

## SECTION 101100 - VISUAL DISPLAY SURFACES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Markerboards.
  - 2. Tackboards.
  - 3. Visual display rails.
  - 4. Visual display wall panels.
  - 5. Support systems for visual display boards.

## 1.3 DEFINITIONS

- A. Tackboard: Framed or unframed, tackable, visual display board assembly.
- B. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame; includes chalkboards, markerboards, and tackboards.
- C. Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of chalkboards, markerboards, tackboards, and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces.
- B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.
  - 1. Show locations of panel joints.
  - 2. Include sections of typical trim members.
- C. Samples for Initial Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:
  - 1. Actual sections of porcelain-enamel face sheet, tackboard assembly, visual display wall panel, and display rail.
  - 2. Fabric swatches of vinyl-fabric-faced tack assemblies.
  - 3. Include accessory Samples to verify color selected.

- D. Samples for Verification: For each type of visual display surface indicated.
1. Visual Display Surface: Not less than 8-1/2 by 11 inches (215 by 280 mm), mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
  2. Trim: 6-inch- (152-mm-) long sections of each trim profile.
  3. Display Rail: 6-inch- (152-mm-) long sections.
  4. Modular Support System: 6-inch- (152-mm-) long sections.
  5. Accessories: Full-size Sample of each type of accessory.
- E. Product Schedule: For visual display surfaces. Use same designations indicated on Drawings.

## 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.
- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
1. Flame-Spread Index: 25 or less.
  2. Smoke-Developed Index: 450 or less.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display surfaces vertically with packing materials between each unit.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display surfaces until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with visual display surfaces by field measurements before fabrication.
1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

## PART 2 - PRODUCTS

### 2.1 MATERIALS, GENERAL

- A. Porcelain-Enamel Face Sheet: ASTM A 424, enameling-grade steel, uncoated thickness indicated; with exposed face and edges coated with primer, 1.7-to-2.5-mil- (0.043-to-0.064-mm-) thick ground coat, and

color cover coat; and with concealed face coated with primer and 1.7-to-2.5-mil- (0.043-to-0.064-mm-) thick ground coat.

1. Gloss-Finish Cover Coat: Gloss as indicated; dry-erase markers wipe clean with dry cloth or standard eraser. Minimum 3.0-to-4.0-mil- (0.076-to-0.102-mm-) thick cover coat. Cover and ground coats shall be fused to steel at manufacturer's standard firing temperatures but not less than 1475 deg F (802 deg C).

a. Products: Subject to compliance with requirements, provide the following:.

1) PolyVision Corporation, a Steelcase company; P<sup>3</sup> ceramicsteel Markerboard.

B. Porcelain-Enamel Face Sheet: Porcelain-enamel-clad, ASTM A 463/A 463M, Type 1, stretcher-leveled aluminized steel, with 0.024-inch (0.60-mm) uncoated thickness; with porcelain-enamel coating fused to steel at approximately 1000 deg F (538 deg C).

1. Gloss Finish: Low gloss; dry-erase markers wipe clean with dry cloth or standard eraser. Suitable for use as projection screen.

a. Products: Subject to compliance with requirements, provide the following:.

1) Claridge Products and Equipment, Inc.; LCS Markerboard.

C. Vinyl Fabric: Mildew resistant, washable, complying with FS CCC-W-408D, Type II, burlap weave; weighing not less than 13 oz./sq. yd. (440 g/sq. m); with surface-burning characteristics indicated.

D. Particleboard: ANSI A208.1, Grade M-1, made with binder containing no urea formaldehyde.

E. Extruded Aluminum: ASTM B 221 (ASTM B 221M), Alloy 6063.

## 2.2 MARKERBOARD ASSEMBLIES

A. Porcelain-Enamel Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and 0.013-inch- (0.33-mm-) thick, porcelain-enamel face sheet with high-gloss finish.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Best-Rite Manufacturing.
- b. Claridge Products and Equipment, Inc.
- c. PolyVision Corporation; a Steelcase company.
- d. Newline Products, Inc.

2. Particleboard Core: 1/2 inch (13 mm) thick; with 0.013-inch- (0.35-mm-) thick, galvanized-steel sheet backing.

3. Laminating Adhesive: Manufacturer's standard, moisture-resistant thermoplastic type.

## 2.3 TACKBOARD ASSEMBLIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Best-Rite Manufacturing.

2. Claridge Products and Equipment, Inc.
3. PolyVision Corporation; a Steelcase company.
4. Newline Products, Inc..

- B. Vinyl-Fabric-Faced Tackboard: 1/4-inch- (6-mm-) thick, vinyl-fabric-faced cork sheet factory laminated to 1/4-inch- (6-mm-) thick particleboard backing.

## 2.4 VISUAL DISPLAY RAILS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Best-Rite Manufacturing.
2. Claridge Products and Equipment, Inc.
3. PolyVision Corporation; a Steelcase company.
4. Newline Products, Inc..

- B. General: Manufacturer's standard, aluminum-framed, tackable cork visual display surface fabricated into narrow rail shape and designed for displaying material.

## 2.5 VISUAL DISPLAY WALL PANELS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Best-Rite Manufacturing.
2. Claridge Products and Equipment, Inc.
3. PolyVision Corporation; a Steelcase company.
4. Newline Products, Inc..

- B. Tack Wall Panels: With tackable surface.

1. Fabricated from tackboard assembly indicated.
2. Vinyl Fabric-Faced Cork: 1/4-inch- (6-mm-) thick, vinyl-fabric-faced cork sheet for direct application to wall surface.

- C. Joint Accessories: Manufacturer's standard, concealed aluminum or steel spline at butt joints.

- D. Adhesive: Mildew-resistant, nonstaining adhesive, for use with specific tack wall panels and substrate application, as recommended in writing by visual display surface manufacturer, and with a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

- E. Primer/Sealer: Mildew-resistant primer/sealer complying with requirements in Division 09 Section "Interior Painting" and recommended in writing by visual display surface manufacturer for intended substrate.

## 2.6 MODULAR SUPPORT SYSTEM FOR VISUAL DISPLAY BOARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Best-Rite Manufacturing.
2. Claridge Products and Equipment, Inc.
3. PolyVision Corporation; a Steelcase company.
4. Newline Products, Inc..

- B. Standards: 72-inch- (1829-mm-) long, extruded-aluminum slotted standards designed for supporting visual display boards on panel clips. Standards shall be punched at not less than 4 inches (100 mm) o.c.
  - 1. Finish: Clear anodic.
- C. Panel Clips: Extruded aluminum or steel with finish to match standards.

## 2.7 MARKERBOARD AND TACKBOARD ACCESSORIES

- A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- (1.57-mm-) thick, extruded aluminum; standard size and shape.
  - 1. Factory-Applied Trim: Manufacturer's standard.
- B. Chalktray: Manufacturer's standard, continuous.
  - 1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.
- C. Map Rail: Provide the following accessories:
  - 1. Display Rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches (25 to 50 mm) wide.
  - 2. End Stops: Located at each end of map rail.
  - 3. Map Hooks: Two map hooks for every 48 inches (1219 mm) of map rail or fraction thereof.
  - 4. Map Hooks and Clips: Two map hooks with flexible metal clips for every 48 inches (1219 mm) of map rail or fraction thereof.
  - 5. Flag Holder: One for each room.
  - 6. Paper Holder: Extruded aluminum; designed to hold paper by clamping action.

## 2.8 FABRICATION

- A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.
- B. Visual Display Boards: Factory assemble visual display boards unless otherwise indicated.
  - 1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.
- C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
  - 1. Make joints only where total length exceeds maximum manufactured length. Fabricate with minimum number of joints, as indicated on approved Shop Drawings.
  - 2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.
  - 3. Provide manufacturer's standard mullion trim at joints between markerboards and tackboards of combination units.
  - 4. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.
- D. Modular Visual Display Boards: Fabricated with integral panel clips attached to core material.

- E. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.
  - 1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

## 2.9 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.10 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
- B. Examine walls and partitions for proper preparation and backing for visual display surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.
- C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.
  - 1. Prime wall surfaces indicated to receive direct-applied, visual display tack wall panels and as recommended in writing by primer/sealer manufacturer and wall covering manufacturer.

### 3.3 INSTALLATION, GENERAL

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

1. Mounting Height for Grades K and younger: 24 inches above finished floor to top of chalktray.
2. Mounting Height for Grades 1 through 5: 32 inches above finished floor to top of chalktray.

### 3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

- A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches (400 mm) o.c. Secure both top and bottom of boards to walls.

### 3.5 INSTALLATION OF VISUAL DISPLAY RAILS

- A. Display Rails: Install rails in locations and at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Attach to wall surface with fasteners at not more than 16 inches (400 mm) o.c.

1. Mounting Height: 84 inches (2134 mm) above finished floor to top of rail.

### 3.6 INSTALLATION OF VISUAL DISPLAY WALL PANELS

- A. Tack Wall Panels: Attach panels to wall surface with egg-size adhesive gobs at 16 inches (400 mm) o.c. horizontally and vertically.

1. Install wrapped-edge wall panels with butt joints between adjacent wall panels.

### 3.7 INSTALLATION OF MODULAR SUPPORT SYSTEM

- A. Modular Support System: Install adjustable standards in locations and at mounting heights indicated on Drawings, or if not indicated, at height indicated below. Install standards at 48 inches (1219 mm) o.c., vertically aligned and plumb, and attached to wall surface with fasteners at 12 inches (300 mm) o.c.

1. Mounting Height: 12 inches (300 mm) above finished floor to bottom of standard.
2. Install single-slotted standard at each end of each run of standards and double-slotted standards at intermediate locations.
3. Provide locking screw at top corner of visual display board at each standard.
4. Hang visual display units on modular support system.

### 3.8 CLEANING AND PROTECTION

- A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.
- C. Cover and protect visual display surfaces after installation and cleaning.

END OF SECTION 101100

## SECTION 101400 - SIGNAGE

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:

- 1. Dimensional characters.
- 2. Panel signs.

- B. Related Sections include the following:

- 1. Division 01 Section "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.
- 2. Division 22 Section "Identification for Plumbing Piping and Equipment" for labels, tags, and nameplates for plumbing systems and equipment.
- 3. Division 23 Section "Identification for HVAC Piping and Equipment" for labels, tags, and nameplates for HVAC systems and equipment.
- 4. Division 26 Sections for electrical service and connections for illuminated signs.
- 5. Division 26 Section "Identification for Electrical Systems" for labels, tags, and nameplates for electrical equipment.
- 6. Division 26 Section "Interior Lighting" for illuminated Exit signs.

- C. FEMA Shelter Signs are as indicated on Drawings.

## 1.3 DEFINITIONS

- A. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: Show fabrication and installation details for signs.

- 1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
- 2. Provide message list, timesteps, graphic elements, including tactile characters and Braille, and layout for each sign.

- C. Samples for Initial Selection: Manufacturer's color charts consisting of actual units or sections of units showing the full range of colors available for the following:
  - 1. Aluminum.
  - 2. Acrylic sheet.
- D. Samples for Verification: For each of the following products and for the full range of color, texture, and sign material indicated, of sizes indicated:
  - 1. Plaque Casting: 6 inches (150 mm) square including border.
  - 2. Dimensional Characters: Full-size Samples of each type of dimensional character (letter, number, and graphic element).
  - 3. Aluminum: For each form, finish, and color, on 6-inch- (150-mm-) long sections of extrusions and squares of sheet at least 4 by 4 inches (100 by 100 mm).
  - 4. Acrylic Sheet: 8 by 10 inches (200 by 250 mm) for each color required.
  - 5. Panel Signs: Not less than 12 inches (305 mm) square.
- E. Sign Schedule: Use same designations indicated on Drawings.
- F. Maintenance Data: For signs to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Source Limitations for Signs: Obtain each sign type indicated from one source from a single manufacturer.
- C. Regulatory Requirements: Comply with applicable provisions in ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.6 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit installation of signs in exterior locations to be performed according to manufacturers' written instructions and warranty requirements.
- B. Field Measurements: Verify recess openings by field measurements before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

- A. Coordinate placement of anchorage devices with templates for installing signs.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.
- B. Bronze Castings: ASTM B 584, Alloy UNS No. C86500 (No. 1 manganese bronze).
- C. Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).

## 2.2 DIMENSIONAL CHARACTERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. ACE Sign Systems, Inc.
  - 2. Advance Corporation; Braille-Tac Division.
  - 3. A. R. K. Ramos.
  - 4. ASI-Modulex, Inc.
  - 5. Bunting Graphics, Inc.
  - 6. Charleston Industries, Inc.
  - 7. Gemini Incorporated.
  - 8. Grimco, Inc.
  - 9. Innerface Sign Systems, Inc.
  - 10. Metal Arts; Div. of L&H Mfg. Co.
  - 11. Mills Manufacturing Company.
  - 12. Mohawk Sign Systems.
  - 13. Nelson-Harkins Industries.
  - 14. Signature Signs, Incorporated.
  - 15. Southwell Company (The).
- B. Cast Characters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated. Comply with the following requirements.
  - 1. Character Material: Aluminum.
  - 2. Thickness: 3/4" @ 8" high, 1" @ 12" high, 1 1/4" @ 15" high, 1 1/2" @ 18" or more high.
  - 3. Color(s): Architect's option of listed aluminum finishes.
  - 4. Mounting: Concealed studs, noncorroding for substrates encountered.
  - 5. Font: Helvetica.
  - 6. Text: LEAVENWORTH HIGH SCHOOL PERFORMING ARTS CENTER

## 2.3 PANEL SIGNS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. ACE Sign Systems, Inc.
  - 2. Advance Corporation; Braille-Tac Division.
  - 3. Allen Industries Architectural Signage
  - 4. Allenite Signs; Allen Marking Products, Inc.
  - 5. APCO Graphics, Inc.
  - 6. ASI-Modulex, Inc.
  - 7. Best Sign Systems Inc.
  - 8. Bunting Graphics, Inc.
  - 9. Fossil Industries, Inc.
  - 10. Gemini Incorporated.

11. Grimco, Inc.
  12. Innerface Sign Systems, Inc.
  13. InPro Corporation
  14. Matthews International Corporation; Bronze Division.
  15. Mills Manufacturing Company.
  16. Mohawk Sign Systems.
  17. Nelson-Harkins Industries.
  18. Seton Identification Products.
  19. Signature Signs, Incorporated.
  20. Supersine Company (The)
- B. Interior Panel Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch (1.5 mm) measured diagonally from corner to corner, complying with the following requirements:
1. Acrylic Sheet: 0.080 inch (2.03 mm) thick.
  2. Edge Condition: Square cut.
  3. Corner Condition: Rounded to radius indicated.
  4. Mounting: Unframed.
    - a. Wall mounted with two-face tape.
    - b. Manufacturer's standard anchors for substrates encountered.
  5. Custom Paint Colors: Match Pantone color matching system.
  6. Color: As selected by Architect from manufacturer's full range.
  7. Tactile Characters: Characters and Grade 2 Braille raised 1/32 inch (0.8 mm) above surface with contrasting colors.
  8. Graphic Logo: Allow for a school mascot logo to be included on each sign. Mascot logo design of approximately 2 square inches in size will be communicated via shop drawings.
- C. Changeable Message Inserts: Fabricate signs to allow insertion of changeable messages in the form of transparent covers with paper inserts printed by Owner.
1. Furnish insert material and software for creating text and symbols for Macintosh computers for Owner production of paper inserts.
  2. Furnish insert material cut-to-size for changeable message insert.
- D. Tactile and Braille Sign: Manufacturer's standard process for producing text and symbols complying with ADA-ABA Accessibility Guidelines and with ICC/ANSI A117.1. Text shall be accompanied by Grade 2 Braille. Produce precisely formed characters with square-cut edges free from burrs and cut marks; Braille dots with domed or rounded shape.
1. Panel Material: Clear acrylic sheet with opaque color coating, subsurface applied.
  2. Raised-Copy Thickness: Not less than 1/32 inch (0.8 mm).
- E. Subsurface Copy: Apply minimum 4-mil- (0.10-mm-) thick vinyl copy to back face of clear acrylic sheet forming panel face to produce precisely formed opaque image. Image shall be free of rough edges.
- F. Colored Coatings for Acrylic Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are UV and water resistant for three years for application intended.
1. Custom Paint Colors: Match Pantone color matching system.
  2. Color: As selected by Architect from manufacturer's full range.

## 2.4 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

## 2.5 FABRICATION

- A. General: Provide manufacturer's standard signs of configurations indicated.
  - 1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
  - 2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
  - 3. Preassemble signs in the shop to greatest extent possible. Disassemble signs only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
  - 4. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

## 2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: Manufacturer's standard Class 1 clear anodic coating, 0.018 mm or thicker, over a satin (directionally textured) mechanical finish, complying with AAMA 611.
- B. Color Anodic Finish: Manufacturer's standard Class 1 integrally colored or electrolytically deposited color anodic coating, 0.018 mm or thicker, in dark bronze applied over a satin (directionally textured) mechanical finish, complying with AAMA 611.
- C. Baked-Enamel Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
  - 1. Organic Coating: Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm), medium gloss.

## 2.8 ACRYLIC SHEET FINISHES

- A. Colored Coatings for Acrylic Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and that are UV and water resistant for three years for application intended.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- B. Verify that items, including anchor inserts, are sized and located to accommodate signs.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
  - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
  - 2. Interior Wall Signs: Install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.
- B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
  - 1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
  - 2. Signs Mounted on Glass: Provide matching opaque plate on opposite side of glass to conceal mounting materials.
- C. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.
  - 1. Flush Mounting: Mount characters with backs in contact with wall surface.

#### 3.3 CLEANING AND PROTECTION

- A. After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by Owner.

END OF SECTION 101400

## SECTION 102113 - TOILET COMPARTMENTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

- 1. Phenolic-core toilet compartments configured as toilet enclosures and urinal screens.

## B. Related Sections:

- 1. Division 10 Section "Toilet, Bath, and Laundry Accessories" for toilet tissue dispensers, grab bars, purse shelves, and similar accessories.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

## 1.4 QUALITY ASSURANCE

- A. Comply with requirements in GSA's CID-A-A-60003, "Partitions, Toilets, Complete."

- B. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84, or another standard acceptable to authorities having jurisdiction, by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

- 1. Flame-Spread Index: 25 or less.
- 2. Smoke-Developed Index: 450 or less.

- C. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 for toilet compartments designated as accessible.

## 1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of toilet fixtures, walls, columns, ceilings, and other construction contiguous with toilet compartments by field measurements before fabrication.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M.
- B. Aluminum Extrusions: ASTM B 221 (ASTM B 221M).
- C. Stainless-Steel Sheet: ASTM A 666, Type 304, stretcher-leveled standard of flatness.
- D. Stainless-Steel Castings: ASTM A 743/A 743M.

## 2.2 PHENOLIC-CORE UNITS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Accurate Partitions Corporation.
  - 2. American Sanitary Partition Corporation.
  - 3. Bobrick Washroom Equipment, Inc.
  - 4. Bradley Corporation; Mills Partitions.
  - 5. Capitol Partitions, Inc.
  - 6. General Partitions Mfg. Corp.
  - 7. Global Steel Products Corp.
  - 8. Knickerbocker Partitions Corp.
  - 9. Sanymetal; a Crane Plumbing Company.
- B. Toilet-Enclosure Style: Overhead braced.
- C. Urinal-Screen Style: Wall hung.
- D. Door, Panel, Screen, and Pilaster Construction: Solid phenolic-core panel material with melamine facing on both sides fused to substrate during panel manufacture (not separately laminated), and with eased and polished edges. Provide minimum 3/4-inch- (19-mm-) thick doors and pilasters and minimum 1/2-inch- (13-mm-) thick panels.
- E. Urinal-Screen Construction:
  - 1. Flat-Panel Urinal Screen: Matching panel construction.
- F. Pilaster Shoes: Fabricated from stainless-steel sheet, not less than 0.031-inch (0.79-mm) nominal thickness and 3 inches (76 mm) high, finished to match hardware.
- G. Brackets (Fittings):
  - 1. Full-Height (Continuous) Type: Manufacturer's standard design; stainless steel.
- H. Phenolic-Panel Finish:
  - 1. Facing Sheet Finish: One color and pattern in each room.
  - 2. Color and Pattern: As selected by Architect from manufacturer's full range, with manufacturer's standard dark color core.

## 2.3 ACCESSORIES

- A. Hardware and Accessories: Manufacturer's standard design, heavy-duty operating hardware and accessories.
  - 1. Material: Stainless steel.
  - 1. Hinges: Manufacturer's standard continuous, cam type that swings to a closed or partially open position.
  - 2. Latch and Keeper: Manufacturer's heavy duty surface-mounted latch unit designed for emergency access and with combination rubber-faced door strike and keeper. Provide units that comply with regulatory requirements for accessibility at compartments designated as accessible.
  - 3. Coat Hook: Manufacturer's standard combination hook and rubber-tipped bumper, sized to prevent in-swinging door from hitting compartment-mounted accessories.
  - 4. Door Bumper: Manufacturer's standard rubber-tipped bumper at out-swinging doors and entrance-screen doors.
  - 5. Door Pull: Manufacturer's heavy duty unit at out-swinging doors that complies with regulatory requirements for accessibility. Provide units on both sides of doors at compartments designated as accessible.
- B. Overhead Bracing: Manufacturer's standard continuous, extruded-aluminum head rail with antigrip profile and in manufacturer's standard finish.
- C. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel or chrome-plated steel or brass, finished to match the items they are securing, with theft-resistant-type heads. Provide sex-type bolts for through-bolt applications. For concealed anchors, use stainless steel, hot-dip galvanized steel, or other rust-resistant, protective-coated steel.

## 2.4 FABRICATION

- A. Overhead-Braced Units: Provide manufacturer's standard corrosion-resistant supports, leveling mechanism, and anchors at pilasters to suit floor conditions. Provide shoes at pilasters to conceal supports and leveling mechanism.
- B. Door Size and Swings: Unless otherwise indicated, provide 24-inch- (610-mm-) wide, in-swinging doors for standard toilet compartments and 36-inch- (914-mm-) wide, out-swinging doors with a minimum 32-inch- (813-mm-) wide, clear opening for compartments designated as accessible.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions. Install units rigid, straight, level, and plumb. Secure units in position with manufacturer's recommended anchoring devices.
  - 1. Maximum Clearances:
    - a. Pilasters and Panels: 1/2 inch (13 mm).
    - b. Panels and Walls: 1 inch (25 mm).
- B. Overhead-Braced Units: Secure pilasters to floor and level, plumb, and tighten. Set pilasters with anchors penetrating not less than 1-3/4 inches (44 mm) into structural floor unless otherwise indicated in manufacturer's written instructions. Secure continuous head rail to each pilaster with no fewer than two fasteners. Hang doors to align tops of doors with tops of panels, and adjust so tops of doors are parallel with overhead brace when doors are in closed position.

- C. Urinal Screens: Attach with anchoring devices to suit supporting structure. Set units level and plumb, rigid, and secured to resist lateral impact.

### 3.2 ADJUSTING

- A. Hardware Adjustment: Adjust and lubricate hardware according to hardware manufacturer's written instructions for proper operation. Set hinges on in-swinging doors to hold doors open approximately 30 degrees from closed position when unlatched. Set hinges on out-swinging doors to return doors to fully closed position.

END OF SECTION 102113

## SECTION 102123 - CUBICLE CURTAINS AND TRACKS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Curtain tracks and curtain carriers.
  - 2. Cubicle curtains.

## 1.3 PERFORMANCE REQUIREMENTS

- A. Curtains: Provide curtain fabrics with the following characteristics:
  - 1. Fabrics are launderable to a temperature of not less than 160 deg F (71 deg C).
  - 2. Fabrics are flame resistant and are identical to those that have passed NFPA 701 when tested by a testing and inspecting agency acceptable to authorities having jurisdiction.
    - a. Identify fabrics with appropriate markings of applicable testing and inspecting agency.

## 1.4 SUBMITTALS

- A. Product Data: Include durability, laundry temperature limits, fade resistance, and fire-test-response characteristics for each type of curtain fabric indicated.
  - 1. Include data on each type of applied curtain treatment.
- B. Shop Drawings: Show layout and types of cubicles, sizes of curtains, number of carriers, anchorage details, and conditions requiring accessories. Indicate dimensions taken from field measurements.
  - 1. Include details on blocking above ceiling and in walls.
- C. Samples for Initial Selection: For each type of curtain material indicated.
- D. Manufacturer Certificates: Signed by manufacturers certifying that products comply with requirements.
- E. Operation and Maintenance Data: For curtains, track, and hardware to include in operation and maintenance manuals.

## 1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install cubicles until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

## PART 2 - PRODUCTS

### 2.1 CURTAIN TRACKS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. General Cubicle Company, Inc.
  - 2. Imperial Fastener Company, Inc.
  - 3. Pryor Products.
- B. Extruded-Aluminum Track: Not less than 1-1/4 inches wide by 3/4 inch high (32 mm wide by 19 mm high); with minimum wall thickness of 0.050 inch (1.27 mm).
  - 1. Finish: Clear anodized.
- C. Track Accessories: Fabricate splices, end caps, connectors, end stops, coupling and joining sleeves, wall flanges, brackets, ceiling clips, and other accessories from same material and with same finish as track.
- D. Curtain Carriers: Two nylon rollers and nylon axle with chrome-plated steel hook.
- E. Exposed Fasteners: Stainless steel.
- F. Concealed Fasteners: Stainless steel.
- G. Location: Nurse G218.

### 2.2 CURTAINS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. General Cubicle Company, Inc.
  - 2. Imperial Fastener Company, Inc.
  - 3. Pryor Products.
- B. Cubicle Curtain Fabric: Curtain manufacturer's standard, 100 percent polyester, inherently and permanently flame resistant, stain resistant, and antimicrobial.
  - 1. Color & Pattern: As selected by Architect from manufacturer's full range.
- C. Curtain Grommets: Two-piece, rolled-edge, rustproof, nickel-plated brass; spaced not more than 6 inches (152 mm) o.c.; machined into top hem.
- D. Mesh Top: No. 50 nylon mesh.

### 2.3 CURTAIN FABRICATION

- A. Fabricate curtains to comply with the following requirements:

1. Width: Equal to track length from which curtain is hung plus 10 percent added fullness, but not less than 12 inches (305 mm) added fullness.
  2. Length: Equal to floor-to-ceiling height, with 20-inch (508-mm) mesh top, and minus distance above the finished floor at bottom as follows:
    - a. Cubicle Curtains: 12 inches (305 mm).
  3. Mesh Top: Top hem not less than 1 inch (25.4 mm) and not more than 1-1/2 inches (38 mm) wide, triple thickness, reinforced with integral web, and double lock stitched. Double lock stitch bottom of mesh directly to 1/2-inch (13-mm) triple thickness, top hem of curtain fabric.
- B. Vertical Seams: Not less than 1/2 inch (13 mm) wide, double turned and double stitched.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, and other conditions affecting performance of work.
1. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. General: Install tracks level and plumb, according to manufacturer's written instructions.
- B. Up to 16 feet (4.9 m) in length, provide track fabricated from 1 continuous length.
1. Curtain Track Mounting: Surface.
- C. Surface Track Mounting: Fasten surface-mounted tracks at intervals of not less than 24 inches (610 mm). Fasten support at each splice and tangent point of each corner. Center fasteners in track to ensure unencumbered carrier operation. Attach track to ceiling as follows:
1. Attach track to suspended ceiling grid with manufacturer's proprietary clip.
- D. Track Accessories: Install splices, end caps, connectors, end stops, coupling and joining sleeves, and other accessories as required for a secure and operational installation.
- E. Curtain Carriers: Provide curtain carriers adequate for 6-inch (152-mm) spacing along full length of curtain plus an additional carrier.
- F. Curtains: Hang curtains on each curtain track.

END OF SECTION 102123



## SECTION 102800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Public-use washroom accessories.
  - 2. Public-use shower room accessories.
  - 3. Warm-air dryers.
  - 4. Childcare accessories.
  - 5. Ceiling-mounted lifts.
  - 6. Underlavatory guards.
  - 7. Changing room accessories.
  - 8. Wall padding for Special Education toilet room.
- B. Owner-Furnished Material: Trash Cans.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:
  - 1. Construction details and dimensions.
  - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
  - 3. Material and finish descriptions.
  - 4. Features that will be included for Project.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
  - 1. Identify locations using room designations indicated.
  - 2. Identify products using designations indicated.
- C. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

## 1.4 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

## 1.5 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch (0.8-mm) minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch (0.9-mm) minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
- I. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

## 2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following, unless noted otherwise:
  - 1. American Specialties, Inc.
  - 2. Bobrick Washroom Equipment, Inc.
  - 3. Bradley Corporation.
- B. Warm-Air Dryer:
  - 1. Basis-of-Design Product: Bobrick; B-748.
  - 2. Mounting: Surface mounted.
  - 3. Operation: Electronic-sensor activated with timed power cut-off switch.
    - a. Operation Time: 30 to 40 seconds.

4. Cover Material and Finish: Chrome-plated steel or Stainless steel, No. 4 finish (satin).
5. Electrical Requirements: 115 V, 20 A, 2300 W.

C. Toilet Tissue (Roll) Dispenser:

1. Product: Oceans; Duett Standard Bath Tissue dispenser R3590TBK.
2. No substitutions.
3. Quantity: Provide one per toilet stall in group restrooms and one per toilet in single-person restrooms.

D. Liquid-Soap Dispenser:

1. Product: Impact; Foam-eeze Bulk Soap Dispenser (with refillable bottle) 9325.
2. No substitutions.
3. Quantity: Provide one per lavatory in all restrooms.

E. Grab Bar:

1. Basis-of-Design Product: Bobrick; B-6806.
2. Mounting: Flanges with concealed fasteners.
3. Material: Stainless steel, 0.05 inch (1.3 mm) thick.
  - a. Finish: Smooth, No. 4 finish (satin) on ends and slip-resistant texture in grip area.
4. Outside Diameter: 1-1/2 inches (38 mm).
5. Configuration and Length: As indicated on Drawings.

F. Sanitary-Napkin Disposal Unit:

1. Basis-of-Design Product: Bobrick; B-270.
2. Mounting: Surface mounted.
3. Door or Cover: Self-closing, disposal-opening cover.
4. Receptacle: Removable.
5. Material and Finish: Stainless steel, No. 4 finish (satin).
6. Quantity: Provide one per toilet stall in Women's / Girl's restrooms, one for single-person Women's / Girl's restrooms and one for single-person restrooms for which neither gender is designated.

G. Mirror Unit (standard):

1. Basis-of-Design Product: Bobrick; B-290.
2. Frame: Stainless-steel angle, 0.05 inch (1.3 mm) thick.
  - a. Corners: Welded and ground smooth.
3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
  - a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
  - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
4. Size: As indicated on Drawings.
5. Locations: Typical unit, unless noted otherwise.

## H. Mirror Unit (ADA):

1. Basis-of-Design Product: Bobrick; B-294.
2. Frame: Stainless steel, adjustable tilt.
  - a. Corners: Manufacturer's standard.
3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
  - a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
  - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
4. Size: As indicated on Drawings.
5. Locations: One per group toilet room, and in each single-user toilet room.

## 2.3 WALL PADDING:

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Porter; HiNRG FR-Safpad, or a comparable product by one of the following:
  - a. AALCO Manufacturing.
  - b. ADP Lemco Inc.
  - c. American Athletic, Inc.
  - d. Draper Inc.
  - e. Jaypro Sports, LLC.
  - f. Performance Sports Systems.
  - g. Porter Athletic Equipment Company.
- B. Safety Pad Surface-Burning Characteristics: ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
  1. Flame-Spread Index: 25 or less.
  2. Smoke-Developed Index: 450 or less.
- C. Pad Coverings: Provide safety pad fabric covering fabricated from puncture- and tear-resistant, not less than 14-oz./sq. yd (475-g/sq. m) PVC-coated polyester or nylon-reinforced PVC fabric treated with fungicide for mildew resistance; with surface-burning characteristics indicated, and lined with fire-retardant liner.
- D. Wall Safety Pads: Padded wall wainscot panels designed to be attached in a continuous row; each panel section consisting of fill laminated to backer board with visible surfaces fully covered by seamless fabric covering, free of sag and wrinkles and firmly attached to back of backer board.
  1. Backer Board: Not less than 3/8-inch- (9.5-mm-) thick fire-retardant-treated plywood per AWWA C27, Interior Type A.
  2. Fire-Resistive Fill: Multiple-impact-resistant foam not less than 2-inch- (50-mm-) thick fire-resistive neoprene, 6.0-lb/cu. ft. (96-kg/cu. m) density.
  3. Size: Each panel section, 24 inches (600 mm) wide by not less than 48 inches (1800 mm) long.
  4. Number of Panel Sections: Four in Special Ed. Tlt. B124 with two each mounted behind and adjacent to toilet fixture above grab bar mounting height.
  5. Installation Method: Manufacturer's standard.
  6. Fabric Covering Color(s): As selected by Architect from manufacturer's full range for one color(s).

## 2.4 PUBLIC-USE SHOWER ROOM ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following, unless noted otherwise:

1. American Specialties, Inc.
2. Bobrick Washroom Equipment, Inc.
3. Bradley Corporation.

B. Shower Curtain Rod:

1. Basis-of-Design Product: Bobrick; B-6047.
2. Description: 1-1/4-inch (32-mm) OD; fabricated from nominal 0.05-inch- (1.3-mm-) thick stainless steel.
3. Mounting Flanges: Stainless-steel flanges designed for exposed fasteners.
4. Finish: No. 4 (satin).
5. Quantity: One per shower stall.

C. Folding Shower Seat:

1. Basis-of-Design Product: Bobrick; B-5181.
2. Configuration: L-shaped seat, designed for wheelchair access.
3. Seat: Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.
4. Mounting Mechanism: Stainless steel, No. 4 finish (satin).
5. Dimensions: As indicated by product designation.
6. Quantity: One per accessible shower stall as indicated on Drawings.

D. Robe Hook:

1. Basis-of-Design Product: Bobrick; B-76717.
2. Description: Projecting minimum of 1 5/8 inches from wall surface.
3. Material and Finish: Stainless steel, No. 4 finish (satin).
4. Quantity: One per shower head.

E. Warm-Air Dryer:

1. Basis-of-Design Product: Bobrick; B-748.
2. Mounting: Surface mounted.
3. Operation: Electronic-sensor activated with timed power cut-off switch.
  - a. Operation Time: 30 to 40 seconds.
4. Cover Material and Finish: Chrome-plated steel or Stainless steel, No. 4 finish (satin).
5. Electrical Requirements: 115 V, 20 A, 2300 W.

## 2.5 CHILDCARE ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:

1. American Specialties, Inc.
2. Brocar Products, Inc.
3. Diaper Deck & Company, Inc.
4. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
5. Koala Kare Products; a division of Bobrick Washroom Equipment, Inc.
6. SSC, Inc.
7. Tubular Specialties Manufacturing, Inc.

B. Diaper-Changing Station:

1. Basis-of-Design Product: Bobrick; B-2230.
2. Description: Horizontal unit that opens by folding down from stored position and with child-protection strap.
  - a. Engineered to support a minimum of 250-lb (113-kg) static load when opened.
3. Mounting: Surface mounted, with unit projecting not more than 4 inches (100 mm) from wall when closed.
4. Operation: By pneumatic shock-absorbing mechanism.
5. Material and Finish: HDPE in manufacturer's standard color.
6. Liner Dispenser: Built in.
7. Quantity: Provide one in each restroom D237 and D238.

## 2.6 UNDERLAVATORY GUARDS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Plumberex Specialty Products, Inc.
2. Truebro by IPS Corporation.

B. Underlavatory Guard:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.
3. Locations: All exposed pipe under lavatories.

## 2.7 CEILING-MOUNTED LIFTS

A. Basis-of-Design Product: SureHands; Handi-Move Model 2500L or pre-approved equal.

1. Safe Working Load: 440 lb. (200 kg).
2. Power: Battery, (2) 12 V, rechargeable.
3. Rail System: Aluminum.
4. Emergency Down: Mechanical.
5. Emergency Stop.
6. Number of Lifts: 160 with fully-charged batteries.
7. Control: Pneumatic hand control.

## 2.8 CHANGING ROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following, unless noted otherwise:
1. American Specialties, Inc.
  2. Bobrick Washroom Equipment, Inc.
  3. Bradley Corporation.
- B. Robe Hook:
1. Basis-of-Design Product: Bobrick; B-76717.
  2. Description: Projecting minimum of 1 5/8 inches from wall surface.
  3. Material and Finish: Stainless steel, No. 4 finish (satin).
  4. Quantity: Eight in each room G254 and G256.
- C. Mirror Unit (full-length):
1. Basis-of-Design Product: Bobrick; B-290.
  2. Frame: Stainless-steel angle, 0.05 inch (1.3 mm) thick.
    - a. Corners: Welded and ground smooth.
  3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
    - a. One-piece, galvanized-steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
    - b. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
  4. Size: 24" x 72".
  5. Locations: Two in each room G254 and G256.

## 2.9 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 102800

## SECTION 104413 - FIRE EXTINGUISHER CABINETS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Fire protection cabinets for the following:
    - a. Portable fire extinguishers for use with Owner-supplied extinguishers.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire protection cabinets.
  - 1. Fire Protection Cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
- B. Shop Drawings: For fire protection cabinets. Include plans, elevations, sections, details, and attachments to other work.

## 1.4 COORDINATION

- A. Coordinate size of fire protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire protection cabinets with wall depths.

## 1.5 SEQUENCING

- A. Apply vinyl lettering on field-painted, fire protection cabinets after painting is complete.

## PART 2 - PRODUCTS

## 2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.

- B. Aluminum: Alloy and temper recommended by aluminum producer and manufacturer for type of use and finish indicated, and as follows:
  - 1. Extruded Shapes: ASTM B 221 (ASTM B 221M).
- C. Transparent Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), 3 mm thick, with Finish 2 (patterned, textured).

## 2.2 FIRE PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Larsen's Manufacturing Company; AL-G2409-R3.
    - b. J. L. Industries, Inc., a division of Activar Construction Products Group; comparable product.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Material: Steel sheet.
- D. Semirecessed Cabinet: Cabinet box partially recessed in walls of sufficient depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend). Provide where walls are of insufficient depth for recessed cabinets but are of sufficient depth to accommodate semirecessed cabinet installation.
  - 1. Rolled-Edge Trim: 2-1/2-inch (64-mm) backbend depth.
- E. Cabinet Trim Material: Extruded-aluminum shapes.
- F. Door Material: Steel sheet.
- G. Door Style: Fully glazed, frameless, backless, acrylic panel.
- H. Door Glazing: Acrylic sheet.
  - 1. Acrylic Sheet Color: Clear transparent acrylic sheet painted black on unexposed side.
- I. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - 1. Provide projecting door pull and friction latch.
  - 2. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- J. Accessories:
  - 1. Mounting Bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  - 2. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated.

- a. Identify fire extinguisher in fire protection cabinet with the words "FIRE EXTINGUISHER."

- 1) Location: Applied to cabinet glazing.
- 2) Application Process: Pressure-sensitive vinyl letters.
- 3) Lettering Color: White.
- 4) Orientation: Vertical.

K. Finishes:

1. Manufacturer's standard baked-enamel paint for the following:
  - a. Interior of cabinet and door.
2. Aluminum: Clear anodic.
3. Steel: Baked enamel or powder coat.

## 2.3 FABRICATION

- A. Fire Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
  1. Weld joints and grind smooth.
  2. Provide factory-drilled mounting holes.
  3. Prepare doors and frames to receive locks.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
  1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch (13 mm) thick.
  2. Miter and weld perimeter door frames.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

## 2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.5 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

## 2.6 STEEL FINISHES

- A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning". After cleaning, apply a conversion coating suited to the organic coating to be applied over it.
- B. Baked-Enamel or Powder-Coat Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).
  - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Prepare recesses for semirecessed fire protection cabinets as required by type and size of cabinet and trim style.

### 3.3 INSTALLATION

- A. General: Install fire protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
  - 1. Fire Protection Cabinets: 54 inches (1372 mm) above finished floor to top of cabinet.
- B. Fire Protection Cabinets: Fasten cabinets to structure, square and plumb.
  - 1. Unless otherwise indicated, provide recessed fire protection cabinets. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire protection cabinets.
  - 2. Fasten mounting brackets to inside surface of fire protection cabinets, square and plumb.
- C. Identification: Apply vinyl lettering at locations indicated.

### 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 manufacturers.
- E. Replace fire protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 104413



## SECTION 105113 - METAL LOCKERS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. All-welded, athletic metal lockers.
  - 2. Benches.

## 1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Show sloping tops, filler panels and other accessories.
  - 2. Include locker identification system.
- C. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.
- D. Warranty: Special warranty specified in this Section.
- E. Samples for verification: Submit one full-size locker sample for evaluation. Adherence to the specification is required. Locker submitted must meet specification regardless of manufacturer's standard product. Submit manufacturer's technical data and installation instructions for metal locker units.

## 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."
  - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.

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. Provide not less than 1 shelf located no higher than 48 inches (1219 mm) above the floor for forward reach.
2. Provide 1 shelf located at bottom of locker no lower than 15 inches (381 mm) above the floor for forward reach.
3. Provide hardware that does not require tight grasping, pinching, or twisting of the wrist, and that operates with a force of not more than 5 lbf (22.2 N).

## 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 combination control charts to Owner by registered mail or overnight package service in electronic form as well as paper copy.

## 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.
  2. Recessed openings.
  3. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish recessed opening dimensions and proceed with fabricating metal lockers without field measurements. Coordinate wall and floor construction to ensure that actual recessed opening dimensions correspond to established dimensions.

## 1.7 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 All-Welded Metal Lockers: Lifetime from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

#### METAL LOCKERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

## 2.2 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS) Type B, suitable for exposed applications.
- B. Expanded Metal: ASTM F 1267, Type II (flattened), Class I, 3/4-inch (19-mm) steel mesh, with at least 70 percent open area.
- C. Fasteners: Zinc- or nickel-plated steel, slotless-type exposed bolt heads, and self-locking nuts or lock washers for nuts on moving parts.
- D. 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.

## 2.3 ALL-WELDED, ATHLETIC METAL LOCKERS

- A. Products:
1. All-Welded, Athletic Metal Lockers:
    - a. DeBourgh Mfg. Co.
    - b. Lyon.
- B. Locker Arrangement: Double Tier & Triple Tier.
1. Locker Room D209:
    - a. Double Tier: 18" x 18" x 72".
    - b. Reference Drawings for quantity.
  2. Locker Room F206:
    - a. Triple Tier: 15" x 15" x 72".
    - b. Reference Drawings for quantity.
- C. Body: Assembled by welding body components together. Fabricate from unperforated, cold-rolled steel sheet with thicknesses as follows:
1. Tops and Bottoms: 0.0528 inch (1.35 mm) thick, with single bend at edges.
  2. Backs: 0.0428 inch (1.1 mm) thick.
  3. Shelves: 0.0528 inch (1.35 mm) thick, with double bend at front and right angle single bend at sides and back.
- D. Expanded-Metal Intermediate Partitions: Shall be constructed with 13 ga. 3/4" flattened expanded metal securely welded to frame at intervals not to exceed 6". All exposed expanded metal edges will be bonded sheared to prevent snags or cuts.

- E. Exposed End Panels: Constructed of 1 inch by 1 inch by 1/8-inch steel angle iron frame with 0.0528 inch (1.35 mm) thick, sheet steel welded to steel angle frame.
- F. Frames: Channel formed; fabricated from 0.0528-inch- (1.35-mm-) thick, cold-rolled steel sheet or 0.0966-inch- (2.5-mm-) thick steel angles; 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 for Double Tier Lockers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.
- G. Doors:
1. 1 inch by 1 inch by 1/8 inch angle iron frame with inserts of (available only when used with Sentry I latching):
    - a. Diamond perforated – permitting 37% ventilation.
- H. 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.
1. Knuckle Hinges: Steel, full loop, 5 knuckles, tight pin; minimum 3 inches (76.2 mm) high. Provide not less than 3 hinges for each door more than 42 inches (1067 mm) high.
- I. Projecting Turn-Handle and Latch: Steel handle welded to manufacturer's standard, three-point, cremone-type latch (DeBourgh: Sentry I Latch) mechanism that consists of steel rods or bars that engage main locker frame at top and bottom of door, and center latch that engages strike jamb; with steel padlock loop.
- J. Special Needs Latch (ADA)
1. Latching operation with a three-point/ three-sided cremone latch (Similar to Sentry I) had an extended six inch handle creating a weighted counterbalance allowing activation by either upward or downward motion.
- K. Equipment: Equip each metal locker with identification plate and the following, unless otherwise indicated:
1. Single-Tier Units: Shelf, one double-prong ceiling hook, and two single-prong wall hooks.
  2. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.
  3. Triple-Tier Units: One double-prong ceiling hook.
- L. Accessories:
1. Filler Panels: Manufacturer's standard fabricated from 18 gauge solid steel finished to match lockers backed with 3/4" plywood.
  2. Continuous Sloping Tops (At lockers against wall on perimeter only): Fabricated from minimum 0.0428-inch- (1.1-mm-) thick, cold-rolled steel sheet: approximately 25-degree pitch.
    - a. Closures: Vertical-end type. Unit construction, factory installed with concealed fasteners.
  3. Solid Resin Tops (At lockers located on island): Provide tops using panels of minimum 3/4" thick solid HDPE resin which is water resistant, non-absorbent and has a self-lubricating surface that resists markings from pens, pencils and other writing instruments. Color and material is homogeneous throughout. All panels should strip covered protective masking.
    - a. Panels to be provided in 60" x 120" sheets to be field-cut and field-routed as noted.
    - b. Manufacturers:

- 1) Comtect Industries
- 2) Metpar Corporation
- c. Material Finish: Selected from manufacturer's color range of solid & pattern finish with a smooth surface.
- d. ¼" rounded edge on all exposed sides.
- e. Panels to be screwed in from inside locker every 12" and within 3" from any end and face. Trim flush with locker fronts and ends with maximum ¼" overhang.

M. Finish:

1. Complete locker unit to be thoroughly cleaned, phosphatized and sealed.
2. Finish to be baked pure TGIC polyester powder coat, 2-3 mils cured.
3. Color to be selected by Architect from manufacturer's standard colors.

## 2.4 BENCHES

- A. General: Provide locker benches fabricated by same manufacturer as metal lockers.
- B. Bench Tops: Manufacturer's standard 1-piece units, of the following material, minimum 9-1/2 inches (240 mm) wide by 1-1/4 inches (32 mm) thick, with rounded corners and edges:
  1. Laminated maple with one coat of clear sealer on all surfaces, and one coat of clear lacquer on top and sides.
- C. Fixed Pedestals: Manufacturer's standard supports, with predrilled fastener holes for attaching bench top and anchoring to floor, complete with fasteners and anchors, and as follows:
  1. Tubular Steel: 1-1/4 inch- (32 mm-) diameter steel tubing, with 0.1265-inch (3.2 mm-) thick steel flanges welded at top and base; with baked enamel or zinc-plated finish; anchored with exposed fasteners.
    - a. Color: Match metal lockers.
- D. Locations:
  1. Locker Rooms D204, D209 and F206:
    - a. Size and Quantity: Provide in lengths and quantities indicated on Drawings.
  2. Changing Rooms G254 and G256:
    - a. Size: 8'-0" long.
    - b. Quantity: One in each room.

## 2.5 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. All-Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections, with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds flush.
- D. Hooks: Manufacturer's standard ball-pointed type, aluminum or steel; zinc plated.
  - 1. Provide two single wall hooks and one double ceiling hook in each locker opening 20 inches or taller.
- E. Coat Rods: Fabricated from Manufacturer's standard.
- F. Identification Plates: Manufacturer's standard etched, embossed, or stamped aluminum plates; with numbers and letters at least 3/8 inch (9 mm) high.
- G. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip joint filler angle formed to receive filler panel. Back filler panels with 3/4" plywood.

## 2.6 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. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer thermosetting powder finish. Comply with resin 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.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to 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 36 inches (910 mm) 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, unless locker is located on concrete island then anchor to existing blocking per manufacturer's recommendations.
  3. Anchor back-to-back metal lockers to floor.
- B. All-Welded Metal Lockers: Connect groups of all-welded metal lockers together with standard fasteners, with no exposed fasteners on 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 filler panels with concealed fasteners. Locate fillers panels where indicated on Drawings.
  5. Attach sloping top units to metal lockers, with closures at exposed ends.
- D. Fixed Locker Benches: Provide not less than 2 pedestals for each bench, uniformly spaced not more than 72 inches (1830 mm) apart. Securely fasten tops of pedestals to undersides of bench tops, and anchor bases to floor.

### 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.

END OF SECTION 105113



## SECTION 105613 - METAL STORAGE SHELVING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Case-type metal storage shelving.
- B. Related Sections:
  - 1. Division 11 Section "Foodservice Equipment" for metal shelving in kitchen, pantry, and refrigerated spaces.

## 1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design metal storage shelving, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance for Case-Type Metal Storage Shelving: Capable of withstanding the loads indicated according to MH 28.1.

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, construction details, material descriptions, dimensions of individual components and profiles, and finishes for metal storage shelving.
- B. Shop Drawings: For customized metal storage shelving. Include plans, elevations, sections, details, and attachments to other work. Include installation details of connectors, lateral bracing, and special bracing.
- C. Samples for Initial Selection: For units with factory-applied color finishes. Include similar Samples of accessories involving color selection.
- D. Delegated-Design Submittal: For metal storage shelving indicated to comply with performance requirements, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 1. Design Calculations: Calculate requirements for seismic restraints.
- E. Product Certificates: For each type of metal storage shelving from manufacturer.
- F. Maintenance Data: For metal storage shelving to include in maintenance manuals.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain metal storage shelving from single source from single manufacturer.

## 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install metal storage shelving until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

## 1.7 COORDINATION

- A. Coordinate sizes and locations of blocking and backing required for installation of metal storage shelving attached to wall and ceiling assemblies.
- B. Coordinate locations and installation of metal storage shelving that may interfere with ceiling systems including lighting, HVAC, speakers, sprinklers, access panels, electrical switches or outlets, and floor drains.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- C. Floor Anchors: Galvanized-steel, post-installed expansion anchors power-actuated fasteners or threaded concrete screws. Provide number per unit recommended by manufacturer unless additional anchors are indicated in calculations.
- D. Wall Anchors: Manufacturer's standard, galvanized-steel anchors designed to secure metal storage shelving to adjacent wall. Provide two per shelving unit for each shelving unit adjacent to a wall unless additional anchors are indicated in calculations.

### 2.2 CASE-TYPE METAL STORAGE SHELVING

- A. General: Factory-formed, field-assembled, freestanding, case-type metal storage shelving system, designed for shelves to span between and be supported by sheet metal end panels (without posts), with shelves adjustable over the height of shelving unit. Fabricate shelf units with end panel at each end so each unit is independent. Provide fixed top and bottom shelves, adjustable intermediate shelves, and accessories indicated.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Adjustable Shelving Products; a division of Karp Associates, Inc.
  - b. Borroughs Corporation.
  - c. Equipto.
  - d. Lyon Workspace Products, LLC.
  - e. Tenssco.
- B. Load-Carrying Capacity per Shelf: 200 lb (91 kg).
- C. End Panels: Fabricated from cold-rolled steel sheet, with concealed perforations at front and back edges at manufacturer's standard spacing for receiving adjustable shelf clips.
1. Steel-Sheet Thickness, Nominal: 0.036 inch (0.91 mm).
  2. Adjustable Shelf Clips: Fabricated from 0.036-inch- (0.91-mm-) nominal thickness, cold-rolled steel; with projections designed to engage at least two perforations in end panels.
- D. End Panels: Fabricated from cold-rolled steel sheet; with horizontal slots spaced at manufacturer's standard spacing for supporting shelves.
1. Steel-Sheet Thickness, Nominal: 0.036 inch (0.91 mm).
- E. Back Panel: One piece, fabricated from cold-rolled steel sheet.
1. Steel-Sheet Thickness, Nominal: 0.036 inch (0.91 mm).
- F. Shelves: Fabricated from cold-rolled steel sheet. Fabricate shelves with vertical front that is flanged and returned.
1. Steel-Sheet Thickness, Nominal: 0.048 inch (1.21 mm).
- G. Shelf Quantity: Five shelves per shelving unit in addition to top and bottom shelf.
- H. Base: Closed front, with base strips fabricated from same material and with same finish as end panels.
- I. Overall Unit Width: 36 inches (914 mm).
- J. Overall Unit Depth: 18 inches (457 mm).
- K. Overall Unit Height: 84 inches (2134 mm).
- L. Finish: Baked enamel.
1. Color and Gloss: As selected by Architect from manufacturer's full range.

### 2.3 FABRICATION

- A. Shop Fabrication: Prefabricate shelving components in shop to greatest extent possible to minimize field fabrication; temporarily preassemble shelving components where necessary to ensure that field-assembled components fit together properly. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Fabricate metal storage shelving square and rigid, with posts plumb and true and shelves flat and free of dents or distortion. Fabricate connections to form a rigid structure, free of buckling and warping.

1. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.
  2. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Locate joints where least conspicuous.
  3. Build in straps, plates, brackets, and other reinforcements as needed to support shelf loading.
  4. Cut, reinforce, drill, and tap metal fabrications to receive hardware, fasteners, and similar items.
- C. Form metal in maximum lengths to minimize joints. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing the Work.
- D. Form edges and corners free of sharp edges or rough areas. Fold back and crimp exposed edges of unsupported sheet metal to form a 1/2-inch- (13-mm-) wide hem on the concealed side; ease edges of metal plate to radius of approximately 1/32 inch (0.8 mm). Shear and punch metals cleanly and accurately. Remove burrs.
- E. Weld corners and seams continuously to develop strength, minimize distortion, and maintain the corrosion resistance of base metals. At exposed locations, finish welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface. Weld before finishing components to greatest extent possible. Remove weld spatter and welding oxides from exposed surfaces before finishing.

#### 2.4 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

#### 2.5 STEEL FINISHES

- A. Surface Preparation: Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning" or SSPC-SP 8, "Pickling."
- B. Baked-Enamel or Powder-Coat Finish: Manufacturer's standard baked-on finish consisting of prime coat and thermosetting topcoat. Comply with coating manufacturer's written instructions for cleaning, pretreatment, application, and minimum dry thickness.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine floors for suitable conditions where metal storage shelving will be installed.
- C. Examine walls and ceilings to which metal storage shelving will be attached for properly located blocking, grounds, or other solid backing for attachment of support fasteners.

- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Vacuum finished floor and wet mop resilient flooring over which metal storage shelving is to be installed.

### 3.3 INSTALLATION

- A. Install metal storage shelving level, plumb, square, rigid, true, and with shelves flat and free of dents or distortion. Make connections to form a rigid structure, free of buckling and warping.
  1. Install exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
  2. Install braces, straps, plates, brackets, and other reinforcements as needed to support shelf loading and as required for stability.
  3. Adjust post-base bolt leveler to achieve level and plumb installation.
  4. Anchor shelving units to floor with floor anchors through floor plate. Shim floor plate to achieve level and plumb installation.
  5. Install seismic restraints.
  6. Connect back-to-back shelving units together.
  7. Install shelves in each shelving unit at spacing indicated on Drawings or, if not indicated, at equal spacing.
    - a. Case-Type Metal Storage Shelving: Install adjustable shelf clips at front and back of each shelf.

### 3.4 ERECTION TOLERANCES

- A. Erect case-type and four-post metal storage shelving to a maximum tolerance from vertical of 1/2 inch (13 mm) in up to 10 feet (3 m) of height, not exceeding 1 inch (25 mm) for heights taller than 10 feet (3 m).

### 3.5 ADJUSTING

- A. Adjust metal storage shelving so that connectors and other components engage accurately and securely.
- B. Adjust and lubricate operable components to operate smoothly and easily, without binding or warping. Check and readjust operating hardware.
- C. Touch up marred finishes or replace metal storage shelving that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by metal storage shelving manufacturer.
- D. Replace metal storage shelving that has been damaged or has deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 105613



## SECTION 107500 - FLAGPOLES

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes ground-mounted flagpoles made from aluminum.
- B. Owner-Furnished Material: Flags.

## 1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Flagpole assemblies, including anchorages and supports, shall withstand the effects of gravity loads, and the following loads and stresses within limits and under conditions indicated according to the following design criteria:
  - 1. Wind Loads: 90 mph according to NAAMM FP 1001, "Guide Specifications for Design of Metal Flagpoles." SEI/ASCE 7.
  - 2. Base flagpole design on nylon or cotton flags of maximum standard size suitable for use with flagpole or flag size indicated, whichever is more stringent.

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for flagpoles.
- B. Shop Drawings: For flagpoles. Include plans, elevations, details, and attachments to other work. Show general arrangement, jointing, fittings, accessories, grounding, anchoring, and support.
  - 1. Include section, and details of foundation system for ground-mounted flagpoles.
- C. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- D. Delegated-Design Submittal: For flagpole assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Operation and Maintenance Data: For flagpoles to include in operation and maintenance manuals.

## 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain flagpole as complete unit, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. General: Spiral wrap flagpoles with heavy paper and enclose in a hard fiber tube or other protective container.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Flagpole; a Kearney-National Inc. company.
2. Atlantic Fiberglass Products, Inc.
3. Baartol Company.
4. Concord Industries, Inc.
5. Eder Flag Manufacturing Company, Inc.
6. Ewing Flagpoles.
7. Lingo Inc.; Acme Flagpole Company Division.
8. Millerbernd Manufacturing Company.
9. Morgan-Francis; Division of Original Tractor Cab Co., Inc.
10. PLP Composite Technologies, Inc.
11. Pole-Tech Company Inc.
12. U.S. Flag & Flagpole Supply, LP.
13. USS Manufacturing Inc.

### 2.2 FLAGPOLES

- A. Flagpole Construction, General: Construct flagpoles in one piece if possible. If more than one piece is necessary, comply with the following:
  1. Fabricate shop and field joints without using fasteners, screw collars, or lead caulking.
  2. Provide flush hairline joints using self-aligning, snug-fitting, internal sleeves.
  3. Provide self-aligning, snug-fitting joints.
- B. Quantity: One.
- C. Exposed Height: 35 feet (11 m).
- D. Aluminum Flagpoles: Provide cone-tapered flagpoles fabricated from seamless extruded tubing complying with ASTM B 241/B 241M, Alloy 6063, with a minimum wall thickness of 3/16 inch (4.8 mm).
- E. Metal Foundation Tube: Utilize existing to extent feasible. Otherwise, remove existing and provide manufacturer's standard corrugated-steel foundation tube, not less than 0.064-inch- (1.6-mm-) nominal wall thickness. Provide with 3/16-inch (4.8-mm) steel bottom plate and support plate; 3/4-inch- (19-mm-) diameter, steel ground spike; and steel centering wedges welded together. Galvanize steel after assembly. Provide loose hardwood wedges at top of foundation tube for plumbing pole.

1. Provide flashing collar of same material and finish as flagpole.

### 2.3 FITTINGS

- A. Finial Ball: Manufacturer's standard flush-seam ball, sized as indicated or, if not indicated, to match flagpole-butt diameter.
  1. 0.063-inch (1.6-mm) spun aluminum, finished to match flagpole.
- B. External Halyard: Ball-bearing, nonfouling, revolving truck assembly of cast metal with continuous 5/16-inch- (8-mm-) diameter, braided polypropylene halyard and 9-inch (228-mm) cast-metal cleats with fasteners. Finish exposed metal surfaces to match flagpole.
  1. Provide one halyard and one cleat at each flagpole.
  2. Provide cast-metal cleat covers, finished to match flagpole, secured with cylinder locks.
  3. Provide halyard covers consisting of a 2-inch (50-mm) channel, 60 inches (1500 mm) long, finished to match flagpole.
  4. Halyard Flag Snaps: Provide two stainless-steel swivel snap hooks per halyard.
    - a. Provide with neoprene or vinyl covers.

### 2.4 MISCELLANEOUS MATERIALS

- A. Drainage Material: Crushed stone, or crushed or uncrushed gravel; coarse aggregate.
- B. Sand: ASTM C 33, fine aggregate.
- C. Elastomeric Joint Sealant: Single-component neutral-curing silicone joint sealant complying with requirements in Division 07 Section "Joint Sealants" for Use NT (nontraffic) and for Use M, G, A, and, as applicable to joint substrates indicated, for Use O.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

### 2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

### 2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, including foundation; accurate placement, pattern, orientation of anchor bolts, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Prepare uncoated metal flagpoles that are set in foundation tubes by painting below-grade portions with a heavy coat of bituminous paint.
- B. Foundation Excavation: Excavate to neat clean lines in undisturbed soil. Remove loose soil and foreign matter from excavation and moisten earth before placing concrete. Place and compact drainage material at excavation bottom.
- C. Provide forms where required due to unstable soil conditions and for perimeter of flagpole base at grade. Secure and brace forms to prevent displacement during concreting.
- D. Place concrete, as specified in Division 03 Section "Cast-in-Place Concrete." Compact concrete in place by using vibrators. Moist-cure exposed concrete for not less than seven days or use nonstaining curing compound.
- E. Trowel exposed concrete surfaces to a smooth, dense finish, free of trowel marks, and uniform in texture and appearance. Provide positive slope for water runoff to perimeter of concrete base.

### 3.3 FLAGPOLE INSTALLATION

- A. General: Install flagpoles where shown and according to Shop Drawings and manufacturer's written instructions.
- B. Ground Set: Place foundation tube, center, and brace to prevent displacement during concreting. Place concrete. Plumb and level foundation tube and allow concrete to cure. Install flagpole, plumb, in foundation tube.
  - 1. Foundation Tube: Place tube seated on bottom plate between steel centering wedges and install hardwood wedges to secure flagpole in place. Place and compact sand in foundation tube and remove hardwood wedges. Seal top of foundation tube with a 2-inch (50-mm) layer of elastomeric joint sealant and cover with flashing collar.

END OF SECTION 107500