stainless Steel: NAAMM AMP 500; No. 4 polished finish.

D. Aluminum Anodized Finish: NAAMM AMP 500.
   1. Clear Anodized Finish: AA-C22A41; Class I Architectural, 0.018 mm (0.7 mil) thick.
   2. Color Anodized Finish: AA-C22A42 or AA-C22A44; Class I Architectural, 0.018 mm (0.7 mil) thick.

E. Chromium Plating: ASTM B456, satin or bright as specified, Service Condition No. SC2.

2.22 ACCESSORIES

A. Fasteners:
   1. Fasteners in Mental Health and Behavioral Patient Care Units: Tamper resistant hot-dipped galvanized or stainless steel.
   2. Exposed Fasteners: Stainless steel or chromium plated brass, finish to match adjacent surface.
   3. Concealed Fasteners:
      a. Shower, Bath Tubs, and High Moisture Areas: Stainless steel.
      b. Other Locations: Steel, hot-dipped galvanized.
   4. Toggle Bolts: For use in hollow masonry or frame construction.
   5. Sex bolts: For through bolting on thin panels.
   6. Expansion Shields: Lead or plastic for solid masonry and concrete substrate as recommended by accessory manufacturer to suit application.
   7. Screws:
      a. ASME B18.6.4.
      b. Fed. Spec. FF-S-107, Stainless steel Type A.

B. Adhesive: As recommended by manufacturer to suit application.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine and verify substrate suitability for product installation.
   1. Verify blocking to support accessories is installed and located correctly.

B. Verify location of accessories with Contracting Officer's Representative.

3.2 INSTALLATION

A. Install products according to manufacturer's instructions and approved submittal drawings.
   1. When manufacturer's instructions deviate from specifications, submit proposed resolution for Contracting Officer's Representative consideration.

B. Install grab bars according to ASTM F446.

C. Set work accurately, in alignment and where indicated, parallel or perpendicular as required to line and plane of surface. Install accessories plumb, level, free of rack and twist.

D. Toggle bolt to steel anchorage plates in frame partitions and hollow masonry. Expansion bolt to concrete or solid masonry.

E. Install accessories to function as designed. Perform maintenance service without interference with performance of other devices.

F. Position and install dispensers, and other devices in countertops, clear of drawers, permitting ample clearance below countertop between devices, and ready access for maintenance.

G. Align mirrors, dispensers and other accessories even and level, when installed in battery.

H. Install accessories to prevent striking by other moving, items or interference with accessibility.

I. Install accessories in Mental Health and Behavioral Units with tamper resistant screws that are flush mounted so that they will not support a rope or material for hanging.

3.3 CLEANING

A. After installation, clean toilet accessories according to manufacturer's instructions.

3.4 PROTECTION

A. Protect accessories from damage until project completion.

3.5 SCHEDULE OF ACCESSORIES

Item	Description	Mounting	Material

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SECTION 10 44 13

FIRE EXTINGUISHER CABINETS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section covers recessed fire extinguisher cabinets.

1.2 RELATED WORK

A. Acrylic glazing: Section 08 80 00, GLAZING.

B. Field Painting: Section 09 91 00, PAINTING.

1.3 SUBMITTALS

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

B. Manufacturer's Literature and Data: Fire extinguisher cabinet including installation instruction and rough opening required.

1.4 APPLICATION PUBLICATIONS

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

B. American Society of Testing and Materials (ASTM):
D4802-15.....Poly (Methyl Methacrylate) Acrylic Plastic Sheet

PART 2 - PRODUCTS

2.1 FIRE EXTINGUISHER CABINET

A. Recessed type with flat trim of size and design shown.

Selection Table - Fire Extinguisher Cabinets			
Mark	Material	Mounting	Usage / Condition
FEC-0	Carbon Steel	Recessed	Recessed for 2 ½ gallon fire extinguisher
FEC-3	Carbon Steel	Surface-mounted Cabinet	For economy or for walls which are not conducive to recessed mounting (i.e. CMU & CIP)
FE	Wall Bracket and exposed Fire Extinguisher – NO Cabinet	Surface-mounted FE w/ Wall Brackets	FE mounted to wall with manufacturer's standard Wall Bracket (utilitarian). Appropriate for Mechanical Rooms and similar non-public areas.

B. Fire Extinguisher Cabinets (FEC):
1. Provide FIRE EXTINGUISHER decal for each cabinet. Orient letters vertically.
2. Provide standard fixed door pull at each cabinet.

C. FEC-0: Recessed, Steel, Fire Extinguisher Cabinet:
1. Cold rolled steel tub with 1-1/4 IN wide recessed flange and flush cabinet door.
   a. Fire-rated Cabinets: Provide fire-rated cabinets where FEC is indicated to be installed in fire-rated walls.

b. Maximum projection from wall surface: 0 IN.

2. Cabinet Construction:
   a. Non-fire rated Cabinets: Single-wall, 0.026 IN (26 GA) steel.
   b. Fire Rated Cabinets: Double-wall construction fabricated from 0.043 IN (18 GA) steel lined with minimum 5/8 IN thick, fire-barrier material.
3. Finish:
   a. Finish interior of cabinet body with baked-on semigloss white enamel.
   b. Finish door, frame with manufacturer's standard baked-on prime coat suitable for field painting.
   c. Powder coated.
      1) Color: White.
   d. Tub Size, inside clear (WxHxD): 12 x 27 x 7-3/4 IN.
4. Door Style: Full Glazing; Clear acrylic.
   a. Door Style: Vertical strip Glazing; Clear acrylic.
5. Lock: None.

D. FEC-3: Surface-mounted, carbon steel, Fire Extinguisher Cabinet:
1. Description: Steel cabinet box fully exposed and mounted directly on wall with no trim.
   a. Material: 0.026 IN (26 GA) cold-rolled steel.
2. Finish:
   a. Finish interior of cabinet body with baked-on semigloss white enamel.
   b. Finish door, frame with manufacturer's standard baked-on prime coat suitable for field painting.
   c. Powder coated.
      1) Color: White.
3. Tub Size, inside clear (WxHxD): 15-13/16 x 30-3/16 x 8-1/4 IN.
4. Door Style: Vertical strip Glazing; Clear acrylic.
5. Lock: None.

E. Wall Brackets:
1. Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated
2. Finish: Baked-enamel or powder coat.
3. Include mounting accessories suitable for substrate wall type.
4. Locations: Install wall brackets for each fire extinguisher (FE) not indicated to be installed in a cabinet.

2.2 FABRICATION

A. Form body of cabinet from 0.9 mm (0.0359 inch) thick sheet steel.

B. Fabricate door and trim from 1.2 mm (0.0478 inch) thick sheet steel with all face joints fully welded and ground smooth.
1. Glaze doors with 6 mm (1/4 inch) thick ASTM D4802, clear acrylic sheet, Category B-1, Finish 1.
2. Design doors to open 180 degrees.
3. Provide continuous hinge, pull handle, and adjustable roller catch.

2.3 FINISH

A. Finish interior of cabinet body with baked-on semigloss white enamel.

B. Finish door, frame with manufacturer's standard baked-on prime coat suitable for field painting.

C. Comply with NAAMM's Metal Finishes Manual for Architectural and Metal Products.

D. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.

E. Finish fire protection cabinets after assembly.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify suitability of substrates to accept installation.

B. Installation constitutes acceptance of responsibility for performance.

3.2 INSTALLATION

A. Install fire extinguisher cabinets in prepared openings and secure in accordance with manufacturer's instructions.

B. Install cabinet so that the extinguisher height within meets the requirements of NFPA 10, ABAAS, and VA Barrier Free Guide.

C. Fasten mounting brackets and cabinets to structure, square and plumb, to comply with manufacturer’s instructions.

D. Provide unistrut or welded steel support where needed to mount cabinets or brackets in mechanical rooms and similar locations.

E. Provide required closures.

F. Mounting Height:
   1. Fire Extinguisher Cabinets (FEC):
      a. Locate with centerline of cabinet door handle not more than 48 IN AFF.
      b. Exception: Extinguishers with at gross weight > 40 LBS: Locate with centerline of cabinet door handle not higher than 24 IN AFF.
   2. Fire Extinguishers (FE) not contained in a cabinet:
      a. Locate wall brackets such that extinguisher release mechanism will not be higher 48 IN AFF.
      b. Exception: Extinguishers with at gross weight greater than 40 LBS: Install with extinguisher top not more than 36 IN above floor.

3.3 ADJUSTING AND CLEANING

A. Remove temporary protective coverings and strippable films.

B. Adjust fire protection cabinet doors to operate easily without binding.
   1. Verify that integral locking devices operate properly.

C. Clean interior and exterior surfaces.

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SECTION 10 81 13

BIRD CONTROL DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes:
   1. Bird Net to prevent birds from entering, roosting and nesting in areas where they are unwanted, and prevent damage from droppings and nesting materials.

1.2 CONFORMANCE SUBMITTALS

A. Product Data: Submit manufacturer's samples, catalog cuts, shop sketches and other descriptive materials.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data

1.4 QUALITY ASSURANCE

A. Single Source Responsibility: Netting and all parts specified in this section will be supplied by a single manufacturer.

B. Obtain technical literature from the specified manufacturer, telephone consultation and plan/photograph evaluation.

C. Utilize labor or manufacturer authorized installers who are certified Product installations. Proof of certification required.

1.5 PRODUCT HANDLING

A. Protect Bird Net and hardware system from damage before, during and after installation.

B. If damage occurs to Bird Net, make all replacements immediately.

1.6 WARRANTY

A. 10-year minimum warranty against material defects and workmanship.

PART 2 - PRODUCTS

2.1 PRODUCT DESCRIPTION

A. Model Designation:
   1. ¾" Bird Net

B. Color: Black

2.2 MATERIAL

A. **Material**: U.V. Stabilized knotted HDPE net. Non-conductive, flame resistant, rot resistant, waterproof, and stable in subzero temperatures.

B. **Construction**: 12/6 construction – 6 strands of UV protected HDPE yarn, each 0.012 inch in diameter.

C. **Sizes**: As required

D. **Break strength**: 52 lbs. per strand

E. **ISO 1806 Mesh Strength Test**: Peak Load 575 lbs force

F. **24" Wide Span Orthogonal Strength Test**: Peak load 575 lbs force

G. **Electrical Properties**: Non-conductive

H. **UV Stability**: UV protection system of Hindered Amine Light Stabilizers (HALS), Anti-oxidants and weather resistant pigments formulated exclusively for Bird-X.

I. **Thermal Properties**: Melting point in excess of 250 degrees F. Flame resistant. Can be heated for short periods of time in excess of 500 degrees F.

J. **Flammability**: Burns slowly in air. Fine filaments tend to melt and drop away before propagating flame.

2.3 MOUNTING SYSTEMS

A. Hardware: stainless steel recommended for all exterior applications
   1. Corner/Primary Attachments
   2. Intermediate Attachments
   3. Stringing Wire/Cable
   4. Ferrules (Copper or Aluminum)
   5. Turnbuckles
   6. Net Rings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine installation area. Notify Owner's Agent of detrimental work conditions.

B. Do not proceed until conditions are corrected.

3.2 AREA AND SURFACE PREPARATION

A. Remove existing bird droppings in a safe manner. Large quantities shall be removed and disposed. Work areas shall be cleaned, and repair work shall be done in areas which will be excluded by the Bird Net.

B. Remove or repair articles that may damage the Bird Net after installation.

3.3 INSTALLATION

A. Install as recommended by the manufacturer.

B. Correct mesh sizes shall be specified to ensure exclusion of the correct pest bird.

C. Shall be installed tightly and securely to ensure a long-lasting installation that is visually hard to see.

3.4 INSPECTION

A. Visually inspect Bird Net for poor adherence to mounting surfaces, or other problems related to poor installation or surface preparation.

B. Repair as necessary immediately.

END OF SECTION