

## **SECTION 10 11 13 MARKERBOARDS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies markerboards and related items.
- B. Boards may be factory or field assembled.
- C. Where shown, assemble both markerboards and tackboards into a single unit.

#### **1.2 RELATED WORK**

- A. Color of markerboard writing surface: White.

#### **1.3 QUALITY ASSURANCE**

- A. Boards to be the products of one manufacturer.

#### **1.4 SUSTAINABILITY REQUIREMENTS**

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT, for project local/regional materials, recycled content, certified wood requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

#### **1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Shop Drawings: Identify all parts by name and material and showing design, construction, installation, anchorage and relation to adjacent construction.
- C. Manufacturer's Literature and Data:
  - 1. Markerboard.
- D. Samples:
  - 1. Markerboard writing surface, 300 by 300 mm (6 by 6 inches), mounted on backing.
  - 2. Integrally colored anodized aluminum, 300 mm (6 inch) length.
  - 3. Each accessory (after approval, may be used in the work).

## 1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced.  
Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American National Standards Institute (ANSI):
- |           |  |
|-----------|--|
| Z97.1-04  | Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test |
| A208.1-09 | Particleboard  |
| A135.4-04 | Basic Hardboard  |
- C. American Society for Testing and Materials (ASTM):
- |         |  |
|---------|--|
| B221-13 | Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes |
|---------|--|
- D. National Association of Architectural Metal Manufacturers (NAAMM):
- |                |                       |
|----------------|-----------------------|
| AMP 500 Series | Metal Finishes Manual |
| AMP 501        | Finishes for Aluminum |

## PART 2 - PRODUCTS

### 2.1 MARKERBOARD

- A. Markerboards consist of a writing surface, snap on aluminum frame, marker trough, mullions, display rail and accessories, grounds and other items specified and shown.

### 2.2 FABRICATION

- A. Materials:
1. Aluminum, extruded: ASTM B221.
  2. Backing: Hardboard, ANSI A135.4 or particleboard, ANSI A208.1.
  3. Porcelain Enamel: Provide markerboard writing surface composed of porcelain enamel fused to a nominal 0.378 mm (28 gauge) thick steel, laminated to a minimum 6 mm (1/4 inch) thick core material with a steel or foil backing sheet. Writing surface must be capable of supporting paper by means of magnets.
- B. Components:
1. Writing Surface: Factory assembly consisting of face sheet of 24 gauge sheet steel with porcelain enamel finish conforming to PEI 1001, laminated to a hardboard or particleboard backing, 9 mm to 13 mm (3/8 to 1/2-inch) thick, and a 0.13 mm (0.005-inch) thick aluminum foil back sheet laminated to back-face.

2. Frames (Trim): Extruded aluminum, 1.5 mm (0.060-inch) thick, snap-on type, approximate face width 44 mm (1-3/4 inch), depth and configuration as required to return to wall and engage clips.
  3. Marker Trough: Extruded aluminum, 2.34 mm (0.092-inch) thick, not less than 75 mm (3-inch) projection from writing surface with grooved top surface, closed ends and return to wall surface at underside. Design to be snap-on type with concealed fasteners.
  4. Mullions: Snap-on type, same material and face width as frames, designed to finish flush with frame.
  6. Grounds: Continuous zinc-coated (galvanized) steel or extruded aluminum members designed to support the markerboard writing surface and clips for snap-on frames, map rail and marker tray.
  7. Clips: Manufacturer's standard as required to support frame, mullions, display rail, and marker trough.
- C. Provide markerboards 3660 mm (12 feet) or less in length as one piece.
- D. Finish exposed aluminum surfaces as follows:
1. AA 45 chemically etched medium matte, with clear anodic coating Class II Architectural, 0.4 mils thick (AA-M12C22A32).

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Install units in accordance with the manufacturer's installation instructions, use concealed fasteners.
- B. Inspect surfaces and related construction to receive units. Verify partitions have reinforcing to receive fasteners. Verify type and placement of reinforcement.
- C. Do not proceed with the installation until reinforcement is in place and surfaces are flat.
- D. Assemble units as specified by the manufacturer.

### **3.2 INSTALLATION OF MARKERBOARD**

- A. Mount markerboard with adhesive and blocking pads spaced 16 inches on center each way.
- B. Grounds designed to receive clips for snap-on trim to be continuous and be secured 300 mm (12 inches) on center. Space clips 300 mm (12 inches) on center.
- C. Miter trim at corners, conceal fasteners. Modify trim as required to conform to surrounding construction details.

- - - E N D - - -

THIS PAGE LEFT BLANK INTENTIONALLY

## **SECTION 10 11 23 TACKBOARDS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies tackboards (bulletin boards), glass door bulletin boards and related items.
- B. Boards may be factory or field assembled.
- C. Where shown, assemble both markerboards and tackboards into a single unit.

#### **1.2 RELATED WORK**

- A. Color of aluminum anodic coating tackboard: Clear.

#### **1.3 QUALITY ASSURANCE**

- A. Boards to be the products of one manufacturer.

#### **1.4 SUSTAINABILITY REQUIREMENTS**

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT, for project local/regional materials, low-emitting materials, recycled content, certified wood requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

#### **1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Shop Drawings: Identifying all parts by name and material and showing design, construction, installation, anchorage and relation to adjacent construction.
- C. Manufacturer's Literature and Data:
  - 1. Bulletin board.
  - 2. Glass door bulletin board.
- D. Samples:
  - 1. Tackboard, 300 by 300 mm (six by six inches), each color, mounted on backing.
  - 2. Integrally colored anodized aluminum, 300 mm (six inch) length.

3. Cork filled map rail, 300 mm (six inch) length.
4. Each accessory (after approval, may be used in the work).

## **1.6 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced.  
Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American National Standards Institute (ANSI):
- |           |  |
|-----------|--|
| Z97.1-04  | Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test |
| A208.1-09 | Particleboard  |
| A135.4-04 | Basic Hardboard  |
- C. American Society for Testing and Materials (ASTM):
- |               |   |
|---------------|---|
| B221/B221M-08 | Aluminum and Aluminum Alloy Extruded Bars, Rods, Wire, Shapes and Tubes |
| C1036-06      | Flat Glass  |
| C1048-04      | Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass      |
- D. National Association of Architectural Metal Manufacturers (NAAMM):
- |                |                       |
|----------------|-----------------------|
| AMP 500 Series | Metal Finishes Manual |
| AMP 501        | Finishes for Aluminum |

## **PART 2 - PRODUCTS**

### **2.1 BULLETIN BOARD**

- A. Bulletin board consists of a tackboard, snap on aluminum frame, grounds and other items specified and shown.

### **2.2 GLASS DOOR BULLETIN BOARD**

- A. Glass door bulletin board consists of a tackboard, aluminum tubular frame, sliding aluminum framed glazed doors and other items specified and shown.

### **2.3 FABRICATION**

- A. Materials:
1. Aluminum, extruded: ASTM B221.
  2. Cork: Plastic-impregnated cork, mildew resistant, on core panel indicated.

3. Tempered Glass: ASTM C1048, Clear Kind FT, Condition A, Type I, Class 1, Quality q3, 6 mm (1/4-inch) thick. Safety glass, ANSI Z97.1, labeled.
4. Backing: Hardboard, ANSI A135.4 or particleboard, ANSI A208.1.
5. Tack Wall Substrate: Mineral or wood fiber product manufactured for this purpose; minimum density 544 Kg/cu.m (34 pcf) and Class A surface burning characteristics.

**B. Components:**

1. Tackboard: Cork face, 6 mm (1/4-inch) thick factory laminated to a hardboard or particleboard backing.
2. Frames (Trim): Extruded aluminum, 1.5 mm (0.060-inch) thick, snap-on type, approximate face width 44 mm (1-3/4 inch), depth and configuration as required to return to wall and engage clips.
4. Display Rail: Snap-on type, same materials as frames, approximate face width one inch with 6 mm (1/4-inch) thick cork insert.
5. Mullions: Snap-on type, same material and face width as frames, designed to finish flush with frame.
6. Grounds: Continuous zinc-coated (galvanized) steel or extruded aluminum members designed to support the tackboard and clips for snap-on frames, and map rail.
7. Clips: Manufacturer's standard as required to support frame, mullions, and display rail.
8. Tubular Frame (For glass door bulletin board): Extruded aluminum, 2.34 mm (0.092 inches) thick; tubular or open back in section, with flanges for concealed attachment, designed to support door hardware and tackboard.

**C. Provide bulletin boards 3660 mm (12 feet) or less in length as one piece**

**D. Finish exposed aluminum surfaces as follows:**

1. AA 45 chemically etched medium matte, with clear anodic coating Class II Architectural, 0.4 mils thick (AA-M12C22A32).

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Install units in accordance with the manufacturer's installation instructions, use concealed fasteners.
- B. Inspect surfaces and related construction to receive units. Verify partitions have reinforcing to receive fasteners. Verify type and placement of reinforcement.
- C. Do not proceed with the installation until reinforcement is in place and surfaces are flat.

- D. Assemble units as specified by the manufacturer.

### **3.2 INSTALLATION OF BULLETIN BOARDS**

- A. (Except glass door bulletin boards):
1. Mount bulletin boards with adhesive and blocking pads spaced 16 inches on center each way.
  2. Grounds designed to receive clips for snap-on trim to be continuous and be secured 300 mm (12 inches) on center. Space clips 300 mm (12 inches) on center.
  3. Miter trim at corners, conceal fasteners. Modify trim as required to conform to surrounding construction details.

### **3.3 INSTALLATION OF GLASS DOOR BULLETIN BOARDS**

- A. Glass door bulletin board units to be factory assembled, except tackboard may be field mounted or shop mounted on frame.
- B. Provide mounting bolts or screws with oval head of stainless steel or chromium plated steel or brass. Space fasteners 500 mm (20 inches) on center, except not less than three fasteners each side, top and bottom. Heads of fasteners must not show on the frame face.

- - - E N D - - -



## **SECTION 10 14 00 EXTERIOR SIGNAGE**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies the work required to furnish and install the indicated and specified exterior cemetery site signage systems, including, but not limited to, sign faces, posts, and mow strips.
- B. Signs shall be products of manufacturers regularly engaged in manufacturing signs of types specified.
- C. Signs included are as follows:
  - 1. Information/Regulation
  - 2. Traffic Regulatory
  - 3. Post and Panel
    - a. One Line of Text
    - b. Two Lines of Text
    - c. Three Lines of Text
  - 4. Pylon Street Signs
  - 5. Faucet Post with Sign Panel
  - 6. Standard Granite Section Marker
  - 7. Wall Signs
  - 8. Dimensional Letters, Numbers, Seals.
  - 9. Pylon Handicapped Sign

#### **1.2 RELATED WORK**

- A. Post Setting Excavation, Material, Backfill, Section 31 20 00, EARTH MOVING.
- B. Concrete Bases for posts: Section 03 30 53, (SHORT FORM) CAST-IN-PLACE CONCRETE
- C. Flower Watering Station piping, appurtenances and mounting: Section 32 30 00 SITE FURNISHINGS.

#### **1.3 MANUFACTURER'S QUALIFICATIONS**

- A. Sign manufacturer shall regularly and presently manufacture signs similar to those specified as one of their principal products. Sign manufacturer shall submit qualifications demonstrating a minimum of three years of experience manufacturing the qualifying signs and shall, if possible, demonstrate the successful manufacturing of exterior site signs installed at one or more State or National Veteran Cemeteries.

#### **1.4 SUSTAINABILITY REQUIREMENTS**

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 74 19, CONSTRUCTION WASTE MANAGEMENT, for project local/regional materials, low-emitting materials, recycled content, certified wood requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, please visit <http://www.biopreferred.gov/>.

#### **1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Samples: Submit 3 sets. One set to the Contractor, one set to the Resident Engineer or Contracting Officer's Representative (RE/COR) and one set to the A/E Designer. The Contractor shall provide submittal documents that indicate each of the sign types, mounting types and materials to be used for the various combinations to be used for this project. Submittal materials shall indicate the location(s) for the various sign types including their mounting.
  - 1. Post & panel sign mock-up, not less than 200 mm by 250 mm (8" by 10"), shall be constructed and submitted, showing typical color, texture and fonts shown on Contract Drawings. Mock-up shall show typical fabrication methods, including panel to post(s) connection. Sample shall be capable of demonstrating how the face panels can be removed, for repair or replacement, from the mounted location between the posts, for a two post sign system. Mock-ups of all other sign systems for post mounted signs shall be capable of demonstrating how the sign panels are to be removed and replaced from the posts, or mounting support system attached to the posts, without moving the posts. Post, other than concrete or stone types, shall include typical post cap secured with tamperproof screws. Top surface of the sign panel shall not contain screws or metal joints that could trap or allow water to enter the sign assembly.
  - 2. Square tube post, 150 mm (6") minimum length, showing typical color and finish. Attachments for the sign panels shall be provided to demonstrate the complete signage system materials and functionality.

3. Aluminum samples showing full range of finish colors available.
  4. Cast Metal Letter, of the style, size and finish indicated
  5. Color samples of each color, 150 mm x 150 mm (6 inches x 6 inches). Show anticipated range of color and texture.
  6. Sample of typeface, arrow and symbols in a typical full size layout.
  7. Directory panels and frames, with letters and symbols, each type.
- C. Shop Drawings: All signs showing material, finish, colors, size of members, details of construction, letter spacing, size and type, numbers, symbols or image details, and mounting details. Identify materials, show joints, welds, anchorage, accessory items, mounting and finishes. The details of construction shall clearly show how the sign is to be disassembled to replace the entire sign or just one side panel, where applicable.
- D. Full size layout in full color of the Sign Panels.
- E. Manufacturer's Literature and Data (Mark literature to indicate items proposed to be furnished): Signs, each type. Manufacturer's printed specifications, anchorage details, installation and maintenance instructions. Manufacturer's recommendations for mounting the Sign Panels shall be provided.
- F. Manufacturer's Certificates: Provide certification from the coating installer, indicating exactly what they did to prepared the aluminum as and applied the coating(s) to the specified thickness(es). The certification shall indicate that the coating has been installed according to specific and identified contract specifications and/or approved submittal materials so it is absolutely clear what was done.
- G. Sample(s) shall be submitted of sign(s) of sufficient size to show the full scaled features of each of the sign types, including frame, mounting, panels, panel mounting, sign mounting facilities, lettering, color and texture. All aluminum signs shall have full exterior Powder Coated finish, with color and quality as specified herein.

## **1.6 DELIVERY AND STORAGE**

- A. 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.
- B. Deliver signs only when the site, mounting materials, and equipment are ready for installation work to proceed.
- C. Store products in dry condition inside enclosed facilities.

## 1.7 WARRANTY

- A. Sign Manufacturer shall guarantee the text and symbols applied to the powder coated aluminum for a period of one year following /final acceptance of the project. A warranty inspection shall be performed no later than one year following project final acceptance and the Contractor shall be responsible for removing and replacing any text and/or symbols identified, during the inspection, that have started to fade, chip, peel or otherwise fail. The Contractor shall remove and replace any sign panel faces with new, where the applied lettering, or the paint system itself, is causing damage to, or failure of, the paint system. All work to produce replacement sign panels with new lettering and/or paint system shall be provided at no cost to the Government, as part of the Warranty work for the signage system.

## 1.8 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. Americans with Disabilities Act - 1990, as amended and in effect as of 01-01-2009
- C. Federal Highway Administration:  
Manuals on Uniform Traffic Control Devices for Street and Highways -  
Single Post Traffic Regulatory Signs.
- D. American Society for Testing and Materials (ASTM):
- |                 |  |
|-----------------|--|
| B209-10         | Aluminum and Aluminum-Alloy Sheet and Plate                              |
| B221-12         | Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes. |
| B449-93(2010)e1 | Standard Specification for Chromates on Aluminum                         |
- E. American Architectural Manufacturer's Association (AAMA):
- |              |   |
|--------------|---|
| AAMA 2605-05 | Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum extrusions and Panels. |
|--------------|---|
- F. Federal Specifications (Fed. Spec.):
- |             |                                   |
|-------------|-----------------------------------|
| MIL-P-8184F | Plastic Sheet, Acrylic, Modified. |
| A-A-59502   | Plastic Sheet, Polycarbonate      |
- G. VA Signage Design Guide:  
Section 12 National Cemetery Signs -

<http://wbdg.org/ccb/VA/VASIGN/signage12.pdf//>

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Aluminum, Extruded: Fed. Spec. QQA-200-9, alloy 6063-T5, applicable as material.
- B. Aluminum, Sheet and Plate: ASTM B209
- C. Aluminum, Extrusions and Tubing: ASTM B221
- D. Zinc Chromate Primer: Fed. Spec. TT-P-645.

### **2.2 SIGNAGE GENERAL**

- A. Signs shall be of type, size and design shown on the drawings and as specified.
- B. Signs shall be complete with lettering, framing, and related components for a complete sign installation.
- C. Provide graphics items as completed units produced by a single manufacturer, including necessary mounting accessories, fittings and fastenings.
- D. Do not scale drawings for dimensions. Verify all dimensions and conditions shown by the drawings. Resident Engineer and/or Contracting Officer's Representative (RE/COR) is to be notified of any discrepancy in drawing(s), in field directions or conditions, and/or of any changes required for any such related construction details.
- E. The Sign Contractor, by commencing work of this section, assumes overall responsibility, as part of his warranty of work, to assure that assemblies, components and parts shown or required within the work of the section, comply with the Contract Documents. Warrant: That all components, specified or required to satisfactorily complete the installation are compatible with each other and with conditions of installations.

### **2.3 SIGN STANDARDS**

- A. Typography:
  - 1. Type Style: Optima Bold. Initial caps or and lower case as indicated in Site Signage Plan, unless otherwise indicated.
  - 2. Arrow: See graphic standards in drawings.
  - 3. Letter spacing: See graphic standards on drawings.
  - 4. All text, arrows, and symbols to be provided in size, colors, typefaces and letter spacing shown. Text shall be a true, clean, accurate reproduction of typeface(s) shown. Text shown in drawings are for layout purposes only. Text to be installed on specific signs shall be as submitted, reviewed and finally approved in shop drawings processed as submittal materials.

B. Sign Colors and Finishes: As specified in this Specification Section and approved in the Shop Drawing & Submittal process.

1. Aluminum sign system color scheme shall have the background color of sign panels and the aluminum posts as powder coated matching "Victor Stanley" Bronze.

## **2.4 SIGNS TYPES**

A. General: The basic sign designations for this project are indicated as follows:

1. NC-01 - Information/Regulations Signs, three size designations.
2. NC-03 – Traffic Regulatory Signs, two size designations.
3. NC-04 – Post and Panel Signs, three size designations.
4. NC-06.03.M – Pylon Street Signs.
5. NC-07.02 – Water Spigot Signage.
6. NC-07.03 - Pylon Section Marker.
7. NC-09 - Incised Letters, one size designation.
8. NC-11.01 - Dimensional Seal.

B. Location, layout and construction details for the all of the project exterior signs shall be found in the Construction Drawings. Refer to the signage details for the specific sign panel sizes, text and graphic sizes as well as the layout and content for the text and images for the respective individual signs.

## **2.5 TEXT AND GRAPHICS**

A. There are multiple Message Layout types for some of the different size signs within the same type of sign. See the drawing layout and detail drawings for the specifics of the locations for the signs, as well as the size, types, materials and messages for the individual signs for the project.

1. Surface applied letters, numbers and graphics shall be of a published quality and life expectancy equal to or exceeding that for reflective white opaque Engineering Grade 3M™ Scotchlite™ vinyl, unless otherwise noted. Color shall be selected from the manufacturer's standard color selection, during the submittal process. Font Type Style shall be as indicated in Paragraph "SIGN STANDARDS" as approved during the submittal process.

B. All text and graphics for the exterior signage shall be provided in detailed submittal information. Each sign face shall be represented in scaled drawings, with exact font, letter style, font, letter spacing, graphics being shown. Only signs and or sign faces approved in the submittal process shall be manufactured.

## 2.6 FABRICATION

- A. Design components to allow for expansion and contraction for a minimum material temperature range of 56 °C (100 °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. Use concealed fasteners whenever and wherever possible.
- C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.
- D. Contact surfaces of connected members shall be true. Assemble so joints will be tight and practically unnoticeable, without use of filling compound.
- E. Signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces shall be smooth flat and without oil-canning, free of rack and twist. Maximum variation from true plane of surface shall be plus or minus 0.4mm (1/64 inch). Restore texture to filed or cut areas.
- F. Level or straighten wrought work. Members shall have sharp lines and angles and smooth surfaces.
- G. Extruded members to be free from extrusion marks. Members shall have square turns and corners sharp, and curves shall be true.
- H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.
- I. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, peeling, foreign matter and other imperfections.
- J. Movable parts, including hardware, are be cleaned and adjusted to operate as designed without binding or deformation of members. All contact surfaces fit tight and even without forcing or warping components.
- K. Pre-assemble items in shop to greatest extent possible 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.

- L. Completed sign installations shall not have any exposed openings so insect nesting inside of signs will be prevented.
- M. No signs are to be manufactured until final sign message schedule and location review has been completed by the RE/COR & forwarded to contractor.
- N. Final sign fabrication shall not proceed until samples and shop drawings detailing the sign system as it will be installed, have been submitted and approved during the submittal process.

## **2.7 PROTECTION OF ALUMINUM**

- A. Isolate aluminum in contact with or fastened to dissimilar metals other than stainless steel, white bronze or other metals compatible with aluminum by one of the following:
  - 1. Painting the dissimilar metal with a prime coat of zinc-chromate or other suitable primer, followed by two coats of aluminum paint.
  - 2. Placing an approved caulking compound, or a non-absorptive tape, or gasket between the aluminum and the dissimilar metal.
- B. Paint aluminum in contact with or built into mortar, concrete, or other masonry materials with bituminous paint or zinc chromate primer.

## **2.8 DOUBLE-POST-PANEL SIGNS**

- A. Post and Panel Signs: Furnish the standard post style for each of the Post and Panel Signs, as designated in the drawings. The two standard types of posts are metal and concrete as follows:
  - 1. Metal post signs:
    - a. The posts, frame and panel(s) that make up the metal post sign system shall be constructed of an aluminum tubing system with approved post caps. Posts and frame elements for supporting the panels at individual sign locations shall be sized using the minimum sizes, as indicated herein, or as indicated on the drawings, with the drawing sizes taking precedence. The minimum size for the metal posts, if not indicated in the drawings, shall be 50 mm x 100 mm x 3 mm (2-inch by 4-inch by 1/8").
    - b. The minimum size for the tubular aluminum frame system, if not indicated in the drawings, shall be 25 mm x 25 mm x 3 mm (1-inch x 1-inch x 1/8-inch) with the 3 mm(1/8 – inch) aluminum panels anchored to the tubing, with all corners mitered and welded and ground smooth. When the sign panel system is mounted to the posts, there shall be no openings for insects to enter. Mounting holes for attaching the sign panel and frame to the posts shall be pre-drilled before the



coating system is applied. The entire sign panel and frame system shall be coated with the submitted and approved powder coating system, as indicated herein or on the drawings. The sign panels shall be secured to the frame system with tamperproof screws and each panel face shall be removable, without removing the sign system from the posts.

- c. Sign panel assembly shall be constructed with extruded aluminum support channels and fasteners that secure a removable powder-coated aluminum sign panel assembly. Aluminum sign panel faces shall be 3 mm (1/8") minimum thick. The design for the sign panel system shall be such that the sign panels can be removed and replaced, if damaged, without having to move the posts that secure the sign panel assembly. The sign panel assembly shall be constructed so there are no gaps or holes in the assembly that could let insects enter and construct nests or otherwise become a nuisance. The top of the sign panel assembly shall be constructed such that it is water tight from above and shall not have unsealed joints where water can collect or enter the assembly. The sign configuration and mounting shall be as depicted in the drawings.
- d. Lettering shall be as indicated on the applicable "Site Details" type of Drawing(s).
- e. Exposed fasteners shall be aluminum, tamper-proof type, and shall be colored to match the color for the sign panels.
- f. Finishes of exposed aluminum surfaces:
  - 1) Pretreatment: Before the finish is applied, a five-stage pretreatment must be applied to assure maximum adhesion and corrosion resistance:
    - a) Stage 1: High alkaline cleaner to prepare the surface
    - b) Stage 2: Water rinse
    - c) Stage 3: Combination of chromic, phosphoric and hydrofluoric acids that produce the chrome-phosphate conversion coating for maximum adhesion and corrosion resistance.
    - d) Stage 4: Water rinse
    - e) Stage 5: Water rinse
  - 2) Coating: The coatings for the metal signs shall produce results that meet or exceed the testing results indicated in AAMA 2605-05. After pretreatment, the metal is dried and paint is then applied. The aluminum shall have an electrostatically applied baked-on flexible acrylic finish that meet or exceeds industry standard tests, achieving a 75 – 125 micron (3.0 – 5.0 mil) thickness,

super-tough finish with maximum exterior durability and superior adhesion characteristics. Color as indicated on the drawings and approved submittal.

3) Tests:

- a) AAMA 2605-05 (covers Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum extrusions and Panels)
- b) ASTM D2247 (Humidity resistance of 1,000 hours)
- c) ASTM B117 (Salt spray resistance of 1,000 hours)
- d) Accelerated weathering for 500 hours under Method 6152 of Federal Test Method 141 shall show no adhesion loss, with only slight fading, chalking and water staining.
- e) Outdoor weathering shall show no adhesion loss, checking or crazing, with only slight fade and chalk when exposed for one year in Florida facing south at a 45 degree angle.
- f) Minimum hardness of 2H using ASTM D3363.
- g) Color of exposed portions of fastenings shall match sign panel being attached.

## **2.9 BRONZE PLAQUES - SEALS**

- A. Furnish and install the Bronze Plaques, Emblems and Seals as indicated on the contract drawings. Bronze elements shall be cast of a lead free tin bronze, such as C900300 (Navy "G" Bronze) or similar alloy approved by the VA. The Bronze elements shall be BAS relief casting based upon the graphic image included in the contract drawings.
- B. BAS relief castings shall be of uniform quality and condition, free from injurious blow holes and porosity, cracks and other defects and not warped or distorted, well finished, free from burrs, sharp edges, scratches and defects that may affect appearance or service ability. Casing shall not be repaired, plugged, welded or burned. Finish to be detailed, hand chased for true alignment, filed, belt polished, sides ground smooth, raised surfaces and borders to be polished and buffed to a bright satin finish, background textures to be reverse medium pebble background, fine pebble background, moss as cast. Bronze to be chemically oxidized to a statuary medium color and finish with one coat of clear protective exterior metal lacquer. Fasteners to be corrosion resistant metal compatible with material or casting. Details for the size, thickness, content, and mounting for the Bronze signage elements shall be as indicated on the contract drawings and as described as follows:"

1. Department of Veteran Affairs Bronze Seal - Shall be of the sculpted BAS relief style with the size and graphics //matching that of previously approved seals//as provided in the VA Graphic files// and as approved during the submittal review and approval process. The size, location and attachment for the seal shall be as indicated on the construction drawings, with the seal between 600mm and 1200mm (2 and 4 feet) in diameter.

## **2.10 GRANITE SECTION MARKERS**

- A. //Details for the Granite Section Markers are to be as indicated on the drawings and associated notes.//
- A. Granite Section Markers shall have honed smooth inscription face and all other surfaces shall be smooth saw cut finish. All corners and edges including 50mm (2") below ground shall be rounded to 10mm (3/8") radius. Dimensions and graphics details are as follows:
  1. Dimensions:
    - a. Height above finished grade - 600mm (2').
    - b. Width and Depth of the Marker - 150mm (6").
    - c. Beveled sign face - 150mm (6") wide x 200mm (8") high on the angled surface.
    - d. Top edge of beveled sign face from back edge of marker - 50mm (2").
    - e. Bottom edge of beveled sign face from top of marker - 175mm (7").
    - f. Bottom of marker below finished grade - 600mm (2') with concrete setting bed around the granite extending to max frost depth area or 6" below granite minimum, whichever is greater total depth.
  2. Graphics:
    - a. "SEC" shall be engraved letters; 38mm (1 1/2") ht., 5mm (3/16") depth, 5mm (3/16") stems & bars, located with bottom edge 57mm (2 1/4") from top of the beveled face; text for section ID numbers shall be as shown on the drawings, approved by the RE/COR & be engraved 50mm (2") ht., 5mm (3/16") depth, 10mm (3/8") stems & bars, and bottom edge 165mm (6 1/2") from top of the beveled face.
- B. Granite Section Markers shall be of materials that match those existing on the site, or are as approved by Memorial Program Services (MPS) for use as niche covers.

## **2.11 FAUCET POST WITH SIGN**

- A. Faucet posts with signs are non-illuminated pylon style with attached message and graphic decals. The decals are mounted directly on the metal post on a separate metal panel attached to the concrete post.

B. The posts contain and/or are used to mount the water pipe and the spigot at the Flower Watering Stations. Details for the water pipe, appurtenances, and mounting are included in the related Section 32 30 00 SITE FURNISHINGS.

C. The posts shall be concrete, with location, materials, color, messages and configuration as indicated on the Drawings. Position sign to provide pedestrians with a clear unobstructed view of the sign, or position according to the drawings, if so indicated.

1. Details for the Faucet Posts with Signs are as indicated on the drawings and associated notes.

a. Concrete Faucet Posts

- 1) 7 1/2" x 7 1/2" x 2'-4" above finished grade, and depth as indicated on the drawings (minimum depth of concrete holding the sign shall be 3'. Drawing details shall take precedence.
- 2) The style for the markers shall have rectangular ends cast into the four sides of the marker. The text panels shall be indented with beveled transition to the text panel mounting surface. The mounting surface for the aluminum text panel for each indent, shall be equal to the dimensions for the aluminum text panels +3mm, -0mm (+1/8", -0") as the gap between the aluminum panel and the flat mounting surface for the panel cast into the concrete.
- 3) The text panel shall be 3mm (1/8") thick powder coated aluminum of the aluminum panel, drilled and ground smooth before the powder coating. The color and finish shall be as approved in the submittal process and shall match the other aluminum signs.
- 4) The dimensions for the aluminum text panels shall be 95mm (3 3/4") wide with the symbol being 75mm (3") in height and 30 mm (1 1/4") from top of text panel to the top of the symbol. The text height shall be 19mm (3/4"). The height of the aluminum panel shall be coordinated to fit within the casting for the panel in the concrete markers, with a 3mm (1/8") gap all around between the aluminum and the concrete, as submitted and approved and meeting the standards established in the approved sample for the concrete pylon section markers with the aluminum text panel, as complete. The approximate height for the aluminum text panels is 400mm (1'-3 3/4"). Dimensions shown on detailed construction drawings shall take precedence over the specifications.

- 5) The text panels shall be furnished without mounting holes and shall be attached to the concrete with a permanent exterior adhesive designed for securing metal to concrete, as submitted and approved.
  - 6) Concrete Faucet Posts shall be manufactured in accordance with Section 04 72 00 Cast Stone Masonry using reinforced wet cast concrete with finish made to emulate stone by the use of acid etching process following casting. Finish, color and texture, as well as dimensional conformance shall be demonstrated by submitting samples of the marker, minimum of 300mm (12") in length, during the submittal process. Submit shop drawings indicating all dimensions and tolerances, as well as reinforcing. The shop drawings and sample shall include the details space for the pipes, appurtenances, and spigot as well as room for assembly and attachment to produce the fully functional FWS spigot assembly as specified. An acceptable sample must be obtained prior to manufacturing the units.
- D. "Do Not Drink" decal shall be as indicated on the drawing details, and as approved during the submittal process.

## **2.12 CONCRETE MOW COLLARS OR STRIPS**

- A. Reinforced concrete mow collars shall be provided for all new single elements in this Specification Section, where they are to be located in lawn areas and are not connected to another adjoining element. For all elements that are connected to another adjoining element, like double post signs, provide a continuous reinforced concrete mow strip. The requirements for the collars and strips are as follows:
1. Reinforced and free floating, concrete not in contact with the element.
    - a. As detailed on the drawings
    - b. Submitted and approved during the submittal process
    - c. Separated from the element with expansion joint material the fill depth of the concrete.
    - d. Closed steel rebar, with overlap at joint, 50mm (2") minimum distance from surrounding earth.
    - e. Minimum 10mm (#3) diameter rebar as enclosing the element or elements approximately 50mm (2") inside the perimeter of the concrete. On the strips,

there shall be an additional bar in the middle between the elements that extends to within 50mm (2") from the closest parts of the adjoining elements.

- f. Cast-in-place concrete shall be same as for other flatwork elements.
- g. Construct the collars and/or strips to be 25mm (1") above finished grade at the junction with the lawn, and with a slope up toward the element(s) and or middle, for drainage, of 13mm (1/2") to 19mm (3/4").

## **2.13 DIMENSIONAL LETTERS**

- A. Cast dimensional metal letters shall be surface mounted tight to the wall unless otherwise noted. Letters to be mounted to other than flat surfaces, like stone masonry veneer walls with irregular shaped and faced stones, and with random joints shall be mounted based upon the wall construction. Before manufacturing the letters, a full sized template of the letters, with correct size and spacing, shall be placed on the wall at the correct location and temporarily secured. The letter template shall be marked for each letter indicating where the joints are located immediately below the letter placement. The marking of the template is to locate where the relatively flat portions of the stones are below the letters so the pins can be manufactured and installed out of the joints between the stones. The template with the joint locations (or flatter portions of the stones) shall be provided to and/or used by the letter manufacturer so the pin placement supporting the individual letters can be adjusted and placed so the pins do not extend into the joints below the letters during the installation of the letters. Lettering shall be Times New Roman Regular with layout, font, style, size and spacing as indicated on the Drawings.
- B. Unless otherwise indicated on the drawings, dimensional lettering shall be sized and depth as follows for the size lettering indicated on the drawings:
  - 1. 200mm (8") lettering - 38mm (1 1/2") deep.

## **2.21 TRAFFIC REGULATORY - TALL**

- A. Sign faces shall be 450mm x 300 mm (1'-4" x 12") and shall be mounted so the bottom of message panel is 2.1m (7'-0") above finished grade.
- B. These signs shall match existing.
- B. The background color for the signs shall match existing.
- C. Text and graphics shall be white surface applied vinyl of same material used for the text on the other signs.

- D. The post for mounting the message panels shall be as indicated on the drawings//50mm (2") square extruded aluminum with powder coating dark bronze.
- C. Sign post types shall be extruded aluminum 100mm (4") square and //1200mm (4')//1800mm (6')// in height above finished grade. Color shall be created using a powder coated system, like that used by Victor Stanley for their benches or receptacles, dark bronze powder coated.
- D. The message layout panels for all of these signs shall be assembled 50mm (2") down from the top of the sign post, regardless of the post type. They shall have the corners eased with a 6mm (1/4") radius.
- E. All of the construction details, including but not limited to, attachments, mounts, reinforcement, finish, texture, color, text, graphics shall be submitted as part of samples and shop drawings for the signs and shall be reviewed, modified as needed, until they are approved, before the actual signs are approved for manufacturing.

## **2.23 PYLON HANDICAPPED SIGN**

- A. Pylon style signs shall be powder coated aluminum with powder coating system like that used by Victor Stanley for their benches and receptacles. The color shall be Handicapped Blue with a white handicapped symbol, and sized to be 50mm (2") deep, 150mm (6") wide, and 1500mm (5') above finished grade.
- B. Submit shop drawing showing the details of the physical pylon, the coating system as well as the colors and graphics as part of the submittal process.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Set work accurately, in alignment and where shown. Signs shall be plumb, level, free of rack and twist and set parallel or perpendicular as required to line and plane the surface.
- B. Signs shall be installed with direct burial of post into concrete as shown on Contract Drawings. Depth of posts shall be such that the bottom of the concrete surrounding the posts is at least below the frost, or as indicated in the drawings, whichever is the greater depth.
- C. Protect aluminum in contact with dissimilar metals or mortar as specified in Paragraph "PROTECTION OF ALUMINUM".
- D. Furnish setting drawings and instructions for installation of anchors and for the positioning of items having anchors or sleeves to be built into construction. Provide temporary bracing for such items until permanent anchors are set.

- E. Provide anchoring devices and fasteners as shown and as necessary for securing signs to construction as specified.
- F. Utilize approved layout template for the installation of the cast metal lettering on the entry wall. Pins shall be securely anchored as detailed. Face of all lettering shall be in a constant plane, while at the same time minimizing the distance between the back of the letters and the stone wall. Maintain a minimum gap as detailed between the back of the letter and the face of the stone wall.
- G. Verify that behind or beneath each sign location there are no utility lines, or other buried infrastructure elements, that will be affected by installation of signs. Any damage during installation of signs to utilities, or other buried infrastructure will be the sole responsibility of the Contractor to correct and repair.
- H. Furnish inserts and anchoring devices which must be set in concrete or other material for installation of signs. Provide setting drawings, templates, instructions and directions for installation of anchorage devices which may involve other trades.
- I. Furnish and install concrete collars and/or mow strips, with reinforcing to prevent cracking as well as expansion joints around the posts, or other elements of this section installed in the lawn areas, to allow for movement due to frost action. The mow strips shall be set so they are parallel to the finished grade around the sign posts, so mowers can drive around them without hitting the concrete, or going into a depression.
- J. Sign message panels shall be mounted using tamper-proof mechanical fasteners that are coated and colored to match the message panels.
- K. Install permanent caps on top of all aluminum posts. Mounting details and materials shall be provided as samples during the submittal process, and complete demonstration of all of the installation features, materials and methods shall be provided during the submittal process.

### **3.2 PLAQUE INSTALLATION**

- A. Install plaques as detailed on Contract Drawings and as follows:
  - 1. For all plaques, a 25 mm (1-inch) diameter hole shall be drilled in the unit masonry or stone to receive the mounting pins. The plaque/emoles shall be attached with non-shrink grout placed into the holes with the plaques/emoles being set when the mortar is wet. Contractor shall hold the plaques until the mortar has set. The plaques shall be set no more than 6 mm (1/4 inch) from the mounting substrate and shall be set plumb. A template of the mounting pins shall be made for each



installation and the locations transferred to the masonry or stone substrate and locations approved by the owner's designated representative before the mounting holes are drilled.

2. Provide samples and drawings indicating all details of the installation as part of the submittal process. Submittals shall be revised and resubmitted until approved, and installation shall not proceed without approved submittals and/or samples.

### **3.3 CLEANING**

- A. After installation, all items shall be cleaned as recommended by the manufacturer and protected from damage until completion of the project.

### **3.4 PROTECTION**

- A. Protect finished surfaces from damage during fabrication, erection and after completion of the work.

- -END- - -

This page intentionally left blank.

## **SECTION 10 14 05 INTERIOR SIGNAGE**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies interior signage for rooms, directional signs, and code required signs.
- B. This section includes bronze Great Seal of the United States.
- C. Installation of Government-furnished dedication plaque.

#### **1.2 RELATED WORK**

- A. Electrical: Related Electrical Specification Sections.
- B. Lighted EXIT signs for egress purposes are specified under Division 26, ELECTRICAL.
- C. Section 10 14 00, EXTERIOR SIGNAGE.

#### **1.3 MANUFACTURER'S QUALIFICATIONS**

- A. Provide evidence that the sign manufacturer regularly and presently manufacture signs similar to those specified in this section as one of their principal products.

#### **1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 00, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
- B. Samples: Sign panels and frames, with letters and symbols, each type. Submit two sets; one set of samples will be retained by RE/COR, other returned to Contractor.
  - 1. Sign Panel, 200 mm x 250 mm (8 inches x 10 inches), with letters.
  - 2. Color samples of each color, 150 mm x 150 mm (6 inches x 6 inches. Show anticipated range of color and texture.
  - 3. Sample of typeface, arrow and symbols in a typical full size layout.
- C. Manufacturer's Literature:
  - 1. Show the methods and procedures proposed for the concealed anchorage of the signage system to each surface type.
  - 2. Manufacturer's printed specifications, anchorage details, installation and maintenance instructions.
- D. Provide sign location plan, showing location, type and total number of signs required.
- E. Shop Drawings: Scale for manufacture and fabrication of sign types. Identify materials, show joints, welds, anchorage, accessory items, mounting and finishes.
- F. Full size layout patterns for dimensional letters.

## 1.5 DELIVERY AND STORAGE

- A. Deliver materials to job in manufacturer's original sealed containers with brand name marked thereon.
- B. Protect materials from damage.
- C. 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.
- D. Deliver signs only when the site and mounting services are ready for installation work to proceed.
- E. Store products in dry condition inside enclosed facilities.

## 1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced.  
Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American Society for Testing and Materials (ASTM):
  - B209-07 Aluminum and Aluminum-Alloy Sheet and Plate
  - B221-06 Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
- C. Military Specifications (Mil. Spec.):
  - MIL-PRF-8184F Plastic Sheet, Acrylic, Modified
  - MIL-P-46144C Plastic Sheet, Polycarbonate

## 1.7 MINIMUM SIGN REQUIREMENTS

- A. Permanent Rooms and Spaces:
  - 1. Tactile and Braille Characters, raised minimum 0.793 mm (1/32 inch); characters must be accompanied by Grade 2 Braille.
  - 2. Topography:
    - a. Type Style: Helvetica Bold. Initial caps or all caps as indicated in Sign Message Schedule.
    - b. Provide text, arrows, and symbols in size, colors, typefaces and letter spacing shown; provide a true, clean, accurate reproduction of typeface(s) shown. Text shown in drawings is for layout purposes only; final text for signs is listed in Sign Message Schedule.
  - 3. Character Height: Minimum 16 mm (5/8 in) high, Maximum 50 mm (2 in).

4. Symbols (Pictograms): Place equivalent written description directly below symbol, outside of symbol's background field. Border dimensions of symbol background must be minimum 150 mm (6 in) high.
5. Finish and Contrast: Characters and background to be eggshell, matte or other non-glare finish with adequate contrast with background.
6. Mounting Location and Height: As shown or mounted on wall adjacent to the latch side of the door and to avoid door swing and protruding objects.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- A. Signs of type, size and design shown on the drawings and as specified.
- B. 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 drawings for dimensions; verify and be responsible for all dimensions and conditions indicated. RE/COR to be notified of any discrepancy in drawing, in field directions or conditions, and/or of any changes required for all such construction details.
- E. By commencing work of this section, Contractor assumes overall responsibility, as part of its warranty of work, to assure that assemblies, components and parts shown or required within the work of the section, comply with the Contract Documents. Contractor further warrants that all components, specified or required to satisfactorily complete the installation are compatible with each other and with conditions of installations.

### **2.2 PRODUCTS**

- A. Cast Acrylic Sheet: MIL-PRF-8184F; Type II, class 1, Water white non-glare optically clear. Matt finish water white clear acrylic is not acceptable.
- B. Vinyl: 0.1 mm thick machine cut, having pressure sensitive adhesive and integral colors.

### **2.3 INTERIOR SIGNAGE TYPES FOR ROOMS**

- A. General:
  1. The interior sign system is comprised of sign types families that are identified by a letter and number which identify a particular group of signs. An additional number identifies a specific type of sign within that family.
    - a. IN indicates a component construction based sign.
- B. Sign Type Family 01, 02.01 thru 02.05, 08, 09 and 20:
  1. All text and graphics are to be first surface silk-screened.

2. IN-01.12 & IN-01.13: Refer to Sign Type 03 specification for tactile and Braille portion of sign.
3. IN-02.4: All text and graphics are to be first surface vinyl letters.
4. IN-01.1: Preparation of artwork for reproduction of "fire and emergency evacuation maps" is by manufacturer.

C. Sign Type Families 03:

1. Tactile sign is to be made from a material that provides for letters, numbers and Braille to be integral with sign plaque material such as: photosensitive polyamide resin, etched metal, sandblasted phenolic or embossed material. Do not apply letters, numbers and Braille with adhesive.
2. Numbers, letters and Braille to be raised 0.793 mm (.0312 inches) from the background surface. The draft of the letters, numbers and Braille must be tapered, vertical and clean.
3. Braille dots are to conform with standard dimensions for literary Braille; (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. Entire assembly is painted in specified color. After painting, apply white or other specified color to surface of the numbers and letters. Entire sign is to have a protective clear coat sealant applied.
5. Complete sign is to have an eggshell finish (11 to 19 degree on a 60 degree gloss meter).

D. Sign Type Family 04 and 11:

1. All text and graphics are to be first surface applied vinyl letters.
2. IN-04: When a Type IN-04 is to be mounted under a Type IN03, a connecting Accent Joiner is to be used to create a singular integrated sign.

E. Sign Type Family 07:

1. A11 text and graphics are to be first surface applied vinyl letters except for under sliding tile.
2. Protect text, which is covered by sliding tile, so tile does not wear away letters.

F. Sign Type Family 12:

1. A11 text and graphics are to be first surface applied vinyl letters.
2. IN-12: Provide felt, cork or similar material on bottom of desk mounting bracket to protect counter surfaces.

G. Sign Type Family 17:

1. A11 text and graphics are to be first surface applied vinyl letters.
2. IN-17: Directory constructed using elements of the Component System.

H. Sign Type Family 18:

1. A11 text and graphics are to be first surface applied stylus cut vinyl letters.
2. Provide in specified typeface, color and spacing, with each message or message group on a single quick release backing sheet.

## **2.4 FABRICATION**

- A. Design components to allow for expansion and contraction for a minimum material temperature range of 56 °C (100 °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. Use concealed fasteners whenever and wherever possible.
- C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.
- D. Contact surfaces of connected members must be true and assembled so joints are tight and practically unnoticeable, without use of filling compound.
- E. Provide signs with fine, even texture, flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces to be smooth flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface is plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.
- F. Level or straighten wrought work. Provide members with sharp lines and angles, and smooth surfaces.
- G. Extruded members to be free from extrusion marks. Square turns and corners sharp, curves true.
- H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.
- I. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Edge joints tightly mitered to give appearance of solid material.
- J. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface

must be smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.

- K. Movable parts, including hardware, are to be cleaned and adjusted to operate as designed without binding or deformation of members. Doors and covers centered in opening or frame. All contact surfaces fit tight and even without forcing or warping components.
- L. Pre-assemble items in shop to greatest extent possible 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. No signs are to be manufactured until final sign message schedule and location review has been completed by the RE/COR and forwarded to Contractor.

## **2.5 GREAT SEAL OF THE UNITED STATES**

- A. Material: Cast of a lead free tin bronze, such as C90300 (Navy "G" Bronze) or similar alloy approved by Government.
- B. Bas relief casting based on Government Drawing and of uniform quality and condition, free from injurious blow holes and porosity, cracks and other defects and not warped or distorted, well finished, free from burrs, sharp edges, scratches and defects that may affect appearance or service ability.
- C. Casting cannot be repaired, plugged, welded or burned.
- D. Finish to be detailed, hand chased for true alignment, filed, belt polished, sides ground smooth, raised surfaces and borders to be polished and buffed to a bright satin finish, background textures to be reverse medium pebble background, fine pebble background, moss as cast.
- E. Bronze to be chemically oxidized to a statuary medium color and finish with one coat of clear protective exterior metal lacquer.
- F. Anchors: Minimum 10 mm (3/8 inch) threaded bronze studs screwed into solid metal portion at back of seal.
- G. Provide 609 mm (24 inches) diameter, unless otherwise determined.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Protect products against damage during field handling and installation. Protect adjacent existing and newly placed construction, landscaping and finishes as necessary to prevent damage during installation. Paint and touch up any exposed fasteners and connecting hardware to match color and finish of surrounding surface.



- B. Mount signs in proper alignment, level and plumb according to the sign location plan and the dimensions given on elevation and sign location drawings. Install signs where best suited to provide a consistent appearance throughout the project, where otherwise not dimensioned. Contact RE/COR for clarification, when exact position, angle, height or location is in doubt.
- C. Contractor is responsible for all signs that are damaged, lost or stolen while materials are on the job site, until the completion and final acceptance of the job.
- D. Remove or correct signs or installation work RE/COR determines as unsafe or as an unsafe condition.
- E. At completion of sign installation, clean exposed sign surfaces. Clean and repair any adjoining surfaces and landscaping that became soiled or damaged as a result of installation of signs.
- F. Locate signs as shown on the Sign Location Plans.
- G. Certain signs may be installed on glass. A blank glass back up is required to be placed on opposite side of glass exactly behind sign being installed. This blank glass back up is to be the same size as sign being installed.
- H. Contractor will be responsible for verifying that behind each sign location there are no utility lines that will be affected by installation of signs. Any damage during installation of signs to utilities will be the sole responsibility of the Contractor to correct and repair.
- I. Furnish inserts and anchoring devices which must be set in concrete or other material for installation of signs. Provide setting drawings, templates, instructions and directions for installation of anchorage devices which may involve other trades.
- J. Great Seal of the United States: Mount seal into solid masonry or concrete with non-shrink mortar.

- - - END - - -

THIS PAGE LEFT BLANK INTENTIONALLY

## **SECTION 10 21 13 TOILET COMPARTMENTS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies solid phenolic toilet partitions, and urinal screens.

#### **1.2 RELATED WORK**

- A. Overhead structural steel supports for ceiling hung pilasters: Section 05 50 00, METAL FABRICATIONS.
- B. Grab bars and toilet tissue holders: Section 10 28 00, TOILET, BATH, AND LAUNDRY ACCESSORIES.

#### **1.3 SUSTAINABILITY REQUIREMENTS**

- A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIRMENTS, for project local/regional materials, low-emitting materials, recycled content, requirements.
- B. Biobased Material: For products designated by the USDA's BioPreferred® program, provide products that meet or exceed USDA recommendations for biobased content, subject to the products compliance with performance requirements in this Section. For more information regarding the product categories covered by the BioPreferred® program, visit <http://www.biopreferred.gov>.

#### **1.4 REGULATORY REQUIREMENTS FOR RECYCLED CONTENT**

- A. Products and Materials with Post-Consumer Content and Recovered Materials Content:
  - 1. Contractor is obligated by contract to satisfy Federal mandates for procurement of products and materials meeting recommendations for post-consumer content and recovered materials content; the list of designated product categories with recommendations has been compiled by the EPA - refer to <http://www.epa.gov/wastes/conservation/tools/cpg/products/>.
  - 2. Materials or products specified by this section may be obligated to satisfy this Federal mandate and Comprehensive Procurement Guidelines program.
  - 3. The EPA website also provides tools such as a Product Supplier Directory search engine and product resource guides.
- B. Fulfillment of regulatory requirements does not relieve the Contractor of satisfying sustainability requirements stipulated by Section 01 81 11, SUSTAINABLE DESIGN

REQUIREMENTS, as it relates to recycled content; additional product and material selections with recycled content may be required, as determined by Contractor's Sustainability Action Plan.

## **1.5 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data: Specified items indicating all hardware and fittings, material, finish, and latching.
- C. Shop Drawings: Construction details at 1/2 scale, showing installation details, anchoring and leveling devices.
- D. Manufacturer's certificate, attesting that zinc-coatings conform to specified requirements.

## **1.6 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American National Standards Institute (ANSI):
  - ICC/ANSI A117.1-03                      Guideline for Accessible and Usable Buildings and Facilities-Providing Accessibility and Usability for Physically Handicapped People
- C. American Society for Testing and Materials (ASTM):
  - A123/A123M-12                      Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
  - A385/A385M-11                      High Quality Zinc Coatings (Hot-Dip)

## **PART 2 - PRODUCTS**

### **2.1 FABRICATION**

- A. Solid phenolic : water resistant; graffiti resistant; non-absorbent; contain a minimum 30 percent post-consumer recycled plastic; Class C flame spread rating.
- B. Conform to ICC A117.1 code for access for the handicapped operation of toilet compartment door and hardware.
- C. Fabricate to dimensions shown or specified.
- D. Toilet Enclosures:
  - 1. Type 1, Style B (Ceiling hung).

2. Upper pivots and lower hinges adjustable to hold doors open 30 degrees.
  3. Keeper:
    - a. U-slot to engage bar of throw latch.
    - b. Combined with rubber bumper stop.
  4. Wheelchair Toilets:
    - a. Upper pivots and lower hinges to hold out swinging doors in closed position.
    - b. Provide U-type doors pulls, approximately 100 mm (four inches) long on pull side.
  5. Finish:
    - a. Solid phenolic for doors, pilasters, and enclosure panels.
- E. Urinal Screens:
1. Type III, Style D (wall hung), solid phenolic.
    - a. With integral flanges and continuous, full height wall anchor plate.
    - b. Option: Full height U-Type bracket.
    - c. Wall anchor plate drilled for 4 anchors on both sides of screen.
  2. Screen 600 mm (24 inches) wide and 1060 mm (42 inches high).

## **2.2 ANCHORING DEVICES AND FASTENERS**

- A. Provide steel anchoring devices and fasteners hot-dipped galvanized after fabrication, in conformance with ASTM A385/A385M and ASTM A123/A123M. Conceal all galvanized anchoring devices.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. General:
1. Install in rigid manner, straight, plumb and with all horizontal lines level.
  2. Conceal evidence of drilling, cutting and fitting in finish work.
  3. Use hex-bolts for through-bolting.
  4. Adjust hardware and leave in freely working order.
  5. Clean finished surfaces and leave free of imperfections.
- B. Panels and Pilasters:
1. Support panels, except urinal screens, and pilaster abutting building walls near top and bottom by stirrup supports secured to partitions with through-bolts.
  2. Secure stirrups to walls with two suitable anchoring devices for each stirrup.

3. Secure panels to faces of pilaster near top and bottom with stirrup supports, through-bolted to panels and machine screwed to each pilaster.
4. Secure edges of panels to edges of pilasters near top and bottom with "U" shaped brackets.

C. Urinal Screens:

1. Anchor urinal screen flange to walls with minimum of four bolts both side of panel.
2. Space anchors at top and bottom and equally in between.

- - - E N D - - -

## **SECTION 10 28 00 TOILET AND BATH ACCESSORIES**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies manufactured items usually used in toilets, baths, locker rooms, and at sinks in related spaces.
- B. Items Specified:
  - 1. Paper towel dispenser.
  - 2. Combination paper towel dispenser and disposal unit.
  - 3. Waste receptacles.
  - 4. Toilet tissue dispenser.
  - 5. Grab Bars.
  - 6. Shower curtain rods.
  - 7. Clothes hooks, robe or coat.
  - 8. Towel bars.
  - 9. Metal framed mirror.
  - 10. Sanitary napkin disposal.
  - 11. Toilet seat cover dispenser.
  - 12. Diaper changing station.
  - 13. Mop racks.
  - 14. Stainless steel shelves.
  - 15. Stainless steel shelves at wheelchair lavatory.
- C. This section also specifies custom fabricated items used in toilets and related spaces.

#### **1.2 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings:
  - 1. Provide for paper towel dispenser and combination dispenser and disposal units.
  - 2. Provide for metal framed mirrors, showing shelf where required, fillers, and design and installation of units when installed on ceramic tile wainscots and offset surfaces.
  - 3. Provide for shower Curtain rods, showing required length for each location.
  - 4. Provide for grab bars, showing design and each different type of anchorage.

5. Show material and finish, size of members, and details of construction, installation and anchorage of mop racks.

C. Samples:

1. One of each type of accessory specified.
2. After approval, samples may be used in the work.

D. Manufacturer's Literature and Data:

1. Provide for all accessories specified.
2. Show type of material, gages or metal thickness in inches, finishes, and when required, capacity of accessories.
3. Show working operations of spindle for toilet tissue dispensers.

E. Manufacturer's Certificates:

1. Attest that soap dispensers are fabricated of material that cannot be affected by liquid soap or aseptic detergents, PhisoHex and solutions containing hexachlorophene.
2. Confirm that anodized finish is as specified.

### **1.3 QUALITY ASSURANCE**

- A. Each product must meet the requirements specified and be a standard commercial product of a manufacturer regularly presently manufacturing items of type specified.
- B. Each accessory type to be the same and be made by the same manufacturer.
- C. Assemble each accessory to the greatest extent possible before delivery to the site.
- D. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

### **1.4 PACKAGING AND DELIVERY**

- A. Pack accessories individually to protect finish.
- B. Deliver accessories to the project only when installation work in rooms is ready to receive them.
- C. Deliver inserts and rough-in frames to site at appropriate time for building-in.
- D. Deliver products to site in sealed packages of containers; labeled for identification with manufacturer's name, brand, and contents.

### **1.5 STORAGE**

- A. Store products in weathertight and dry storage facility.
- B. Protect from damage from handling, weather and construction operations before, during and after installation in accordance with manufacturer's instructions.



## 1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced.

Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

- B. American Society for Testing and Materials (ASTM):

A167-99(2009)	Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
A176-99(2009)	Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip
A269-10	Seamless and Welded Austenitic Stainless Steel Tubing for General Service
A312/A312M-13	Seamless and Welded Austenitic Stainless Steel Pipes
A653/A653M-11	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
A1011/A1011M-12	Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
B456-11e1	Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium
C1036-11e1	Flat Glass
D635-10	Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position
D3690-02(2009)	Vinyl-Coated and Urethane-Coated Upholstery Fabrics - Indoor
F446-85(2009)	Consumer Safety Specification for Grab Bars and Accessories Installed in the Bathing Area

- C. American Welding Society (AWS):

D10.4-86 (R2000)	Welding Austenitic Chromium-Nickel Stainless Steel Piping and Tubing
------------------	--

- D. The National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500 Series	Metal Finishes Manual
AMP 500-505-06	Metal Finishes Manual and Finishes for Stainless Steel

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Stainless Steel:
  - 1. Plate or sheet: ASTM A167, Type 302, 304, or 304L, except ASTM A176 where Type 430 is specified, 0.0299-inch thick unless otherwise specified.
  - 2. Tube: ASTM A269, Type 304 or 304L.
- B. Stainless Steel Tubing: ASTM A269, Grade 304 or 304L, seamless or welded.
- C. Stainless Steel Pipe: ASTM A312; Grade TP 304 or TP 304L.
- D. Steel Sheet: ASTM A653, zinc-coated (galvanized) coating designation G90.
- E. Glass: ASTM C1036, Type 1, Class 1, Quality q2, for mirrors.
- F. Vinyl Covering: ASTM D3690, Vinyl coated fabric, Class A.
- G. Plywood: PS1, Grade CD.

### **2.2 FASTENERS**

- A. Exposed Fasteners: Stainless steel or chromium plated brass, finish to match adjacent surface.
- B. Concealed Fasteners: Steel, hot-dip galvanized; except in high moisture areas such as showers, use stainless steel.
- C. Toggle Bolts: For use in hollow masonry or frame construction.
- D. Hex Bolts: For through bolting on thin panels.
- E. Expansion Shields: Lead or plastic as recommended by accessory manufacturer for component and substrate for use in solid masonry or concrete.
- F. Screws:
  - 1. ASME B18.6.4.
- G. Adhesive: As recommended by manufacturer for products to be joined.

### **2.3 FINISH**

- A. In accordance with NAAMM AMP 500 series.
- B. AA-M32 Mechanical finish, medium satin.
  - 1. Chromium Plating: ASTM B456, satin or bright as specified, Service Condition No. SC2.
  - 2. Stainless Steel: NAAMM AMP 503, finish number 4.
  - 3. Ferrous Metal:
    - a. Shop Prime: Clean, pretreat and apply one coat of primer and bake.
    - b. Finish: Over primer apply two coats of alkyd or phenolic resin enamel, and bake.

4. Nylon Coated Steel: Nylon coating powder formulated for a fluidized bonding process to steel to provide a hard smooth, medium gloss finish, not less than 0.3 mm (0.012-inch) thick, rated as self-extinguishing when tested in accordance with ASTM D635.

## **2.4 FABRICATION - GENERAL**

- A. Perform welding in accordance 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. Shop assemble accessories and package with all components, anchors, fittings, fasteners and keys.
- G. Key items alike.
- H. Provide templates and rough-in measurements as required.
- I. Round and smooth edges of sheets to remove sharp edges.

## **2.5 PAPER TOWEL DISPENSERS (TA-1)**

- A. Surface mounted type with sloping top for Household Aides Closets.
- 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 a refill sight slot in front.

## **2.6 COMBINATION PAPER TOWEL DISPENSER AND DISPOSAL UNITS (TA-2)**

- A. Recessed and semi-recessed type for public use spaces.
- 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 liter (10.5 gallon) capacity, fabricated of 0.45 mm (0.018 inch) thick stainless steel.

## **2.7 TOILET TISSUE DISPENSERS (TA-3)**

- A. Double roll surface mounted type.
- B. Mount on continuous back plate.

C. Removable spindle ABS plastic or chrome plated plastic.

D. Wood rollers are not acceptable.

## **2.8 SHOWER CURTAIN RODS (TA-4)**

A. Stainless steel tubing, ASTM A1011, 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 5/8 inch) minimum outside diameter, with 2 holes opposite each other for 6 mm (1/4 inch) stainless steel fastening bolts. Provide a set screw within the curvature of each flange for securing the rod.

## **2.9 CLOTHES HOOKS-ROBE OR COAT (TA-5)**

A. Fabricate hook units of chromium plated brass, with a satin finish, or stainless steel, using 6 mm (1/4 inch) minimum thick stock, with edges and corners rounded smooth to the thickness of the 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 the wall flange, provided with concealed fastenings.

## **2.10 TOWEL BARS (TA-6)**

A. Surface mounted type.

B. Stainless steel with minimum thickness of 0.38 mm (0.015 inch); 19 mm (3/4 inch) diameter, or 16 mm (5/8 inch) square.

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

D. Finish of brackets or supports same as bar; satin.

## **2.11 METAL FRAMED MIRRORS (TA-7)**

A. Mirror Glass:

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

B. Frames:

1. Channel or angle shaped section with face of frame not less than 9 mm (3/8 inch) wide. Fabricate with square corners.
2. Use 0.9 mm (0.0359 inch) thick stainless steel.
3. Filler:
  - a. Where mirrors are mounted on walls having ceramic tile wainscots not flush with wall above, provide fillers at void between back of mirror and wall surface.
  - b. Fabricate fillers from same material and finish as the mirror frame, contoured to conceal the void behind the mirror at sides and top.

C. Back Plate:

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

D. Mounting Bracket:

1. Designed to support mirror tight to wall.
2. Designed to retain mirror with concealed set screw fastenings.

E. Size:

1. As noted on drawings.

**2.12 SANITARY NAPKIN DISPOSAL (TA-8)**

- A. Fabricate a Type 304 stainless steel sanitary napkin disposal with removable leak-proof receptacle for disposable liners.
- B. Provide 50 disposable liners of the type standard with the manufacturer.
- C. Retain receptacle in cabinet by tumbler lock.
- D. Provide disposal with a door for inserting disposed napkins, surface mounted.

**2.13 TOILET SEAT COVER DISPENSER (TA-9)**

- A. Provide Type 304 stainless steel with surface mounted toilet seat cover dispensers.  
Provide dispenser with a minimum capacity of 500 seat covers.

**2.14 DIAPER CHANGING STATION (TA-10)**

- A. Provide surface mounted diaper changing station fabricated of high impact plastic interior with no sharp edges; Type 304 stainless steel cover exterior closed position.
- B. Provide fold down platform concave to the child's shape, equipped with nylon and hook and loop safety straps and engineered to withstand a minimum static load of 113 kg (250 lb.).
- C. Provide an integral dispenser for sanitary liners for each unit.
- D. Provide pictorial for universal use of safety graphics.

**2.15 MOP RACKS (TA-11)**

- A. Minimum 1.0M (40 inches) long with five holders.
- B. Clamps:
  1. Minimum of 1.3 mm (0.050-inch) thick stainless steel bracket retaining channel with a hard rubber serrated cam; pivot mounted to channel.

2. Provide clamps to hold handles from minimum 13 mm (1/2-inch) to 32 mm maximum (1-1/4 inch) diameter.

C. Support:

1. Minimum of 1 mm (0.0375 inch) thick stainless steel hat shape channel to hold clamps away from wall as shown.
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.

E. Finish on stainless Steel: AMP 503-No. 4.

**2.16 STAINLESS STEEL SHELVES, TYPES 45 AND 45C (TA-12)**

- A. Fabricate shelves and brackets to design shown of 1.2 mm (0.0478-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.

**2.17 SURFACE MOUNTED ROLL-TOWEL DISPENSER (TA-13)**

- A. Provide heavy duty surface mounted roll-towel dispenser of cast aluminum with satin finish.

**2.18 SOAP DISPENSER (TA-14)**

- A. Provide unit with corrosion-resistant valve dispensing thin, free-flowing commercially marketed all-purpose hand soaps.
- B. Unit to be provided with translucent polyethylene container that provides visible soap level of 24 fl-oz (0.7-L) capacity.
- C. Mounting bracket and base of bright polished, chrome plated ABS plastic.

**2.19 GRAB BARS (TA-15)**

- A. Comply with ASTM F446.
- B. Fabricate of stainless steel or nylon coated steel, except use only one type throughout the project:
  1. Stainless Steel: Grab bars, flanges, mounting plates, supports, screws, bolts, and exposed nuts and washers.
- C. Bars:
  1. Fabricate from 32 mm (1-1/4 inch) outside diameter tubing.
    - a. Stainless steel, minimum 1.2 mm (0.0478 inch) thick.

2. Fabricate in one continuous piece with ends turned toward walls, except swing up and where grab bars are shown continuous around three sides of showers, bars may be fabricated in two sections, with concealed slip joint between.
  3. Continuous weld intermediate support to the grab bar.
  4. Swing up bars manually operated. Designed to prevent bar from falling when in raised position.
- D. Flange for Concealed Mounting:
1. Minimum of 2.65 mm (0.1046 inch) thick, approximately 75 mm (3 inch) diameter by 13 mm (1/2 inch) deep, with provisions for not less than three set screws for securing flange to back plate.
  2. Insert grab bar through center of the flange and continuously weld perimeter of grab bar flush to back side of flange.
- E. Instead of providing flange for concealed mounting, and back plate as specified, grab rail may be secured by being welded to a back plate and be covered with flange.
- F. Back Plates:
1. Minimum 2.65 mm (0.1046 inch) thick metal.
  2. Fabricate in one piece, approximately 6 mm (1/4 inch) deep, with diameter sized to fit flange. Provide slotted holes to accommodate anchor bolts.
- G. Size:
1. As noted on drawings.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- A. Before starting work notify COTR in writing of any conflicts detrimental to installation or operation of units.
- B. Verify with the COTR the exact location of accessories.

### **3.2 INSTALLATION**

- A. Set work accurately, in alignment and where shown; plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.
- B. Toggle bolt to steel anchorage plates in frame partitions or hollow masonry. Expansion bolt to concrete or solid masonry.
- C. Install accessories in accordance with the manufacturer's printed instructions and ASTM F446.
- D. Install accessories plumb and level and securely anchor to substrate.

- E. Install accessories in a manner that will permit the accessory to function as designed and allow for servicing as required without hampering or hindering the 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 as needed.
- 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.

### **3.3 CLEANING**

- A. After installation, clean as recommended by the manufacturer and protect from damage until completion of the project.

- - - E N D - - -



## **SECTION 10 44 13 FIRE EXTINGUISHER CABINETS**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. This section covers semi-recessed and surface mounted 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.
- C. Manufacturer's Literature and Data: Fire extinguishers materials description; including ratings and classifications.
- D. Samples: Extinguisher Cabinet Door and Trim Finishes: For each type of exposed finish required, prepared on samples of size minimum 6 inches square.
- E. Warranty: Sample of special warranty.

#### **1.4 QUALITY ASSURANCE**

- A. Comply with standards referenced in Article 1.7 – Applicable Publications.
- B. Provide fire extinguishers, cabinets and accessories produced by a single manufacturer.
- C. Provide fire extinguishers of type approved by UL, State Fire Marshal's Office, and local regulatory agencies, as applicable.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- A. Deliver, store and handle fire protection specialties and related materials using means and methods that will prevent damage, deterioration or loss and in compliance with manufacturer's requirements. Deliver components in manufacturer's original packaging, properly labeled for identification.

## **1.6 WARRANTY**

- A. All Fire Protection Products (except fire extinguishers) to carry a minimum one year warranty against defects in materials or workmanship. Fire extinguishers to provide manufacturer's standard warranty in compliance with all regulatory requirements.

## **1.7 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced.  
Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American Society of Testing and Materials (ASTM):  
D4802-10                                      Poly (Methyl Methacrylate) Acrylic Plastic Sheet
- C. International Code Council:  
2012 IBC                                      International Building Code – 2012 Edition  
2012 IFC                                      International Fire Code – 2012 Edition
- D. National Fire Protection Association (NFPA):  
NFPA 10-2010                                Standard for Portable Fire Extinguishers: For criteria covering installations for Class A, B, C, D, and K hazards as well as the selection, inspection, maintenance, recharging, and testing of portable fire extinguishers.

## **PART 2 - PRODUCTS**

### **2.1 FIRE EXTINGUISHER CABINETS**

- A. Semi-Recessed type with flat trim and surface mounted.
- B. Basis of Design: JL Industries, Inc., a division of Activar Construction Products Group, 4450 West 78<sup>th</sup> Street, Bloomington, MN 55435-5416, (phone) 1-800-554-6077, (fax) 952-835-2218, [www.activarcpq.com](http://www.activarcpq.com).
  - 1. Semi-Recessed Cabinet: Model Number 1836S21, Cosmopolitan Series in stainless steel finish.
  - 2. Surface Mount Cabinet: Model Number 8133S21, Cosmopolitan Series in stainless steel finish.

### **2.2 FIRE EXTINGUISHER**

- A. Multi-Purpose Chemical Type: Extinguisher unit containing a fluidized and siliconized mono ammonium phosphate powder; nonconductive and nontoxic.

1. Construction: Heavy duty steel cylinder with metal valve and siphon tube, O-ring seal, replaceable valve stem seal, visual pressure gage, pull pin and upright squeeze grip.
2. Finish: Factory powder-coated; Red.
3. Effectiveness (Rating): Class A, B and C fires.

## **2.3 FINISH**

### **A. Fire Extinguisher Cabinets:**

1. Cabinet with Stainless Steel Trim and Door: Cosmopolitan Series
2. Cabinet Style: Semi-recessed or Surface-mounted as indicated. Semi-recessed cabinets for all finished interior locations. Surface-mounted in un-conditioned shop and storage areas of Maintenance Building, Pump House and Committal Shelter.
3. Tub (Semi-recessed and Surface-mounted Cabinets): Stainless steel; #4 directional satin finish.
4. Door and Trim Construction: Stainless steel; flush doors with 5/8 inch (15.88 mm) door stop attached by continuous hinge equipped with zinc plated handle with roller catch. Standard finish to be #4 directional satin finish.
5. Trim Style and Depth: Semi-Recessed Cabinet – square edge 1-1/2 inch. Surface-mounted Cabinet – standard profile square edge.

### **B. Cabinet Door Styles and Additional Options:**

1. Style S21: Solid; no glazing; with pull handle.

### **C. Additional Options:**

1. Cabinet Lettering: Mounting direction – Vertical. Diecut lettering. Text to read “FIRE EXTINGUISHER”. Color to be Red.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- #### **A. Examine walls and partitions for suitable framing depth and blocking where semi-recessed cabinets to be installed, and blocking where surface mounted cabinets will be installed.**
1. Notify the Contractor in writing of conditions detrimental to proper and timely completion of the installation.
  2. Proceed with the installation only after unsatisfactory conditions have been corrected. Start of installation indicates full acceptance of existing conditions.

### **3.2 INSTALLATION**

- A. Install cabinets in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations or governing authorities.
  - 1. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's written instructions.
  - 2. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's written instructions.
- B. Cabinet Lettering:
  - 1. Location: Face of door framing.
  - 2. Apply lettering on factory finished either at the factory or just prior to Substantial Completion.

### **3.3 FIELD QUALITY CONTROL**

- A. Ensure that each extinguisher is fully charged, and that inspection of each extinguisher has been performed, as evidenced by the National Association of Fire Equipment Distributors certification tag, just prior to turnover.

### **3.4 ADJUSTING AND CLEANING**

- A. Remove temporary protective coverings and strippable films, if any, as fire protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire protection cabinet and mounting bracket manufacturer.
- E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair of finish touchup or similar minor repair procedures at no additional expense to owner.

- - - E N D - - -

## **SECTION 10 51 13 METAL LOCKERS**

### **PART 1 – GENERAL**

#### **1.1 DESCRIPTION**

- A. This Section includes metal lockers for Locker Rooms and metal lockers for Honor Guard Room.

#### **1.2 RELATED WORK**

- A. Furring, blocking, and shims (required for installing metal lockers and concealed within other construction before metal locker installation): Section 06 10 00, ROUGH CARPENTRY.
- B. Shop prime painting of steel and ferrous metals: Section 05 50 00, METAL FABRICATIONS.
- C. Locker Base: Section 03 30 00, CAST-IN-PLACE CONCRETE.

#### **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. Before fabrication of the lockers is started, submit manufacturer's literature which will be used to determine compliance with submittal requirements.
- C. Samples: Prior to fabrication, provide color samples on actual locker material to determine final color selection.

#### **1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: An authorized representative of metal locker manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain metal lockers and accessories through one source from a single manufacturer.
- C. Product Options: Drawings indicate size, profiles, and dimensional requirements of metal lockers and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."
- D. Regulatory Requirements: Where metal lockers are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance

Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)".

### **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for metal locker installation.
- B. Deliver master and control keys to Owner by registered mail or overnight package service.

### **1.6 PROJECT CONDITIONS**

- A. Field Measurements: Verify the following by field measurements before fabrication and indicate measurements on Shop Drawings:
  - 1. Concealed framing, blocking, and reinforcements that support metal lockers before they are enclosed. Recessed openings.

### **1.7 COORDINATION**

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

### **1.8 WARRANTY**

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures.
    - b. Faulty operation of latches and other door hardware.
  - 2. Damage from deliberate destruction and vandalism is excluded.
  - 3. Warranty Period for Knocked-Down Metal Lockers: Two years from date of Substantial Completion.

### **1.9 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American Society for Testing and Materials (ASTM):

A1008/A1008M-12a	Steel Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
------------------	--

C. Accessibility Standards:

ADA	Americans with Disabilities Act
ADA-ABA	Americans with Disabilities Act and the Architectural Barriers Act
ADAAG	Accessibility Guidelines for Buildings and Facilities

D. Metal Finishes Manual for Architectural and Metal Products (NAAMM)

## **PART 2 – PRODUCTS**

### **2.1 MATERIALS**

- A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS) Type B, suitable for exposed applications.
- B. Fasteners: Zinc- or nickel-plated steel, slot-less type exposed bolt heads, and self-locking nuts or lock washers for nuts on moving parts.
- C. Anchors: Select material, type, size, and finish required for secure anchorage to each substrate.
  - 1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls and elsewhere as required for corrosion resistance.
  - 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

### **2.2 METAL LOCKERS**

- A. Locker Arrangement:
  - 1. Locker Rooms: Single tier.
  - 2. Honor Guard: Double tier.
- B. Locker Dimensions:
  - 1. Provide individual units with the following dimensions:
    - a. Locker Rooms: 18 inches wide, 21 inches deep and 72 inches high.
    - b. Honor Guard Rooms: 18 inches wide, 21 inches deep and 36 inches high.
- C. Body: Assembled by riveting or bolting body components together. Fabricate from non-perforated, cold-rolled steel sheet with thicknesses as follows:
  - 1. Tops, Bottoms, and Intermediate Dividers: 0.55 mm (0.0209 inch), with single bend at sides.

2. Backs and Sides: 0.55 mm (0.0209 inch) thick, with full-height, double-flanged connections.
  3. Shelf: 0.55 mm (0.0209 inch) thick, with double bend at front and single bend at sides and back.
- D. Frames: Channel formed; fabricated from 1.35 mm (0.0528 inch) thick, cold-rolled steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral door strike full height on vertical main frames.
1. Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical frame members.
  2. Frame Vents: Fabricate horizontal face frames with vents.
  3. Provide resilient bumpers to cushion door closing.
- E. Doors: One-piece; fabricated from 1.35 mm (0.0528 inch) thick, cold-rolled steel sheet; formed into channel shape with double bend at vertical edges, and with right-angle single bend at horizontal edges.
1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 381 mm (15 inches) wide; welded to inner face of doors.
  2. Stiffeners: Manufacturer's standard full-height stiffener fabricated from 1.1 mm (0.0428 inch) thick, cold-rolled steel sheet; welded to inner face of doors.
  3. Door Style: Non-perforated panel.
    - a. Concealed Vents: Slotted perforations in top and bottom horizontal return flanges of doors.
  4. Hinges: Self-closing; welded to door and attached to door frame with not less than 2 factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
  5. Continuous Hinges: May be provided if manufacturer's standard; steel continuous hinge.
  6. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond face of door; pry resistant.
  7. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks, built-in key locks, or padlocks; positive automatic and pre-locking.
    - a. Latch Hooks: Equip doors less than 48 inches(1219 mm) high with 2 latch hooks; fabricated from minimum 0.0966-inch-(2.5-mm-) thick steel; welded or riveted to full-height door strikes; with resilient silencer on each latch hook.



- b. Latching Mechanism: Manufacturer's standard rattle-free latching mechanism and moving components isolated with vinyl or nylon to prevent metal-to-metal contact, and incorporating a pre-locking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.
- 8. Accessible Latching: Provide paddle latch control designed for use with built-in combination locks, built-in key locks, or padlocks; positive automatic and pre-locking at all lockers designated as accessible.
- 9. Cylinder Locks: Built-in, flush, cam locks with five-pin tumbler keyway, keyed separately and master keyed. Furnish two change keys for each lock and five master keys.
- 10. Key Type: Flat.
- 11. Bolt Operation: Manually locking deadbolt.
- 12. Equipment: Equip each metal locker with identification plate and the following, unless otherwise indicated.
- 13. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.
- F. Accessories:
  - 1. Continuous Sloping Tops: Fabricated from cold-rolled steel sheet, manufacturer's standard thickness, but not less than 0.0329 inch (0.85 mm) thick.
    - a. Closures: Hipped-end type.
  - 2. Finished End Panels: Fabricated from 0.0209-inch-(0.55-mm-) thick, cold-rolled steel sheet.
  - 3. End Filler Panels:
    - a. Provide filler panels at each end of locker run to completely fill any residual space between locker units and adjoining walls.
    - b. Center locker units in recess area.
    - c. Fabricate from sheet steel matching locker door specification.
- G. Base: Install lockers on constructed concrete base provided under other specification division.
- H. Finish: Baked enamel.
  - 1. Color(s): As scheduled or as selected from manufacturer's full color range.

## **2.3 FABRICATION**

- A. General: Fabricate metal lockers square, rigid, and without warp; with metal faces flat and free of dents or distortion. Make exposed metal edges free of sharp edges and burrs, and safe to touch.
  - 1. Form body panels, doors, shelves, and accessories from one-piece steel sheet, unless otherwise indicated.
  - 2. Provide fasteners, filler plates, supports, clips, and closures as required for a complete installation.
- B. Unit Principle: Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.
- C. Knocked-Down Construction: Fabricate metal lockers for nominal assembly at Project site using nuts, bolts, screws, or rivets. Factory weld frame members together, to form a rigid one-piece assembly.
- D. Hooks: Manufacturer's standard ball-pointed type, aluminum or steel; zinc plated.
- E. Coat Rods: Fabricated from 19 mm (3/4 inch) diameter steel; chrome finished.
- F. Identification Plates: Manufacturer's standard etched, embossed, or stamped aluminum plates; with numbers and letters at least 9 mm (3/8 inch) high.
- G. Continuous Base: Formed into channel or Z profile for stiffness, and fabricated in lengths as long as practicable to enclose base and base ends of metal lockers; finished to match lockers.
- H. Continuous Sloping Tops: Fabricated in lengths as long as practicable, without visible fasteners at splice locations; finished to match lockers.
  - 1. Sloped top corner fillers, mitered.
- I. Finished End Panels: Designed for concealing unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of non-recessed metal lockers; finished to match lockers.
  - 1. Provide one-piece panels for double-row (back-to-back) locker ends.

## **2.4 STEEL SHEET FINISHES**

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Factory finish steel surfaces and accessories except stainless-steel and chrome-plated surfaces.

- C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond. Use manufacturer's standard methods.
- D. Baked-Enamel Finish: Immediately after cleaning, pre-treating and phosphatizing, apply manufacturer's standard thermosetting baked-enamel finish. Comply with paint manufacturer's written instructions for application, baking, and minimum dry film thickness.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Examine walls, floors, and support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 INSTALLATION**

- A. General: Install level, plumb, and true; shim as required, using concealed shims:
  - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 910 mm (36 inches) o.c. Install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion, using concealed fasteners.
  - 2. Anchor single rows of metal lockers to walls near top and bottom of lockers.
- B. Knocked-Down Metal Lockers: Assemble knocked-down metal lockers with standard fasteners, with no exposed fasteners on door faces or face frames.
- C. Equipment and Accessories: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
  - 1. Attach hooks with at least two fasteners.
  - 2. Attach door locks on doors using security-type fasteners.
  - 3. Identification Plates: Identify metal lockers with identification indicated on Drawings.
    - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
  - 4. Attach sloping top units to metal lockers, with closures at exposed ends.
  - 5. Attach finished end panels with fasteners only at perimeter to conceal exposed ends of non-recessed metal lockers.

### **3.3 ADJUSTING, CLEANING, AND PROTECTION**

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding. Verify that integral locking devices operate properly.
- B. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit metal locker use during construction.
- C. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal locker manufacturer.

- - - E N D - - -

## **SECTION 10 56 13 STEEL SHELVING**

### **PART 1 – GENERAL**

#### **1.1 DESCRIPTION**

- A. This section specifies medium duty and heavy duty storage shelving.

#### **1.2 DEFINITIONS**

- A. For the purposes of this specification the shelf category, "Medium Duty" and "Heavy Duty" will be as follows. Load is given per shelf in kilograms (pounds) for evenly distributed load. This does not limit the shelf size, only the shelving category.

1. Minimum Evenly Distributed Load per Shelf in Kilograms:

Type	Type	
Shelf Size	Medium Duty	Heavy Duty
450 by 900 mm	320	590
450 by 1200 mm	230	410

2. Minimum Evenly Distributed Load Per Shelf in Pounds:

Type	Type	
Shelf Size	Medium Duty	Heavy Duty
18 by 36 in.	706	1301
18 by 48 in.	508	904

#### **1.3 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Product Data: Submit manufacturer's literature for shelving units, accessories; include test reports and installation instructions.
- C. Samples: Provide color samples on actual shelving material.

#### **1.4 APPLICABLE PUBLICATIONS**

- A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. American Society for Testing and Materials (ASTM):
- |                |  |
|----------------|--|
| D522-93a(2008) | Mandrel Bend Test of Attached Organic Coatings |
|----------------|--|

D2794-93(2010) Resistance of Organic Coatings to the Effects of Rapid  
Deformation (Impact)

D3359-09e2 Measuring Adhesion by Tape Test

C. Material Handling Industry of America, Inc. (MHIA):

MHI MH28.1-1997 Industrial Steel Grade Shelving

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials in original packages, containers or bundles bearing the brand name and identification of the manufacturer. Store inside under cover. Protect surfaces from damage.

## **PART 2 – PRODUCTS**

### **2.1 MANUFACTURED UNITS**

- A. Reference Standard: Comply to MHI MH28.1.
- B. Provide shelving units indicated or scheduled.
- C. Provide shelving units designed for full dead and live load, designated medium duty or heavy duty.
- D. Provide units with base plates for floor anchorage where indicated.
- E. Provide wall connections for units over 2500 mm (8 feet 3 inches) to top shelf.
- F. Provide door and drawer earthquake stops.
- G. Provide wall connections for drawer units if necessary.

### **2.2 ACCESSORIES**

- A. Drawers: 180 kg (400 pound) capacity, and mounting brackets.
- B. Partitions and dividers.
- C. Label Holders: 75 x 125 mm (3 x 5 inches).

### **2.3 FINISH**

- A. Provide the shelving units in the manufacturer's standard colors as chosen by the COR.
- B. Clean metal by multiple stage phosphatizing and sealing process, for rust resistance and paint adhesion.
- C. Provide electrostatically applied enamel finish coats, baked hard for a minimum of 30 minutes at 149 degrees C (300 degrees F).
- D. Provide special finish meeting the flexibility, adhesion, and impact standards below.

### **2.4 SOURCE QUALITY CONTROL**

- A. MHI MH28.1, for tests of shelf capacity, lateral stability and shelf connections.

- B. Finish Flexibility: Comply to ASTM D522.
- C. Finish Adhesion: Comply to ASTM D3359, Method B.
- D. Impact Resistant Finish: Comply to ASTM D2794.

## **PART 3 – EXECUTION**

### **3.1 EXAMINATION**

- A. Before installation, examine shelving units for dents and scratches. Replace damaged shelving and units.

### **3.2 INSTALLATION**

- A. Install shelving according to manufacturer's installation instructions.

### **3.3 PROTECTION**

- A. Cover and protect shelving from damage during the completion of construction. Remove prior to acceptance of project.

--- E N D ---

THIS PAGE LEFT BLANK INTENTIONALLY



## SECTION 10 75 00 FLAGPOLES

## PART 1 - GENERAL

## 1.1 DESCRIPTION

- A. This section specifies materials, shipping and delivery protection, storage, handling, and installation of two (2) flagpoles to be installed in the project areas indicated on the drawings. The flagpole for the American flag shall be 70 feet in height and the flagpole for the P.O.W. flag shall be 30 feet in height. Flagpoles shall be deluxe internal halyard fixed high dimensional, ground set, cone tapered, seamless tube flag poles together with concealed halyard, revolving truck, finial ball, flashing collar, anchors, fittings, and accessories.

## 1.2 RELATED WORK

- A. Excavation and backfill: Section 31 20 00, EARTH MOVING.
- B. Concrete for ground set flagpole: Section 03 30 53, (SHORT FORM) CAST-IN-PLACE CONCRETE.

### 1.3 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings: Flagpole details of all parts and accessories, and list of all materials, including but not limited to: base with support plate and grounding spike, lightning kit, pole, flash collar, revolving truck, internal halyard, cable assembly, winch detail w/lock, hooks, beaded retainer ring, counterweight, winch handle and finial ball, along with construction and installation details. Flagpole components shall match those for the main pole.
- C. Manufacturer's Literature and Data: Flagpole, base and all parts and accessories.

## 1.4 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to extent referenced.
- Publications are referenced in text by the basic designation only. Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
- B. ASTM International (ASTM):
- |      |   |
|------|---|
| A312 | Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes |
|------|---|

- C. American National Standards Institute Inc. (ANSI):  
ANSI/NAAMM 1001                      Guide Specifications for Design of Metal Flagpoles  
Manual.

## **1.5 QUALITY ASSURANCE**

- A. Manufacturer's Qualifications: Firms regularly engaged in the manufacture of metal flagpoles and accessories, of types, size and configurations required, whose products have been is satisfactory use in similar service for not less than 5 years.
- B. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects having flagpole installation work similar to that required for this project.
- C. Design Criteria: Flagpoles shall be designed to withstand the wind speeds and conditions indicated herein for the specific flagpole and flag sizes indicated. The flagpoles shall be designed based upon a minimum sustained 100 mph) wind velocity and minimum wind gust velocity of 130 mph when flying a flag 5 feet by 8 feet in size in accordance with ANSI/NAAMM 1001, with the pole wall thickness being in conformance with the design standards but with a minimum wall thickness of 0.188 inch, whichever causes the stronger flagpole. The flagpole foundation has been designed based upon applicable conditions for the project specific location of the respective flagpole.

## **1.6 PROTECTION AND SHIPPING**

- A. Package flagpole for shipping with spiral wrap protective covering and pack in shipping tubes acceptable to the COTR and per manufacturer's recommendations.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Stainless Steel: ASTM A312, Class 302 or 304.

### **2.2 FABRICATION**

- A. Fabricate flagpole of seamless stainless steel pipe, uniform conical taper of approximately 1 in 70, one inch in every 6 feet. Taper shall not exceed 50 percent of outside diameter of pole. When flagpole is shipped in more than one section, provide self-aligning sleeves for field joint.
- B. Base: Stainless steel, of stock design similar to that shown.
- C. Finial Ball: 0.0747 inch thick spun aluminum sphere, with seams of ball welded flush and watertight. Mount ball on threaded rod to fit truck. Diameter of ball shall be approximately same as pole butt diameter.

- D. Truck: Equip pole with extra heavy, revolving, non-fouling, ball bearing type truck with cast aluminum body and designed to accept an ornament on top.
- E. Halyards: Internal type cable assemblies. 1/8 inch and/or 3/16 inch stainless steel aircraft cable incorporating a stainless steel swivel, upper cable section, and flag arrangement with cable and two stainless steel quick links and two stainless steel swivel snaps. The cable assemblies shall be constructed to fit the flagpole size and flag size specified.
- F. Beaded Retainer Ring and Counterweights: Provide as recommended by manufacturer based on the pole size, flag size and design wind velocity. Provide recommended connection accessories.
- G. Internal Halyard Accessories: Furnish and install a gearless, self-locking at any point, direct drive winch that does not require welding for installation and does not require monthly application of lubrication and is attached to the pole with one stainless steel bolt on the back side of the pole. The unit shall be silver in color. Provide locking mechanism and two keys. Provide a winch handle designed for the unit. Pole shall be reinforced through the area of the winch opening by the manufacturer's standard reinforcement method.
- H. Foundation Tube: Hot dipped galvanized corrugated steel tube. Tube shall have a steel base plate and centering wedges and support plate for connection of lightning kit. Bottom plate shall be a minimum of 3/16 inch thickness.
- I. Lightning Kit: Provide a complete kit (maximum protection available) for each pole. Configuration and components for the kit shall be as recommended by the pole manufacturer for use on the pole selected.

## **2.3 FINISH**

- A. Finish exposed surfaces of flagpoles.
- B. Stainless steel flagpole shaft and finial ball: Satin brushed finish.
- C. Base and cleats: Finish to match flagpole.

## **PART 3 - EXECUTION**

### **3.1 INSPECTION**

- A. Verify that concrete foundation work is correctly sized and positioned.
- B. Repair or replace defective foundation work as directed by the COTR.

### **3.2 PREPARATION**

- A. Coat portions of flagpole below grade and in surfaces in contact with dissimilar metals with black asphaltum paint, as recommended by manufacturer.

### **3.3 INSTALLATION**

- A. Install galvanized, corrugated steel sleeve or tube of detailed length, welded to steel base plates for installation in concrete. Set base plate and lightning kit in place before concrete is placed. Follow the manufacturer's recommendations for the installation of the lightning kits.
- B. Install foundation plate and centering wedges for flagpole base in concrete and fasten.
- C. Install concrete foundation work to dimensions indicated in accordance with Section 033053.
- D. Wrap top of sleeve with two layers of asphalt felt for distance of 2 feet down.
- E. Install flagpole in accordance with manufacturer's written installation instructions. Install pole plumb using centering wedges.
- F. Backfill and compact excavation around flagpole base in accordance with Section 312000.
- G. Fill and thoroughly compact dry fine sand into the space between pole and steel sleeve and tamp to within 2 inches of top of sleeve.
- H. Remove temporary wood positioning wedges and fill upper 2 inch space between pole and steel sleeve with specified or manufacturer recommended waterproofing compound.
- I. Install fittings in accordance with manufacturer's written installation instructions.
- J. Check and adjust installed fittings for smooth operation of halyards.

### **3.2 LIGHTNING ROD**

- A. Weld lightning ground rod of 3/4-inch diameter galvanized steel to base plate at bottom of sleeve or tube, and to steel support plate at grade.

### **3.3 CLEANUP**

- A. After installation, carefully clean the flagpole and appurtenances, removing all dirt stains, and all other incident defacements.
  - 1. Fabricator should be contacted regarding the use of any cleaners and must approve of them before use.
  - 2. Protection of Finished Work: Flagpoles for this project shall be protected at all times during construction.
- B. Clean up area of excess material and debris.

- - - E N D - - -