

SECTION 101418 - 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 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals to provide signs and plaques as indicated including, but not limited to, the following:
 - 1. Interior Permanent Panel Plaques.
 - 2. Exterior Truss Construction Identification Emblem.
 - 3. Backlit Metal Building Signage
- B. Provide identification plaque at each interior door opening to each interior space and as indicated on the drawings.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's descriptive literature, specifications and installation instruction for each type of sign required.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations, dimensions, large-scale details, wiring diagrams sign locations, field measurements, wording, lettering, artwork and braille layout. Show attachment to other work, field dimensions and accessory items. Furnish location template drawings for items supported or anchored to permanent construction. Obtain Owner's or Architect's written approval of sign text prior to fabrication of signs.
- C. Samples: Submit samples of each color and finish of exposed materials and accessories required for specialty signs. Architect's review of samples will be for color and texture only. When requested, furnish full-size samples of specialty signs materials.

1.4 QUALITY ASSURANCE

- A. Regulatory Requirements: Provide raised image tactile signs in compliance with code provisions of ICC/ANSI A117.1 and The Americans with Disabilities Act (ADA). Provide Identifying Emblems in compliance with N.J.A.C. 5:23-3.5(e) to identify the building as having floor, roof or both roof and floor trusses.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Panel Signs: Subject to compliance with requirements, manufacturers of panel signs that may be incorporated in the work include, but are not limited to, Best Sign Systems, Inc., (Basis-of-Design) or approved equal.

2.2 INTERIOR PLAQUES

- A. Materials: Interior plastic plaques shall be a durable, two color, scratch resistant, non-static, fire retardant, washable melamine surface laminate with non-glare surface and tough colored phenolic core painted a contrasting color after artwork has been carved into the surface and providing raised lettering and braille. Subject to compliance with requirements, manufacturers of products that may be incorporated in the work include, but are not limited to, Best Sign Systems, Inc. Series HC300 Series Plastic Type, Non-Combustible or self-extinguishing type (Basis-of-Design) or approved equal.

1. Material thickness: 1/4 inch.
2. Weight: 2 lbs./sq. ft.
3. Flexural strength flat: 25,000 p.s.i.
4. Tensile strength: 22,000 p.s.i.
5. Compressive strength flat: 47,000 p.s.i.
6. Shear strength: 16,800 p.s.i.
7. Dielectric strength short time (D229 Test): 330 volts/Mil
8. NEMA Rated "self-extinguishing".
9. Bull nose edge condition.
10. 1/2 inch radius corners.

- B. Requirements of All Interior Permanent Room Plaques shall comply with the following provisions for compliance with ICC/ANSI A117.1 and ADA:

1. Characters shall be raised 1/32 inch.
2. Characters shall be upper case and sans serif or "simple serif" type style, as selected by the Architect.
3. Characters shall be accompanied by Grade 2 Braille.
4. Raised characters shall be a minimum of 5/8 inch and a maximum 2 inch high with a width-to-height ratio of between 3:5 and 1:1, stroke width-to-height ratio of between 1:5 and 1:10 (based on upper case X).
5. Equivalent written description (if any) shall be placed directly below pictogram (symbol).
6. Pictograms shall be of sizes indicated on drawings or, if not indicated, with a minimum field of 6 inches in height. Provide pictograms at Accessible Toilet room doors,

accessible toilet stalls, accessible entrances, directional signage, stair/elevator instructional signage, etc. as indicated and as required for code compliance.

7. Pictograms shall be raised 1/32 inches, block Type with sharply defined edges, with at least one quarter inch stroke width (if incised).
8. Characters and background shall be eggshell, matte or other non-glare finish.
9. Characters shall contrast with background (either light on dark or dark on light).
10. Signs shall be located on the wall adjacent to the latch side of the door. (If wall space is inadequate or at double leaf doors, mount signs at nearest adjacent wall).
11. Mount using manufacturer's concealed theft resistant fasteners or other method acceptable to the Architect.
12. Mount sign so that a person can approach within 3" and avoid door swing and protruding objects.
13. Mounting height: Characters shall be 48 inches minimum and 60 inches maximum above adjacent finish floor or ground surface, measured from the base line of the characters.

C. Additional Requirements of All Interior Directional and Informational Plaques shall comply with the following provisions:

1. Characters shall have a width to height ratio of between 3:5 and 1:1.
2. Characters shall have a stroke width to height ratio of between 1:5 and 1:10.
3. Characters shall be sized according to the viewing distance from which they are to be read.
4. Lower case characters are permitted.
5. Characters and background shall be eggshell, matte or other non-glare finish.
6. Characters shall contrast with background (either light on dark or dark on light).
7. Pictograms shall be of sizes indicated on drawings or, if not indicated, with a minimum field of 6 inches in height. Provide pictograms at Non-accessible toilet room doors, non-accessible entrances, non-accessible stairs, etc. as indicated and as required for code compliance.

D. Panel Sign Types:

1. Generic Room Identification Plaques (drawing designation A) shall be of types and sizes indicated or, if not indicated, shall be 8" x 6" in size and contain the room name and number in lettering and Braille and include a 1" changeable message window with an insert for adding a person's name, unless noted otherwise.
 - a. Provide identification plaque at doors:
 - 1) 102, 103, 104, 105, 106, 107A, 107B, 108A, 110, 111 and 112
2. Accessible Toilet Room Plaques (drawing designation RM and RW): Shall be 6" x 8" containing the International Symbol of Accessibility together with gender pictogram and name as follows:
 - a. Provide one sign at the outside of each entrance to accessible toilet rooms.
3. Accessible Toilet Stall Plaques (drawing designation S): Shall be 6" x 6" containing the International Symbol of Accessibility.
 - a. Provide one sign at the outside of each entrance to Accessible Stalls.

2.3 EXTERIOR TRUSS CONSTRUCTION IDENTIFICATION EMBLEM

- A. Identifying Emblem shall be made of 18 gauge bonderized steel. Emblem shall be of a bright and reflective color. Shape of the emblem shall be an isosceles triangle and the size shall be 12 inches horizontally by 6 inches vertically. The following letters, of a size and color to make them conspicuous, shall be printed on the emblem:
1. “F” to signify a floor with truss construction;
 2. “R” to signify a roof with truss construction; or
 3. “F/R” to signify both a floor and roof with truss construction.

2.4 BACKLIT METAL BUILDING SIGNAGE

- A. General:
- B. Manufacturers: Subject to compliance with requirement, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
1. Impact Architectural Signs; Stainless Steel Halo Lighted Backlit Letters
 2. Or approved equal.
- C. Materials (Metal Alloys)
1. Stainless Steel – C316 Alloy
- D. Finishes
1. Fabricated Stainless Steel: Brushed Finish
 - a. Brushed finish
- E. Character Depth: 2”
- F. Font Styles: See drawings for location and sizes of each font.
1. Times New Roman
 2. Century Gothic
- G. Mounting Hardware: Stud mount with spacers to float letters from wall
- H. LED Backlighting: Low-voltage LED modules shall be installed inside fabricated stainless steel channel letters with a lexan backer
- I. Fabrication:
1. Letters shall be fabricated of stainless steel. Form letters by heliarc welding process. Characters should have smooth flat faces, sharp corners, precicely formed lines and profiles, free from pits, scale, and other defects.

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, and electrical power provided under other sections of Work are sized and located to accommodate signs.
- C. Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install sign units and components at locations shown or scheduled, securely mounted with concealed theft-resistant fasteners, unless otherwise indicated. Attach signs to substrates in accordance with manufacturer's instructions.
- B. Install level, plumb, and at proper height. Cooperate with other trades for installation of sign units to finish surfaces. Repair or replace units as directed by Architect.
- C. Location of room and capacity plaques to be mounted with characters 48 inches minimum and 60 inches maximum above the adjacent finished floor or ground surface measured from the baseline of the characters on wall next to door on the latch side when door is closed. When a tactile sign is provided at double doors, the sign shall be to the right of the right hand door. Where there is no space on the latch side of a single door, or the right side of double doors, signs shall be on the nearest adjacent wall. Signs containing tactile characters shall have an 18 inch minimum by 18 inch minimum space on the floor or ground centered on the sign, beyond the arc of any door swing between the closed position and 45 degree open position.
 - 1. Exception: Door mounted signs shall be permitted on the push side of the doors without closers and without hold-open devices.
- D. Location of Truss Identifying Emblem shall be permanently affixed to the left of the main entrance door at a height of between four and six feet above the ground.
- E. Apply plaques in strict compliance with the manufacturer's printed recommendations. Clean all surfaces exposed to view before final completion.
- F. Wall-Mounted Panel Signs: Attach panel signs to wall surfaces using methods indicated below:
 - 1. Vinyl-Tape Mounting: Use double-sided foam tape to mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
 - 2. Shim Plate Mounting: Provide 1/8-inch thick, concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.

3. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.
- G. Bracket-Mounted Units: Provide manufacturer's standard brackets, fittings, and hardware as appropriate for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.
- H. Dimensional Characters: Mount characters using standard fastening methods recommended in writing by manufacturer 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. Projected Spacer Mounting: Mount characters at projection distance as recommended by manufacturer.
- I. Illuminated Characters:
 1. Run wires into wall construction through conduit.
 2. Exposed-to-view wiring or conduit on wall face is not permitted.

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 101418.

SECTION 101423 – COMMEMORATIVE PLAQUE

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 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals to provide commemorative plaque as indicated including, but not limited to, the following:
 - 1. Custom Cast Metal Commemorative Plaque.
- B. Related Work by Others:
 - 1. Signage Division 10

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and recommended installation instructions and procedures for each item required.
- B. Samples: Submit sample of color and finish of exposed materials and accessories required for commemorative plaque. Architect's review of samples will be for color and texture only.
- C. Shop Drawings: Prior to fabrication, submit shop drawings clearly indicating:
 - 1. Indicating the full size, style and detail, height, stroke, depth and width of lettering employed.
 - 2. Cross section through border and background.
 - 3. Paper masque proof copy or rubbing of complete layout, showing background texture and all special artwork.
 - 4. Mounting method indicating concealed fasteners.
- D. Maintenance Literature: Submit manufacturer's written instructions and procedures for care and maintenance of finished surfaces.

1.4 QUALITY ASSURANCE

- A. Compliance: Comply with ASTM B 179 for aluminum alloys in ingot form for sand casting, permanent mold castings and die casting.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver material in manufacturer's original, unopened, undamaged protective packaging with labels intact and clearly and accurately identified.
- B. Store materials in a clean dry area in accordance with manufacturer's recommendations and requirements protected from damage in location directed by the Architect.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to Compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following, or approved equal:

A.R.K. Ramos
Cornelius Architectural Products.
Gemini Incorporated
Seaboard Graphics, Inc.

2.2 MATERIALS

- A. Aluminum Alloy Ingots: ASTM B 179, Alloy G4A (Trade 214).
 - 1. Finish: Satin aluminum raised areas with dark bronze duranodic background, chemically cleaned and etched with two coats of clear non-yellowing acrylic lacquer on completed plaque.
- B. Fasteners: Concealed, non-corrosive threaded studs, set in cement filled holes.
- C. Setting Cement: Type recommended by the plaque manufacturer.
- D. Bituminous Paint: Type recommended by the plaque manufacturer.

2.3 PLAQUE DESIGN

- A. Size: 18" wide by 24" high, unless otherwise indicated.
- B. Letter Style: Clarendon.
- C. Letter Quantity: As indicated, or if not shown, not to exceed 75% of total square inches of plaque.
- D. Border Style: Single line, beveled edge, with radius corners, unless otherwise indicated.
- E. Background: Leatherette or pebble.

2.4 FABRICATION

- A. Use pure virgin materials. Use of scrap metal remelt is prohibited.
- B. Cast plaque with border, background texture, raised lettering, numbers, characters and artwork in accordance with approved rubbing and shop drawings.
- C. Plaque shall be free of pits, sand holes, warped surfaces, or other defects.
- D. Chemically clean completed casting.
- E. Hand Tool letters, numerals, insignia, artwork and borders to sharp, clean, crisp edges.
- F. Grind and buff raised letters, numerals, insignia, artwork and borders and faces of letters to polish finish.
- G. Dark Bronze Duranodic or oxidized background surface, and two finish coats of clear, non-yellowing, lacquer to entire completed plaque.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Installer shall verify location for installation and that conditions do not exist that would adversely affect installation. Notify the General Contractor in writing of any adverse conditions found and do not proceed with installation until adverse conditions have been corrected.

3.2 INSTALLATION

- A. Install plaque by flush mount method using concealed fasteners in setting cement or epoxy resin as per manufacturer's written recommendations and approved shop drawings.
- B. Install straight, level, plumb, and at proper height. Cooperate with other trades for installation of plaque to finish surfaces.
- C. Apply bituminous coating on concealed contact surfaces of dissimilar metals or cementitious materials, prior to installation wherever there is the possibility of corrosive or electrolytic action.

3.3 CLEANING

- A. Wipe, clean and remove markings or fingerprints, and leave plaque and adjacent surfaces clean.

END OF SECTION 101423.

SECTION 102000 - LOUVERS AND VENTS

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. Fixed, extruded-aluminum louvers.

1.3 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Drainable-Blade Louver: Louver with blades having gutters that collect water and drain it to channels in jambs and mullions, which carry it to bottom of unit and away from opening.

1.4 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide louvers capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act on vertical projection of louvers.
 - 1. Wind Loads: Determine loads based on a uniform pressure of 20 lbf/sq. ft. acting inward or outward.
- B. Thermal Movements: Provide louvers that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- C. Air-Performance, Water-Penetration, Air-Leakage, and Wind-Driven Rain Ratings: Provide louvers complying with performance requirements indicated, as demonstrated by testing

manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.

- D. Airborne Sound Transmission Loss: Provide acoustical louvers complying with airborne sound transmission loss ratings indicated, as demonstrated by testing manufacturer's stock units identical to those specified, except for length and width according to ASTM E 90.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other Work. Show blade profiles, angles, and spacing.
 - 1. For installed louvers and vents indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 2. Wiring Diagrams: Power, signal, and control wiring for motorized adjustable louvers.
- C. Samples for Initial Selection: For units with factory-applied color finishes.
- D. Samples for Verification: For each type of metal finish required.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain louvers and vents through one source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.
- B. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2, "Structural Welding Code--Aluminum."
- C. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.
- D. UL and NEMA Compliance: Provide motors and related components for motor-operated adjustable louvers that are listed and labeled by UL and comply with applicable NEMA standards.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify louver openings by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish opening dimensions and proceed with fabricating louvers without

field measurements. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Louvers:
 - a. Construction Specialties, Inc.; Model 6917 (Basis of Design)
 - b. Airline Products Co.
 - c. Greenheck.
 - d. Industrial Louvers, Inc.
 - e. Or approved equal

2.2 MATERIALS

- A. Aluminum Extrusions: ASTM B 221, alloy 6063-T5 or T-52.
- B. Aluminum Sheet: ASTM B 209, alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer for required finish.
- C. Aluminum Castings: ASTM B 26/B 26M, alloy 319.
- D. Fasteners: Of same basic metal and alloy as fastened metal or 300 Series stainless steel, unless otherwise indicated. Do not use metals that are incompatible with joined materials.
1. Use types and sizes to suit unit installation conditions.
 2. Use Phillips flat-head screws for exposed fasteners, unless otherwise indicated.
- E. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, made from stainless-steel components, with capability to sustain, without failure, a load equal to 4 times the loads imposed, for concrete, or 6 times the load imposed, for masonry, as determined by testing per ASTM E 488, conducted by a qualified independent testing agency.
- F. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.3 FABRICATION, GENERAL

- A. Assemble louvers in factory to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

- B. Vertical Assemblies: Where height of louver units exceeds fabrication and handling limitations, fabricate units to permit field-bolted assembly with close-fitting joints in jambs and mullions, reinforced with splice plates.
 - 1. Continuous Vertical Assemblies: Fabricate units without interrupting blade-spacing pattern.
- C. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.
- D. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
- E. Include supports, anchorages, and accessories required for complete assembly.
- F. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.4 FIXED, EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal, Drainable-Blade Louver:
 - 1. Louver Depth: 6 inches.
 - 2. Frame and Blade Nominal Thickness: As required to comply with structural performance requirements, but not less than 0.080 inch for blades and 0.080 inch for frames.
 - 3. Performance Requirements:
 - a. Free Area: Not less than 40% for 48-inch wide by 48-inch high louver.
 - b. Point of Beginning Water Penetration: Not less than 1250 fpm.
 - c. Air Performance:
 - 1) Intake: Not more than 0.24-inch wg static pressure drop at 1250-fpm free-area velocity.
 - 2) Exhaust: Not more than 0.5-inch wg static pressure drop at 1519-fpm free-area velocity.
 - 4. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.5 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 - 1. Screen Location for Fixed Louvers: Interior face.
 - 2. Screening Type: Bird screening.

- B. Secure screens to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches from each corner and at 12 inches o.c.
- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
 - 1. Metal: Same kind and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.
 - 2. Finish: Same finish as louver frames to which louver screens are attached.
 - 3. Type: Rewirable frames with a driven spline or insert for securing screen mesh.
- D. Louver Screening for Aluminum Louvers:
 - 1. Bird Screening: Aluminum, 1/2-inch- square mesh, 0.063-inch wire.

2.6 BLANK-OFF PANELS

- A. Uninsulated, Blank-off Panels:
 - 1. Aluminum sheet for aluminum louvers, not less than 0.050-inch nominal thickness, unless otherwise indicated.

2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish louvers after assembly.

2.8 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
- B. High-Performance Organic-Coating Finish: AA-C12C42R1x (Chemical Finish: cleaned with inhibited chemicals; Chemical Finish: acid-chromate-fluoride-phosphate conversion coating; Organic Coating: as specified below). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Fluoropolymer Two-Coat Coating System: Manufacturer's standard two-coat, thermocured system consisting of specially formulated inhibitive primer and fluoropolymer color topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 2605.
 - 2. Color: As selected by Architect from full range of industry colors and color densities, including metallics.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louvers and vents level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Repair finishes damaged by cutting, welding, soldering, and grinding. Restore finishes so no evidence remains of corrective work. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.
- F. Protect galvanized and nonferrous-metal surfaces from corrosion or galvanic action by applying a heavy coating of bituminous paint on surfaces that will be in contact with concrete, masonry, or dissimilar metals.
- G. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Division 7 Section "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Test operation of adjustable louvers and adjust as needed to produce fully functioning units that comply with requirements.

- B. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate until final cleaning.
- C. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- D. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
 - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 102000

SECTION 102113 - TOILET PARTITIONS

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 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals to complete toilet partition work, as required, including but not limited to the following:
 - 1. Toilet partitions; floor mounted, overhead braced.
 - 2. Urinal Screens; wall mounted
- B. Related Work Specified Elsewhere:
 - 1. Toilet Accessories: Division 10.
 - 2. Plumbing Fixtures: Division 22.

1.3 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work. However, allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay work.
- B. Coordination: Furnish inserts and anchorage's which must be built into other work for installation of toilet partitions, privacy screens and related work; coordinate delivery with other work to avoid delay.
- C. Fire Hazard Classification:
 - 1. U.L. tested, listed and labeled or certified Class A, with a smoke developed rating of 450 or less when tested in accordance with ASTM E-84.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of toilet partition assemblies, urinal screens not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.
- C. Samples: Submit full range of color samples for each type of toilet partition and privacy screen required.

1.5 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's written warranty covering replacement of all plastic components against breakage, corrosion and delamination for a period of 15 years at no cost to the owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide plastic compartment partitions and urinal screens produced by the following:
 - 1. Scranton Products; Hiny Hiders. (Basis of Design)
 - 2. Bradley Corp.
 - 3. ASI Global Partitions.

2.2 TOILET PARTITIONS

- A. Type: High Density Polyethylene Plastic (HDPE), floor-mounted, overhead braced toilet partition panels and pilasters, angle supports, all non-corrosive and selected from manufacturer's full range of available colors and patterns. All work shall comply with ICC/ANSI A117.1 requirements and the Americans with Disabilities Act at locations indicated for handicap accessibility.
- B. General: Provide materials of single component construction of solid HDPE in colors that extend from the surface throughout the entire thickness of the panels, doors and pilasters.

C. Characteristics:

1. Dual component compression molded HDPE of solid virgin resin materials in colors that extend throughout the surface: the panels, doors, and pilasters shall have recycled material (HDPE) as the core material as specified.
2. Doors, panels, pilasters shall be 1" thick and all edges machined to a radius of .250" and all exposed surfaces to be free of saw marks.

D. Fabrication:

1. Dividing panels shall be 55" high and mounted at 14" above finished floor.
2. Doors shall be 55" high and mounted at 14" above finished floor.
3. Pilasters shall be 82" high mounted within an 18 ga. stainless steel shoe with one-way theft-proof stainless steel sex bolts.
4. Finish and color of doors, panels and pilasters to be selected from the full HDPE color range.
5. Aluminum edging strips to be fastened to the bottom edge of all doors and panels using vandal proof fasteners.

E. Door Hardware shall be as follows:

1. Hinges shall be fabricated from heavy duty extruded aluminum 6463-T5 alloy with bright dipped anodized finish with 8" wrap around flanges, surface mounted and through bolted to doors and pilasters with stainless steel, torx head sex bolts. Hinges shall be adjustable nylon cams.
2. Each door shall be furnished with (1) coat hook/bumper of heavy chrome plated Zamak with rubber bumper mounted at 48" above finish floor. (Handicapped doors also include: (1) door pull, mounted at 42" above finish floor and (1) wall stop).
3. Door strike and keeper shall be fabricated from heavy aluminum extrusion (6463-T5 Alloy) with clear anodized finish with wrap around flange surface mounted and thru-bolted to pilaster with one-way sex bolts at 42" above finish floor. Size of strike shall be 6" in length.
4. Door latch housing shall be fabricated from heavy aluminum extrusion (6463-T5-Alloy) with clear anodized finish, surface mounted and thru-bolted to door with one-way sex bolts. Slide bolt and button shall be heavy aluminum with black anodized finish.

F. Door Dimensions: Unless otherwise indicated, furnish 24" wide in swinging doors for ordinary toilet stalls and 34" wide (clear opening) out swinging doors at stalls equipped for use by disabled persons and 34" wide (clear opening) swinging door at privacy screen.

G. Solid color pilaster shoes shall be anchored to finish floor with No. 5 Plastic Anchors and No. 14 Stainless Steel Phillips head screws.

H. Full length continuous stall wall brackets shall be aluminum (6463-T5 alloy) bright dip anodized fabricated from extrusions weighing not less than 1.685 lbs per linear foot. Wall brackets shall be thru-bolted to panels and pilasters with one-way sex bolts. Attachment of brackets to adjacent wall construction shall be accomplished with No. 5 plastic anchors and No. 14 x 1 1/4" stainless steel Phillips head screws.

- I. Headrail for toilet stalls shall be heavy aluminum extrusion (6463-T5 Alloy) with clear anodized finish in anti-grip configuration. Headrail shall be fastened to tops of pilasters and headrail brackets by thru-bolting with one-way stainless steel sex bolts (no cadium plated sex bolts allowed).
- J. Headrail bracket shall be of 16 gauge stainless steel.
- K. Panels, doors and pilasters shall be fabricated from HDPE containing a minimum of 30% recycled material manufactured under high pressure forming a single component section which is waterproof, non-absorbent and has a self-lubricating surface that resists marking with pens, pencils or other writing utensils. All panels, doors and pilasters to arrive at job site with special protective plastic covering.

2.3 URINAL SCREENS

- A. Type: High Density Polyethylene Plastic (HDPE), wall-mounted, urinal screen, angle supports, all non-corrosive and selected from manufacturer's full range of available colors and patterns. All work shall comply with ICC/ANSI A117.1 requirements and the Americans with Disabilities Act at locations indicated for handicap accessibility.
- B. General: Provide materials of single component construction of solid HDPE in colors that extend from the surface throughout the entire thickness of the panels, doors and pilasters.
- C. Characteristics:
 - 1. Dual component compression molded HDPE of solid virgin resin materials in colors that extend throughout the surface: the panels shall have recycled material (HDPE) as the core material as specified.
 - 2. Panels shall be 1" thick and all edges machined to a radius of .250" and all exposed surfaces to be free of saw marks.
- D. Dimensions: Screens shall be 24" wide x 48" Tall x 1" Thick. The bottom of the screen shall be mounted at 18" above finish floor.
- E. Full length continuous stall wall brackets shall be aluminum (6463-T5 alloy) bright dip anodized fabricated from extrusions weighing not less than 1.685 lbs per linear foot. Wall brackets shall be thru-bolted to panels with one-way sex bolts. Attachment of brackets to adjacent wall construction shall be accomplished with No. 5 plastic anchors and No. 14 x 1 1/4" stainless steel Phillips head screws.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Installer must examine areas and conditions under which toilet partitions and related items are to be installed, including supporting anchors and supports installed by others, and must notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.

3.2 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with wall brackets from top to bottom of panel. Locate wall brackets to pilasters from top to bottom plumb with wall. Secure panels in position with manufacturer's recommended anchoring devices.
- B. Overhead-Braced Partitions: Secure pilasters to floor, and level, plumb, and tighten installation with devices furnished. Secure overhead brace to each pilaster with not less than two fasteners. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position.
- C. Wall-Hung Screens: Attach with heavy-duty concealed anchoring devices, as recommended by manufacturer to suit supporting wall structure. Set units to provide support and to resist lateral impact. Secure each screen with continuous wall brackets.
- D. No evidence of drilling, cutting, or patching shall be visible in the finished work.
- E. Clearance of vertical edges of doors shall be uniform top to bottom and shall not exceed 3/16".

3.3 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges in in-swinging doors to hold open approximately 30° from closed position when unlatched. Set hinges on out swinging doors (and entrance swing doors) to return to fully closed position.
- B. Finished surfaces shall be cleaned after installation and left free from imperfections.

END OF SECTION 102113

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 DESCRIPTION OF WORK

- A. Extent of each type of toilet accessory as shown on drawings and scheduled.
- B. All operating devices to comply with ADA and to ICC/ANSI A117.1 requirements for mounting heights and operating force.
- C. Owner-Furnished Material:
 - 1. Refer to drawings for toilet accessories schedule for list products being furnished by Owner.
- D. Related Sections:

1.3 ACTION 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.
 - 5. Manufacturer's warranty.
- 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.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain products from single source from single manufacturer.
- B. Manufacturer: Provide each type of toilet accessory required as scheduled on drawings, or approved equal.

1.7 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** minimum nominal thickness unless otherwise indicated.
- B. Brass: ASTM B 19, flat products; ASTM B 16, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.
- C. Steel Sheet: ASTM A 1008, Designation CS (cold rolled, commercial steel), **0.036-inch** minimum nominal thickness.
- D. Galvanized-Steel Sheet: ASTM A 653, with **G60** hot-dip zinc coating.
- E. Galvanized-Steel Mounting Devices: ASTM A 153, 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 ACCESSORY SCHEDULE

- A. A 'TOILET ACCESSORY SCHEDULE' is included within the Architectural Drawings as an extension of this Specification Section.

2.3 UNDER-LAVATORY GUARDS

- A. Under-lavatory Guards:
 - 1. Basis-of-Design Product: LavGuard by Truebro, Inc., or approved equal.
 - 2. 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. Provide at all exposed lavatory piping installed, whether shown on drawings or not.
 - 3. Material and Finish: Antimicrobial, molded plastic, white.

2.4 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 (6) 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, 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 PROTECTION 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 Portable hand-carried fire extinguishers.
- B. Related Requirements:
 - 1. Section 104416 "Fire Extinguishers."

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed, semi-recessed, or surface-mounting method and relationships of box and trim to surrounding construction.
- B. Shop Drawings: For fire-protection cabinets. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Verification: For each type of exposed finish required, prepared on Samples 6 by 6 inches square.
- D. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semi-recessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function. Use same designations where indicated on Drawings.

1.4 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.5 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.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E 814 for fire-resistance rating of walls where they are installed.
- 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.

2.2 FIRE-PROTECTION CABINET (FEC)

- A. Cabinet Type: Suitable for portable, hand-carried fire extinguishers.
 - 1. Available Manufacturers:
 - a. JL Industries.
 - b. Larsen's Manufacturing Company
 - c. Potter Roemer
- B. Cabinet Style: Larsen's Manufacturing Company Model 2409 6R, JL Industries Model 1027, Potter Roemer's Model 7042 or approved equal for semi-recessed 2-1/2" to 3" rolled trim and vertical duo glass with clear tempered safety glass.
- C. Cabinet Construction: Nonrated.
- D. Cabinet Material: Cold-rolled steel sheet.
 - 1. Shelf: Same metal and finish as cabinet.
- E. Semi-recessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
 - 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
- F. Cabinet Trim Material: Same material and finish as door.
- G. Door Material: Steel sheet.
- H. Door Style: Vertical duo panel with frame.
- I. Door Glazing: Tempered float glass (clear).

- J. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
1. Provide recessed door pull and friction latch.
 2. Provide continuous hinge, of same material and finish as trim, or concealed hinges permitting door to open 180 degrees.

K. Accessories:

1. Mounting Bracket: Manufacturer's standard steel bracket, 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. Lettered Door Handle: One-piece, cast-iron door handle with the word "FIRE" embossed into face.
3. Door Lock: Cam lock that allows door to be opened during emergency by pulling sharply on door handle.
4. 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 door.
 - 2) Application Process: Die-cut.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
5. Alarm: Manufacturer's standard alarm that actuates when fire-protection cabinet door is opened and that is powered by batteries.

L. Materials:

1. Cold-Rolled Steel: ASTM A 1008, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel or powder coat.
 - b. Color: As selected by Architect from full range of industry colors and color densities.
2. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

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.
 4. Install door locks at factory.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 2. Fabricate door frames of one-piece construction with edges flanged.
 3. 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 AMP 500, "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.

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 PREPARATION

- A. Prepare recesses for recessed and semi-recessed 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: 48 inches above finished floor to top of cabinet, rough opening or masonry opening.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semi-recessed fire-protection cabinets.
 - 2. Provide inside latch and lock for break-glass panels.
 - 3. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
- C. Identification: Apply decals or specified 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 104416 - FIRE EXTINGUISHERS

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. Portable, hand-carried fire extinguishers.
 - 2. Mounting brackets for fire extinguishers.
- B. Related Requirements:
 - 1. Section 104413 "Fire Protection Cabinets."

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function. Use same designations where indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate, install and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers" and ICC/ANSI A117.1.
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
 - 1. Provide fire extinguishers approved, listed, and labeled by FM Global.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
 - 1. Available Manufacturers:
 - a. JL Industries; Cosmic 10E (Basis of Design)
 - b. Larsen's Manufacturing Company
 - c. Potter Roemer
 - 2. Valves: Manufacturer's standard.
 - 3. Handles and Levers: Manufacturer's standard.

4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

- B. Multipurpose Dry-Chemical Type in Steel Container: UL-rated, 4-A:80-BC, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.

2.3 MOUNTING BRACKETS (FE)

- A. Mounting Brackets: Manufacturer's standard steel bracket, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.
 - a. Orientation: Vertical.
 - b. Equal to JL Industries Model #LDHRFE, 7-1/8"x2-1/4" decal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
 1. Mounting Brackets: 44 inches above finished floor to handle assembly, or as indicated on drawings.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Welded lockers.

1.3 ACTION SUBMITTALS

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

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker

- B. Shop Drawings: For metal lockers.

- 1. Include plans, elevations, sections, and attachment details.
- 2. Show locker trim and accessories.
- 3. Include locker identification system and numbering sequence.

- C. Samples: For each color specified, in manufacturer's standard size.

- D. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. The following metal locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five units:
 - a. Locks.
 - b. Blank identification plates.
 - c. Hooks.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.9 COORDINATION

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

1.10 WARRANTY

- A. Special Warranty: 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 Welded Metal Lockers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain metal lockers and accessories from single source from single locker manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: For lockers indicated to be accessible, comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.3 WELDED CORRIDOR LOCKERS

- 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, or approved equal:
1. Penco Products; All-Welded Lockers (Basis of Design)
 2. ASI Storage Solutions
 3. Hadrian Inc.
- B. Doors: One piece; fabricated from 14 gauge steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.
1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
 2. Door Style: Vented panel as follows:
 - a. Louvered Vents: No fewer than three louver openings at top and bottom for double-tier lockers.
- C. Body: Assembled by welding body components together. Fabricate from unperforated steel sheet with thicknesses as follows:
1. Tops, Bottoms, and Sides: 16 gauge thickness.
 2. Backs: 16 gauge thickness.
 3. Shelves: 16 gauge thickness, with double bend at front and single bend at sides and back.
- D. Frames: Channel formed; fabricated from 16 gauge steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.
1. Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.

- E. Hinges: Welded to door and attached to door frame with no fewer than two factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
 - 1. Continuous Hinges: Manufacturer's standard, steel, full height.
- F. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond door face; pry and vandal resistant.
 - 1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks or padlocks; positive automatic latching and prelocking.
 - a. Latch Hooks: Equip doors 48 inches and higher with three latch hooks and doors less than 48 inches high with two latch hooks; fabricated from 0.120-inch nominal-thickness steel sheet; welded to full-height door strikes; with resilient silencer on each latch hook.
 - b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact, and incorporating a prelocking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.
- G. Locks: Combination padlocks
- H. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and letters at least 3/8 inch high.
- I. Hooks: Manufacturer's standard ball-pointed, aluminum or steel; zinc plated.
- J. Continuous Channel Base: Fabricated from 16 gauge steel sheet.
 - 1. Height: 4 inches.
- K. Continuous Sloping Tops: 16 gauge steel, slope rise equal to 1/3 of the locker depth (18.5 degrees), plus a 1 inch vertical rise at front.
 - 1. Supplied in 72 inch lengths only.
 - 2. Slip joints without visible fasteners at splice locations.
 - 3. Provide necessary end closures.
 - 4. Finish to match lockers.
- L. Recess Trim: Fabricated from 18 gauge steel sheet.
- M. Filler Panels: Fabricated from 20 gauge steel sheet formed in an angle shape, with 20 gauge slip joint angles formed in an angle shape with double bend on one leg forming a pocket to provide adjustable mating with angle filler. Attachment to be by concealed fasteners only; Finished to match lockers.
- N. Finished End Panels: Minimum 16 gauge steel formed to match locker depth and height, 1 inch edge dimension; finish to match lockers and install with concealed fasteners.

- O. Interior Equipment:
1. ADA-Compliant Lockers:
 - a. Locker Compartment Bottom: Minimum of 15 inches off the floor, or an extra shelf placed 15 inches off the floor for unobstructed forward and side reach.
 - b. Handicapped symbol attached to door.
 - c. Hooks as specified for other lockers.
 2. All Welded Lockers:
 - a. Openings 20 inches or Higher and 12 or 15 inches Wide: Two single-prong wall hooks and one double-prong ceiling hook.
 - b. Over 15 inches Wide: Four single-prong wall hooks and one double-prong ceiling hook.
- P. Materials:
1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B, suitable for exposed applications.
 2. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with A60 zinc-iron, alloy (galvannealed) coating designation.
- Q. Finish: Baked enamel or powder coat.
1. Color: As selected by Architect from manufacturer's full range.

2.4 FABRICATION

- A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.
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 complete installation.
- B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.
- C. Equipment: Provide each locker with an identification plate and the following equipment:
1. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.
- D. 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 smooth and flush.
- E. Accessible Lockers: Fabricate as follows:

1. Locate bottom shelf no lower than 15 inches above the floor.
 2. Where hooks or additional shelves are provided, locate no higher than 48 inches above the floor.
- F. Continuous Zee Base: Fabricated in lengths as long as practical to enclose base and base ends; finished to match lockers.
- G. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.
1. Sloping-top corner fillers, mitered.
- H. Individual Sloping Tops: Fabricated in width to fit one locker frame in lieu of flat locker tops; with integral back; finished to match lockers. Provide wedge-shaped divider panels between lockers.
- I. Recess Trim: Fabricated with minimum 3-inch face width and in lengths as long as practical; finished to match lockers.
- J. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.
- K. Finished End Panels: Fabricated to conceal unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of nonrecessed metal lockers; finished to match lockers.
- L. Center Dividers: Full-depth, vertical partitions between bottom and shelf; finished to match lockers.

2.5 ACCESSORIES

- A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.
- B. Anchors: Material, type, and size required for secure anchorage to each substrate.
1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls for corrosion resistance.
 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and floors or support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install lockers 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 o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top and bottom of lockers and to floor.
 - 3. Anchor back-to-back metal lockers to floor.
- B. Knocked-Down Lockers: Assemble with manufacturer's standard fasteners, with no exposed fasteners on door faces or face frames.
- C. Welded Lockers: Connect groups together with manufacturer's standard fasteners, with no exposed fasteners on face frames.
- D. Equipment:
 - 1. Attach hooks with at least two fasteners.
 - 2. 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.
 - b. Attach plates to upper shelf of each open-front metal locker, centered, with a least two aluminum rivets.
- E. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach recess trim to recessed metal lockers with concealed clips.
 - 2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
 - 3. Attach sloping-top units to metal lockers, with closures at exposed ends.
 - 4. Attach boxed end panels using concealed fasteners to conceal exposed ends of nonrecessed metal lockers.
 - 5. Attach finished end panels using fasteners only at perimeter to conceal exposed ends of nonrecessed metal lockers.

3.3 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding.

3.4 PROTECTION

- A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. 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 locker manufacturer.

END OF SECTION 105113

SECTION 107316 – PRE-ENGINEERED FUEL ISLAND CANOPIES (ALTERNATE BID)

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 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals required to complete entrance canopy work indicated, including, but not limited to the following:

1. Pre-Engineered fuel island canopies.

- B. Related Work Specified Elsewhere:

- | | |
|---|-------------|
| 1. Cast-In-Place Concrete Islands and Curbing | Division 03 |
| 2. Structural Steel | Division 05 |
| 3. Miscellaneous Metals: | Division 05 |
| 4. Joint Sealants | Division 07 |
| 5. Painting | Division 09 |
| 6. Plumbing services and connections | Division 22 |
| 7. Electrical Wiring and connections | Division 26 |

1.3 QUALITY ASSURANCE

- A. Comply with the following codes and standards, unless more stringent requirements are indicated elsewhere:

1. IBC International Building Code 2015, New Jersey Edition.
2. ASTM A 500 “Specification for Structural Tubing for Construction of Bridges and Buildings”.
3. ASTM A 653 “Specification for Sheet Steel, Zinc Coated by the Hot-Dip Process, Structural Quality”.
4. ASTM A 924 “General Requirements for Steel Sheet, Metallic Coated by the Hot-Dip Process”.
5. AISI “Specification for the Design of Cold-Formed Steel Structural Members”.
6. American Institute of Steel Construction, Inc. (AISC): AISC 360 - Specification for Structural Steel Buildings

7. American Society of Civil Engineers (ASCE): ASCE 7 - Minimum Design Loads for Buildings and Other Structures
 8. American Welding Society (AWS): AWS D1.1 - Structural Welding Code - Steel
 9. ASTM International (ASTM):
 - a. ASTM A 36/A 36M - Standard Specification for Structural Steel.
 10. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM MFM - Metal Finishes Manual.
 11. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (NEC)
- B. Structural Performance of Canopies: Engineer, fabricate, and install canopies to withstand the following structural loads without exceeding the allowable design working stress of the materials for entrance canopies, anchors, hanger rods and connections. Apply each load to produce the maximum stress in each of the respective components comprising entrance canopies and components.
- C. Design Criteria: Design entrance canopies and components which, when installed, comply with the following minimum structural performance requirements:
1. Structural Performance: Provide pre-engineered canopies capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated for the specific location where Canopy will be installed:
 - a. Uniform pressure as indicated on drawings - minimum design wind load per ASCE 7, CH. 6.
 2. Thermal Movements: Provide pre-engineered canopies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - a. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.
- D. Manufacturer shall be a company specializing in prefabricated steel canopies and be able to demonstrate at least ten (10) years of successful experience in engineering and manufacturing of prefabricated canopies and who maintains a fully qualified technical representative who will be available for technical assistance, including field assistance at the project site within 24 hours notice.
- E. Engineer Qualifications: Manufacturer shall employ a Professional Engineer licensed in the State of New Jersey to supervise the design and certify that the canopies to be provided conform with or exceed the roof design criteria indicated on structural drawings and as required by all applicable codes.

- F. Installer shall have a minimum of five (5) years experience installing pre-engineered steel canopies. Installation shall be in accordance with approved manufacturer's shop drawings bearing the engineer's signature and seal.
- G. Qualifications for welding work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."
- H. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.1 "Structural Welding Code - Steel" and (AWS) D1.3 "Structural Welding Code – Sheet Steel."
- I. Product Options:
 - 1. Information on the Drawings and in the Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including preconstruction testing, field testing, and in-service performance. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.
 - 2. The Drawings indicate size, profiles, and dimensional requirements of pre-engineered metal canopies and are based on the specific system indicated. Do not modify intended aesthetic effects, as judged solely by the Architect, except with the Architect's approval. If modifications are proposed, submit comprehensive explanatory data to the Architect for review.
- J. Coordination:
 - 1. The Contractor shall conduct site meetings to verify project requirements, substrate conditions, utility connections, manufacturer's drawings and installation instructions. Comply with Division 1 section on project meetings.
 - 2. The contractor shall prepare for and pour the concrete footers for the pre-engineered metal canopies. Manufacturer shall furnish recommended footing drawings as per IBC Section 1807.3 and prints and rebar details for concrete footings, as well as provide anchor bolts to be embedded in concrete footer. Such items shall be delivered to project site in time for installation.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's catalogued literature, technical data, specifications and installation instructions for pre-formed canopy units and component parts.
- B. Shop Drawings: Submit detailed drawings showing dimensioned layout, locations elevations, sections and large-scale details showing sizes and gauges of materials, shop coatings, details of fastening and anchorage to structural elements, relationships and flashings to adjoining construction for prefabricated canopy system, complete with all hardware, fasteners, miscellaneous reinforcement to existing construction, special conditions and connection details,

reinforcing and accessories, etc. Show reinforcement, anchorages, components, finishes and installation procedures. Shop drawings shall be signed and sealed by a qualified professional engineer licensed in the State of New Jersey who is responsible for the preparation of shop drawings.

- C. Structural Calculations: Submit structural calculations verifying the assembly's ability to meet or exceed design and code requirements including, structural analysis depicting stress and deflection requirements for framing application, selection of framing components and accessories, verification of attachments to the structure and/or adjacent framing components signed and sealed by a qualified professional engineer licensed in the State of New Jersey who is responsible for the preparation of shop drawings.
- D. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Samples: Submit two 2" x 3" color samples for selection of roof deck, trim and aluminum fascia for selection and approval by the Architect.
- F. Warranty Data: Submit warranty documents specified herein.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify field measurements prior to preparation of shop drawings and prior to fabrication to ensure proper fitting. Coordinate fabrication with construction progress to avoid delays. Allow for trimming and fitting when taking field measurements before fabrication may delay the work due to lead times and coordinate with others so that openings are size for units.
- B. Store materials on site in a manner so they will not be damaged and in accordance with manufacturer's written requirements. Place materials on pallets so water will drain and not accumulate.
- C. Pre-assemble in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- D. Be responsible for interface coordination between work provided and related work of other trades and contracts.
- E. Control of Corrosion: Prevent electrolytic action and other forms of corrosion by isolating dissimilar metals, masonry and other materials from direct contact with incompatible materials.
- F. Thermal Movements: Allow for thermal movement resulting from changes in ambient temperature in the design, fabrication, and installation of canopies to prevent buckling, opening up of joints, overstressing components, connections and other detrimental effects resulting from

extreme change in surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

- G. Coordinate installation of anchorage for canopies. Furnish setting drawings, templates, and directions for installing anchorage, including sleeves, masonry inserts, anchor bolts, backing plates and items with integral anchors, that are to be embedded in concrete or masonry or welded to existing steel construction. Deliver such items to Project site in time for installation.

1.6 WARRANTY

- A. Unit to be warranted against defects in materials and workmanship for a period of two years from date of substantial completion.
- B. Special Warranty on Finishes
 - 1. Furnish owner with 20-year warrantee against peeling, flaking, chipping of deck and aluminum fascia panels.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, Manufacturer's offering products that may be incorporated in the work include, but are not limited to, the following:
 - 1. Austin Mohawk and Company Inc.
 - 2. or approved equal.

2.2 MATERIALS

- A. Structural Steel:
 - 1. Material and work shall conform to the latest AISC 360.
 - 2. Structural steel shall be painted with a rust inhibitive (red oxide) primer (std).
 - 3. Structural steel shall be hot-dip-galvanized.
- B. Sheet Metal:
 - 1. Decking: 3 inch (76 mm) by 16 inch (406 mm) by 20 gage smooth white, ASTM A 653/A 653M GR40, Fy = 40 ksi, galvanized steel with baked enamel finish.
 - 2. Center and Tapered Gutter: 24 gage hot-dip galvanized steel baked enamel finish.
 - 3. Perimeter Gutter: 20 gage hot-dip galvanized steel baked enamel finish.
 - 4. Internal Downspout: 3 inch (76 mm) diameter PVC.
 - 5. External Downspouts: 3 inch (76 mm) by 4 inch (102 mm) by 24 gage hot-dip galvanized steel with baked enamel finish.

2.3 PRE-ENGINEERED FUEL ISLAND CANOPY

- A. General: Provide a complete, integrated set of manufacturer's standard design canopy components using a flexible frame with fixed base wherein the steel framing system uses stacked I Beam construction transferring the moment to the concrete footing without requiring a rigid connection between steel frame members. The beam arrangements allow for a canteliever design which can bring the columns from the perimeter of the structure to the inner protected zones between the drive lanes. These mutually dependent components form a pre-engineered canopy, ready for construction on project site. Said pre-engineered metal canopy will be designed to meet all site structural wind, snow and seismic requirements.
- B. Canopy Fascia:
 - 1. Aluminum Composite Panel (ACM): Available with a fluorocarbon paint finish, masked on one side.
- C. Canopy Finishes: Comply with NAAMM MFM for recommendations for applying and designating finishes.
 - 1. 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.
- D. Fabrication: Fabricate pre-engineered canopies completely in factory.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work is to be installed, and notify the Contractor in writing, with a copy to the Owner and the Architect, of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.
 - 1. Examine supporting foundations for compliance with manufacturer's requirements, including installation tolerances and other conditions affecting performance of supporting members.
 - 2. Verify the rough-in of required mechanical and electrical services prior to placement of the structure.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. A work area shall be required extending 10 feet (3 m) beyond buildings and canopies in all directions to the extent practical. The work area shall be flat, comprised of hard-packed soil or gravel, asphalt, or concrete, and free of open excavation, debris, construction equipment and construction workers. An additional flat work space a minimum of 25 feet (7.6 m) by 25 feet (7.6 m) or as practical shall be provided adjacent to the canopy and/or building for unloading and storing materials. Site to meet OSHA guidelines to allow lift equipment and scaffolding to maneuver the work area.
- B. Set pre-engineered metal canopy plumb and aligned. Level base plates true to plane with full bearing on concrete bases.
- C. Fasten pre-engineered metal canopy columns to anchor bolts and/or foundation bolts.
- D. Provide anchor bolts as follows:
 - 1. Anchor bolts or foundation bolts will be set by the Owner in accordance with approved site specific drawings. They must not vary from the size and dimensions shown on the erection drawings. Use of a plywood template is recommended. Remove template prior to column erection.
 - 2. Anchor bolts shall conform to ASTM A 307, and shall have a minimum of 7 inches (178 mm) of exposed thread and 23 inch (584 mm) minimum embedment with 1-1/4 inch (32 mm) nut and washer as embedment end.
- E. Provide bolted connections as follows:
 - 1. Structural erection bolts shall conform to ASTM A 325/A 325M.
 - 2. Bolts shall be tightened to snug tight per latest RCSC specifications (unless otherwise specified).
- F. Provide screws as follows:
 - 1. Fastening shall be performed per installation prints provided by the manufacturer.
 - 2. Self-drilling and self-tapping screws shall have a sufficient cut point and a 1/2 inch (13 mm) outside diameter dished metal-backed neoprene washer to be used in water sealing applications.
- G. Provide pedestrian protection and warnings during construction which comply with local, Federal, and OSHA codes.

- H. Prior to steel erection of any kind, the Contractor shall grade, backfill and otherwise prepare the job site to allow for rolling scaffold and ensure safe working conditions including the removal or relocation of overhead power lines.
- I. Any grade or elevation situations which deviate from the approved manufacturer's plans shall be conveyed to the manufacturer prior to fabrication.
- J. All anchor bolts and/or leveling plates shall be set within 1/4 inch (6 mm) tolerance on layout and grade level.
- K. Temporary electrical power shall be provided.
- L. Connect electrical power service to power distribution system according to requirements specified in Division 26 - Electrical.
- M. Dumpster for trash and debris shall be provided by the Contractor.

3.4 ADJUSTING AND CLEANING

- A. At completion of installation, clean surfaces in accordance with manufacturer's written instructions. Clean site of debris associated with this work and remove excess material and debris from site in approved manner. Protect units from damage until acceptance by Owner.

3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION 107316

SECTION 107317 – PRE-ENGINEERED ALUMINUM CANOPIES

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 DESCRIPTION OF WORK

- A. Provide all labor, materials, accessories, equipment and incidentals required to complete entrance canopy work indicated, including, but not limited to the following:

1. Pre-engineered aluminum canopies with integral concealed fascia drains.

- B. Related Work Specified Elsewhere:

- | | |
|--------------------------------------|-------------|
| 1. Cast in Place Concrete | Division 03 |
| 2. Structural Steel | Division 05 |
| 3. Miscellaneous Metals: | Division 05 |
| 4. Sheet Metal Flashing and Trim | Division 07 |
| 5. Painting | Division 09 |
| 6. Plumbing services and connections | Division 22 |
| 7. Electrical Wiring and connections | Division 26 |

1.3 QUALITY ASSURANCE

- A. Comply with the following codes and standards, unless more stringent requirements are indicated elsewhere:

1. IBC International Building Code 2015, New Jersey Edition.
2. Aluminum: AA30 “Specifications of Aluminum Structures”.
3. National Association of Architectural Metal Manufacturers (NAAMM): NAAMM MFM - Metal Finishes Manual.
4. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (NEC)

- B. Structural Performance of Canopies: Engineer, fabricate, and install canopies to withstand the following structural loads without exceeding the allowable design working stress of the materials for entrance canopies, anchors, hanger rods and connections. Apply each load to

produce the maximum stress in each of the respective components comprising entrance canopies and components.

- C. Design Criteria: Design entrance canopies and components which, when installed, comply with the following minimum structural performance requirements:
1. Structural Performance: Provide pre-engineered canopies capable of withstanding the effects of gravity and wind loads and the following loads and stresses within limits and under conditions indicated for the specific location where Canopy will be installed:
 2. Thermal Movements: Provide pre-engineered canopies that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - a. Temperature Change (Range): 120 degrees F, ambient; 180 degrees F, material surfaces.
- D. Manufacturer shall be a company specializing in prefabricated steel canopies and be able to demonstrate at least ten (10) years of successful experience in engineering and manufacturing of prefabricated canopies and who maintains a fully qualified technical representative who will be available for technical assistance, including field assistance at the project site within 24 hours notice.
- E. Engineer Qualifications: Manufacturer shall employ a Professional Engineer licensed in the State of New Jersey to supervise the design and certify that the canopies to be provided conform with or exceed the roof design criteria indicated on structural drawings and as required by all applicable codes.
- F. Installer shall have a minimum of five (5) years experience installing pre-engineered steel canopies. Installation shall be in accordance with approved manufacturer's shop drawings bearing the engineer's signature and seal.
- G. Qualifications for welding work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure."
- H. Welding: Use qualified welders and comply with American Welding Society (AWS) D1.1 "Structural Welding Code - Steel" and (AWS) D1.3 "Structural Welding Code – Sheet Steel."

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's catalogued literature, technical data, specifications and installation instructions for pre-formed canopy units and component parts.
- B. Shop Drawings: Submit detailed drawings showing dimensioned layout, locations elevations, sections and large-scale details showing sizes and gauges of materials, shop coatings, details of fastening and anchorage to structural elements, relationships and flashings to adjoining construction for prefabricated canopy system, complete with all hardware, fasteners,

miscellaneous reinforcement to existing construction, special conditions and connection details, reinforcing and accessories, etc. Show reinforcement, anchorages, components, finishes and installation procedures. Shop drawings shall be signed and sealed by a qualified professional engineer licensed in the State of New Jersey who is responsible for the preparation of shop drawings.

- C. Structural Calculations: Submit structural calculations verifying the assembly's ability to meet or exceed design and code requirements including, structural analysis depicting stress and deflection requirements for framing application, selection of framing components and accessories, verification of attachments to the structure and/or adjacent framing components signed and sealed by a qualified professional engineer licensed in the State of New Jersey who is responsible for the preparation of shop drawings.
- D. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Samples: Submit two 2" x 3" color samples for selection of roof deck and trim for selection and approval by the Architect.

1.5 PROJECT CONDITIONS

- A. Field Measurements: Verify field measurements prior to preparation of shop drawings and prior to fabrication to ensure proper fitting. Coordinate fabrication with construction progress to avoid delays. Allow for trimming and fitting when taking field measurements before fabrication may delay the work due to lead times and coordinate with others so that openings are size for units.
- B. Store materials on site in a manner so they will not be damaged and in accordance with manufacturer's written requirements. Place materials on pallets so water will drain and not accumulate.
- C. Pre-assemble in the shop to the greatest extent possible, so as to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.
- D. Be responsible for interface coordination between work provided and related work of other trades and contracts.
- E. Control of Corrosion: Prevent electrolytic action and other forms of corrosion by isolating dissimilar metals, masonry and other materials from direct contact with incompatible materials.
- F. Thermal Movements: Allow for thermal movement resulting from changes in ambient temperature in the design, fabrication, and installation of canopies to prevent buckling, opening up of joints, overstressing components, connections and other detrimental effects resulting from extreme change in surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

- G. Coordinate installation of anchorage for canopies. Furnish setting drawings, templates, and directions for installing anchorage, including sleeves, masonry inserts, anchor bolts, backing plates and items with integral anchors that are to be embedded in concrete or masonry or welded to existing steel construction. Deliver such items to Project site in time for installation.

1.6 WARRANTY

- A. Unit to be warranted against defects in materials and workmanship for a period of two years from date of substantial completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements, Manufacturer's offering products that may be incorporated in the work include, but are not limited to, the following:
 - 1. Mapes Industries, Inc.; Post-Mounted Super Lumideck (Basis of Design)
 - 2. or approved equal.

2.2 MATERIALS

- A. General: Canopies shall be of sizes indicated on drawings. Intermediate gutters shall be of .032" aluminum with one end closed at factory and be readily removable for cleaning as necessary. All components will be sized as required to satisfy engineering requirements. Fascia shall be Style "J" heavy extruded aluminum 1/8" thick. Water drainage shall be into a continuous fascia gutter drained by downspouts at points indicated.
- B. Roof Deck:
 - 1. Extruded Aluminum, Alloy 6063-T6
- C. Roof Beams:
 - 1. Beams shall be extruded aluminum, Alloy 6063-T6.

D. Posts:

1. Posts shall be extruded aluminum, Alloy 6063-T6.

E. Fascia:

1. 8" extruded Aluminum "J" Style fascia

F. Exterior Finish: Two-coat fluoropolymer

1. Color: As selected by Architect from manufacturer's full range of standard and premium colors, including metallics.

2.3 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

- B. 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 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.

C. Canopy and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.4 FABRICATION

- A. Support columns and gutter beams shall be designed such that the columns will be notched to create a "saddle" that will receive and secure the gutter beams.

- B. Post and beams shall be mechanically assembled utilizing 3/16" fasteners with a minimum shear stress of 350 lb. Pre-welded or factory-welded connections are not acceptable.

- C. Concealed drainage. Water shall drain from covered surfaces into intermediate trough and be directed to Fascia Drain. To ensure drainage install canopy with positive camber.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Installer shall examine area and conditions under which canopy units are to be installed and notify General Contractor in writing of conditions detrimental to proper timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to installer.
- B. Installer shall confirm dimensions and elevations to be as shown on drawings provided by Mapes Industries.
- C. Erection shall be performed by an approved installer and scheduled after all concrete, masonry and roofing in the area is completed

3.2 INSTALLATION

- A. Install canopy units plumb, level, straight and true in locations indicated. Securely attach to supporting structure in accordance with manufacturer's written installation instructions and approved engineered shop drawings.

3.3 ADJUSTING, CLEANING AND PROTECTION

- A. At completion of installation, clean surfaces in accordance with manufacturer's written instructions. Clean site of debris associated with this work and remove excess material and debris from site in approved manner. Protect units from damage until acceptance by Owner.

END OF SECTION 107316