

**SECTION 10101 - VISUAL DISPLAY SURFACES**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Markerboards.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
  - 1. Documentation for particleboard indicating that no urea formaldehyde has been added to the product.
- B. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- C. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- D. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Show location of panel joints.
  - 2. Include sections of typical trim members.
- E. Samples for Initial Selection: For each type of visual display surface indicated and as follows:
  - 1. Actual sections of porcelain-enamel face sheet.
- F. Maintenance Data: For visual display surfaces to include in maintenance manuals.
- G. Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of motor-operated, sliding visual display unit manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain each type of visual display surface through one source from a single manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

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

1.6 WARRANTY

- A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Surfaces lose original writing and erasing qualities.
    - b. Surfaces become slick or shiny.
    - c. Surfaces exhibit crazing, cracking, or flaking.
  - 2. Warranty period: 50 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

2.1 MATERIALS, GENERAL

- A. Porcelain-Enamel Face Sheet: Porcelain-enamel-clad, ASTM A 463/A 463M, Type 1, stretcher-leveled aluminized steel, with 0.0236-inch uncoated thickness; with porcelain-enamel coating fused to steel at approximately 1000 degrees F.
  - 1. Gloss finish: Low gloss; dry-erase markers wipe clean with dry cloth or standard eraser, and suitable for use as projection screen.
- B. Particleboard: ANSI A208.1, Grade 1-M-1, free of added urea formaldehyde.
- C. Extruded Aluminum: ASTM B 221, Alloy 6063.

2.2 MARKERBOARD ASSEMBLIES

- A. Porcelain-Enamel Markerboard Assembly: Balanced, high-pressure, factory-laminated markerboard assembly of 3-ply construction consisting of backing sheet, core material, and 0.021-inch- thick, porcelain-enamel face sheet with high -gloss finish.
  - 1. Particleboard core: 3/8 inch thick; with 0.015-inch- thick, aluminum sheet backing.
  - 2. Laminating adhesive: Manufacturer's standard moisture-resistant thermoplastic type.
  - 3. Available manufacturers: Subject to compliance with requirements, provide products by one of the following manufacturers.
    - a. ADP/Lemco, Inc.
    - b. Claridge Products & Equipment, Inc.
    - c. Marsh Industries, Inc.
    - d. Nelson Adams /GSI.

2.3 MARKERBOARD ACCESSORIES

- A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch- thick, extruded aluminum; of size and shape indicated.
  - 1. Factory-applied trim: Manufacturer's standard.
- B. Chalktray: Manufacturer's standard, continuous.
  - 1. Solid Type: Extruded aluminum with ribbed section and smoothly curved exposed ends.
  - 2. Products: Subject to compliance with requirements, provide the following:
    - a. Claridge Products & Equipment, Inc.: No. 362.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) ADP/Lemco, Inc.
      - 2) Marsh Industries, Inc.
      - 3) Nelson Adams /GSI.

- C. Map Rail: Provide the following accessories:
  - 1. Display rail: Continuous and integral with map rail; fabricated from cork approximately 1 to 2 inches wide.
  - 2. End stops: Located at each end of map rail.
  - 3. Paper holder: Extruded aluminum; designed to hold paper by clamping action.

## 2.4 FABRICATION

- A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.
- B. Visual Display Boards: Factory assemble visual display boards, unless otherwise indicated.
  - 1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display boards at manufacturer's factory before shipment.
- C. Factory-Assembled Visual Display Units: Coordinate factory-assembled units with trim and accessories indicated. Join parts with a neat, precision fit.
  - 1. Make joints only where total length exceeds maximum manufactured length.
    - a. Fabricate with minimum number of joints, balanced around center of board, as acceptable to Architect.
  - 2. Provide manufacturer's standard vertical-joint spline system between abutting sections of markerboards.
  - 3. Where size of visual display boards or other conditions require support in addition to normal trim, provide structural supports or modify trim as indicated or as selected by Architect from manufacturer's standard structural support accessories to suit conditions indicated.
- D. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum.
  - 1. Miter corners to neat, hairline closure.
  - 2. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

## 2.5 ALUMINUM FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- D. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 611.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of work.
- B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motor-operated, sliding visual display units.
- C. Examine walls and partitions for proper backing for visual display surfaces.

- D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove dirt, scaling paint, projections, and depressions that will affect smooth, finished surfaces of visual display boards.
- B. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, and substances that will impair bond between visual display boards and surfaces.

### 3.3 INSTALLATION, GENERAL

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings, or if not indicated, at heights indicated below.
  - 1. Keep perimeter lines straight, level, and plumb.
  - 2. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.
  - 3. Mounting height: 36 inches above finished floor to top of chalktray.

### 3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

- A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches on center.
  - 1. Secure both top and bottom of boards to walls.

### 3.5 CLEANING AND PROTECTION

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

END OF SECTION 10101

**SECTION 10200 - 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.
- B. Related Sections include the following:
  - 1. Division 7 Section "Joint Sealants" for sealants installed in perimeter joints between louver frames and adjoining construction.

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.

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 wind loads and resulting design pressures applicable to Project according to the following, based on mean roof heights above grade as indicated on Drawings:
    - a. International Building Code, 2000 Edition.
      - 1) Wind speed: 120 miles per hour, with 3-second gust.
      - 2) Exposure: B.
      - 3) Importance factor: 1.00
- B. Water Infiltration Performance: Exterior wall louvers shall meet the following performance requirements based on a 1 meter by 1 meter unit when tested in by Building Services Research and Information Association (BSRIA) for compliance with HEVAC Laboratory Testing and Rating of Weather Louvers When Subjected to Simulated Rain, at a rain fall rate of 3 inches per hour and wind directed at the face of the louver at 29.1 miles per hour.
  - 1. Effectiveness ratio:
    - a. 99.00 percent at 0 cubic feet per minute.
    - b. 99.00 percent at 6,227 cubic feet per minute.
  - 2. Liter of water per hour: 0.10.
  - 3. Allowable air volume: 5800 cubic feet per minute through 4 feet by 4 feet louver at 0.020 inch water gage.
- C. 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 degrees F, ambient; 180 degrees F, material surfaces.

## 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- C. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- D. 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.
- E. Samples for Verification: For each type of metal finish required.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver.

## 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.

## 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.
  - 2. Coordinate construction to ensure that actual opening dimensions correspond to established dimensions.

## **PART 2 - PRODUCTS**

### 2.1 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. 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 hex-head or Phillips pan-head screws for exposed fasteners, unless otherwise indicated.

- D. 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.
- E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

## 2.2 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 unless horizontal mullions are indicated.
  - 2. Horizontal mullions: Provide horizontal mullions at joints where indicated.
- 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.
  - 1. Frame type: Channel, unless otherwise indicated.
- E. Include supports, anchorages, and accessories required for complete assembly.
- F. Provide vertical mullions of type and at spacings indicated, but not more than recommended by manufacturer, or 72 inches on center, whichever is less.
- G. Provide subsills made of same material as louvers and extended sills for recessed louvers.
- H. Join frame members to each other and to fixed louver blades with fillet welds, threaded fasteners, or both, as standard with louver manufacturer, concealed from view, unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

## 2.3 FIXED, EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal Storm-Resistant Louver (Types L1, L2, L3, and L4):
  - 1. Louver depth: 5 inches.
  - 2. Frame and blade nominal thickness: As required to comply with structural performance requirements, but not less than 0.060 inch for blades and 0.080 inch for frames.
  - 3. Products: Subject to compliance with requirements, provide one of the following:
    - a. Construction Specialties, Inc.: Model RS5300.
    - b. Industrial Louvers, Inc.: Model 837-XP.
    - c. The Airolite Company: SCH8.
    - d. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) Greenheck.
- B. Vertical Storm-Resistant Louver (Types L5, L6, and L7):
  - 1. Louver depth: 6 inches.
  - 2. Frame and blade nominal thickness: As required to comply with structural performance requirements, but not less than 0.081 inch for blades and 0.081 inch for frames.
  - 3. Products: Subject to compliance with requirements, provide one of the following:
    - a. Greenheck: EVH-602.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:

- 1) Construction Specialties, Inc.
- 2) Industrial Louvers, Inc.
- 3) The Airolite Company.

## 2.4 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 on center.
- 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: Mill finish, unless otherwise indicated.
  3. Type: Non-rewirable, U-shaped frames for permanently securing screen mesh.
- D. Bird screening: Aluminum, 1/2-inch- square mesh, 0.063-inch wire.

## 2.5 BLANK-OFF PANELS

- A. Insulated, Blank-off Panels: Laminated metal-faced panels consisting of insulating core surfaced on back and front with metal sheets.
  1. Thickness: 1 inch.
  2. Metal facing sheets: Aluminum sheet, not less than 0.032-inch nominal thickness.
  3. Insulating core: Unfaced mineral-fiber or foamed-plastic rigid insulation board.
  4. Edge treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch nominal thickness, with corners mitered and with same finish as panels.
  5. Seal perimeter joints between panel faces and louver frames with 1/8-by-1-inch PVC compression gaskets.
  6. Panel finish: Same type of finish applied to louvers, but black color.
  7. Attach blank-off panels to back of louver frames with stainless steel, sheet metal screws.

## 2.6 FINISHES, GENERAL

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

## 2.7 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with system established by the Aluminum Association for designating aluminum finishes.
- B. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

## 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.
  - 1. Comply with Division 7 Section "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Clean exposed surfaces of louvers and vents that are not protected by temporary covering, to remove fingerprints and soil during construction period.
  - 1. Do not let soil accumulate until final cleaning.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes.
  - 1. Thoroughly rinse surfaces and dry.
- C. Restore louvers and vents damaged during installation and construction so no evidence remains of corrective work.
  - 1. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

END OF SECTION 10200

## SECTION 10240 - GRILLS

### 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 interior grills.
- B. Related Sections include the following:
  - 1. Division 6 Section "Interior Architectural Woodwork."
  - 2. Division 9 Section "Gypsum Board Assemblies."

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- C. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURED UNITS

- A. Fixed Interior Grills:
  - 1. Material: ASTM B 221 extruded aluminum.
  - 2. Finish: Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
  - 3. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Titus: FL-10 with H3 ceiling clip, WC3 wall clip, SX straight end border, and FBR-10 return hood.

#### 2.2 ACCESSORIES:

- A. Fasteners: Of same basic metal and alloy as fastened metal.
  - 1. Do not use metals that are incompatible with joined materials.
  - 2. Use types and sizes to suit unit installation conditions.
  - 3. Use Phillips pan-head screws for exposed fasteners, unless otherwise indicated.

### 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 INSTALLATION

- A. Locate and place grills level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Repair finishes damaged by during installation.
  - 1. Restore finishes so no evidence remains of corrective work.
  - 2. Return items that cannot be refinished in the field to the factory, make required alterations, and refinish entire unit or provide new units.

#### 3.3 CLEANING

- A. Clean exposed surfaces.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes.
  - 1. Thoroughly rinse surfaces and dry.
- C. Restore grills damaged during installation and construction so no evidence remains of corrective work.
  - 1. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.

END OF SECTION 10240

**SECTION 10265 - IMPACT-RESISTANT WALL PROTECTION**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. Corner guards.

1.3 SUBMITTALS

- A. Product Data: Include physical characteristics, such as durability for each impact-resistant wall protection system component indicated.
- B. Shop Drawings: Show locations, extent, and installation details of each impact-resistant wall protection system component.
  - 1. Show methods of attachment to adjoining construction.
- C. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- D. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed installation of impact-resistant wall protection system components similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Manufacturer Qualifications: A firm experienced in manufacturing impact-resistant wall protection system components similar to those required for this Project and with a record of successful in-service performance.
- C. Source Limitations: Obtain each color, grade, finish, and type of impact-resistant wall protection system component from a single source with resources to provide components of consistent quality in appearance and physical properties.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store wall surface-protection materials in original undamaged packages and containers.

## PART 2 - PRODUCTS

### 2.1 CORNER GUARDS

- A. Stainless-Steel Corner Guards: Paper-covered, satin-finish, 0.0625-inch minimum, stainless steel sheet corner guards; height as indicated.
  - 1. Material: Type 304 stainless steel, minimum 0.0625 inch.
  - 2. Provide 90-degree turn, unless otherwise indicated; and formed edges.
  - 3. Wing size: 3-1/2 by 3-1/2 inches.
  - 4. Height: Full height of wall.
  - 5. Mounting method: Double-faced, self-adhesive foam tape.
  - 6. Corner radius: 1/8 inch.
  - 7. Products: Subject to compliance with requirements, provide the following:
    - a. Construction Specialties, Inc.: CO-8.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) Arden Architectural Specialties, Inc.
      - 2) Balco, Inc.
      - 3) IPC Door and Wall Protection Systems, Inc.
      - 4) Koroseal Wall Protection Systems, Inc.
      - 5) Pawling Corporation.

### 2.2 FABRICATION

- A. General: Fabricate impact-resistant wall and door protection systems to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including thicknesses of components.
- B. Preassemble components in the shop to greatest extent possible to minimize field assembly.
  - 1. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled.
  - 1. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections.
  - 2. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
- D. Provide inserts and other anchoring devices for connecting components to concrete or masonry.
  - 1. Fabricate anchoring devices to withstand imposed loads.
  - 2. Coordinate anchoring devices with the supporting structure.

### 2.3 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary covering before shipping.

### 2.4 STAINLESS-STEEL FINISHES

- A. Bright, Directional Polish: No. 4 finish.
  - 1. Remove tool and die marks and stretch lines or blend into finish.
  - 2. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches.
    - a. Run grain with long dimension of each piece.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine areas and conditions in which impact-resistant wall protection system components and impact-resistant wall covering materials will be installed.
  - 1. Complete finishing operations, including painting, before installing impact-resistant wall protection system components.
- B. Impact-Resistant Wall Covering Materials: Wall surfaces to receive impact-resistant wall covering materials shall be dry and free from dirt, grease, loose paint, and scale.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- A. General: Before installation, clean substrate to remove dust, debris, and loose particles.

#### **3.3 INSTALLATION**

- A. Install impact-resistant wall protection system components level, plumb, and true to line without distortions.
  - 1. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.

#### **3.4 CLEANING**

- A. General: Immediately on completion of installation, clean components according to the manufacturer's written instructions.
- B. Remove surplus materials, rubbish, and debris, resulting from installation, on completion of work and leave installation areas in neat, clean condition.

END OF SECTION 10265

**SECTION 10270 - ACCESS FLOORING**

**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 type(s) of access flooring systems:
  - 1. Bolted panels on stringerless understructure.

1.3 UNIT PRICES

- A. Unit Prices: Adjust the Contract Sum for changes in quantity from that indicated in allowances for cutouts in floor panels based on the amounts stipulated in the Form of Agreement and in compliance with Division 1 Section "Unit Prices."

1.4 PERFORMANCE REQUIREMENTS

- A. Performance Requirements, General: Provide access flooring systems consisting of proprietary portable assemblies composed of modular floor panels on elevated supports (understructures) forming accessible underfloor cavities (air spaces) to accommodate electrical and mechanical services and complying with performance requirements specified.
- B. Structural Performance per CISCA A/F: Provide access flooring systems capable of withstanding the following loads and stresses within limits and under conditions indicated, as determined by testing manufacturer's current standard products according to referenced procedures in CISCA A/F, "Recommended Test Procedures for Access Floors":
  - 1. Concentrated-load performance: Provide floor panels, including those with cutouts, capable of withstanding a concentrated design load of the following magnitude, with a top-surface deflection under load and a permanent set not to exceed, respectively, 0.10 and 0.010 inch, as determined by applying concentrated load through a 1-inch-square or 1.128-inch-diameter steel indenter according to CISCA A/F, Section I, "Concentrated Loads."
    - a. 1500 pounds.
  - 2. Ultimate-load performance: Provide access flooring systems capable of withstanding a minimum ultimate concentrated load equal to value obtained by multiplying specified concentrated floor panel design load by a factor of 3.0, without failing, according to CISCA A/F, Section II, "Ultimate Loading."
    - a. Failure is defined as the point at which access flooring system will not take any additional load.
  - 3. Rolling-load performance: Provide access flooring systems capable of withstanding rolling loads of the following magnitude applied to nonperforated panels, with a combination of local and overall deformation not to exceed 0.040 inch after exposure to rolling load over CISCA A/F Path A or B, whichever path produces the greatest top-surface deformation, according to CISCA A/F, Section III, "Rolling Loads."
    - a. CISCA A/F Wheel 1 rolling load: 1000 pounds.
    - b. CISCA A/F Wheel 2 rolling load: 1000 pounds.
  - 4. Pedestal axial-load performance: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding a 5000 pounds axial load per pedestal, according to CISCA A/F, Section V, "Pedestal Axial Load Test."
  - 5. Pedestal overturning-moment performance: Provide pedestal assemblies, without panels or other supports in place, capable of withstanding an overturning moment per pedestal of 1000 pounds x inches, according to CISCA A/F, Section VI, "Pedestal Overturning Moment Test."

- C. Floor Panel Impact-Load Performance: Provide access flooring system capable of withstanding an impact load of 100 pounds when dropped from 36 inches onto a 1-square inch area located anywhere on panel, without failing.
  - 1. Failure is defined as collapse of access flooring system.
- D. Earthquake Load Performance: Provide access flooring capable of withstanding a lateral seismic force (Fp) in seismic zone applicable to this Project, according to requirements of the International Building Code.
- E. Panel-to-Understructure Resistance: Not more than 10 ohms.

#### 1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- C. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- D. Shop Drawings: Include the following:
  - 1. Complete layout of access flooring based on field-verified dimensional relationships to adjoining work and installation tolerances.
  - 2. Details with descriptive notes indicating materials, finishes, fasteners, typical and special edge conditions, accessories, understructure, and other data to permit a full evaluation of entire access flooring system.
- E. Samples for Verification: For each type of floor covering and exposed finish indicated, in sizes indicated below.
  - 1. One complete full-size floor panel, pedestal, and understructure unit for each type of access flooring system required.
- F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency or by access flooring manufacturer and witnessed by the qualified testing agency.

#### 1.6 QUALITY ASSURANCE

- A. Source Limitations: Obtain access flooring through one source from a single manufacturer.
- B. Provide floor panels that are clearly and permanently marked on their underside with panel type and concentrated-load rating.

#### 1.7 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install access flooring until spaces are enclosed, subfloor has been sealed, ambient temperature is between 40 and 90 degrees F, and relative humidity is not more than 70 percent.
- B. Field Measurements: Verify actual locations of walls, columns, and other construction contiguous with access flooring by field measurements before fabrication and indicate measurements on Shop Drawings.

#### 1.8 COORDINATION

- A. Coordinate location of mechanical and electrical work in underfloor cavity to prevent interference with access flooring pedestals.

- B. Mark pedestal locations on subfloor by use of a grid, with a module equal to the width of five floor panels in both directions, to enable mechanical and electrical work to proceed without interfering with access flooring pedestals.
- C. Proceed with installation only after completion of other construction within affected spaces.

#### 1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Standard field panels: 12.
  - 2. Pedestals: 20.

### **PART 2 - PRODUCTS**

#### 2.1 FLOOR PANELS AND UNDERSTRUCTURE

- A. Floor Panels, General: Provide modular field panels complying with the following requirements that one person, using a portable lifting device, can interchange with other field panels without disturbing adjacent panels or understructure and that are free of exposed-metal edges with floor covering in place:
  - 1. Nominal panel size: 24 by 24 inches.
  - 2. Fabrication tolerances: Fabricate panels to the following tolerances with squareness tolerances expressed as the difference between diagonal measurements from corner to corner:
    - a. Size and squareness: Plus or minus 0.015 inch of required size, with a squareness tolerance of plus or minus 0.015 inch, unless tolerances are otherwise indicated for a specific panel type.
    - b. Flatness: Plus or minus 0.020 inch, measured on a diagonal on top of panel.
  - 3. Method of panel attachment to understructure: By bolting to pedestal heads.
    - a. Provide panels with holes drilled in corners to align precisely with threaded holes in pedestal heads and to accept countersunk screws with heads flush with top of panel.
- B. Base Bid: Cementitious-filled, formed-steel panels, fabricated with die-cut flat top sheet and die-formed and stiffened bottom pan formed from cold-rolled steel sheet joined together by resistance welding to form an enclosed assembly, with metal surfaces protected against corrosion by manufacturer's standard factory-applied finish.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. Interface AR: FS 1500.
    - b. Maxcess Technologies, Inc.: RWC400.
    - c. Tate Access Floors, Inc.: ConCore 1500.
- C. Alternate No. 19: Lightweight-concrete-filled, steel panels, fabricated with bottom pan die-formed from electrolytic-zinc-coated steel sheet and filled with lightweight concrete that is reinforced and bonded to pan by shear ties.
  - 1. Joint seals: Non-PVC system designed to seal joints between access flooring panels.
  - 2. Products: Subject to compliance with requirements, provide the following:
    - a. Interface AR: Tec-Crete.
- D. Pedestals: Assembly consisting of base, column with provisions for height adjustment, and head (cap); made of steel or aluminum or a combination of both.
  - 1. Base: Square or circular base with not less than 16 square inches of bearing area.
  - 2. Provide vibration-proof leveling mechanism for making and holding fine adjustments in height over a range of not less than 2 inches and for locking at a selected height so deliberate action is required to change height setting and vibratory displacement is prevented.
  - 3. Provide units of sufficient height to achieve underfloor clearance indicated.
  - 4. Head: Designed for direct, bolted support of floor panels.
    - a. Provide head with four holes aligned with holes in floor panels for positive bolting of panels to pedestals.

## 2.2 FLOOR PANEL COVERING

- A. Provide bare panels without factory-applied floor covering on traffic surfaces.

## 2.3 ACCESSORIES

- A. Cutouts: Provide cutouts in floor panels for air diffusers, cable penetrations and service outlets.
  - 1. Provide reinforcement or additional support, if needed, to make panels with cutouts comply with standard performance requirements.
  - 2. Number, size, shape, and location: As indicated.
  - 3. Trim edge of cutouts with manufacturer's standard plastic molding.
  - 4. Provide foam-rubber pads for sealing annular space formed in cutouts by cables and trim edge of cutout with molding having flange and ledge for capturing and supporting pads.
- B. Perimeter Seals: Self-adhering Neoprene seal for sealing access flooring against vertical obstructions.
  - 1. Size: 1inch by 1/4 inch thick.
  - 2. Fire rating: Class A when tested in accordance with ASTM E 84.
- C. Cavity Dividers: Provide manufacturer's standard metal dividers located where indicated to divide underfloor cavities.
- D. Vertical Closures (Fasciae): Where underfloor cavity is not enclosed by abutting walls or other construction, provide manufacturer's standard metal-closure plates with factory-applied finish.
- E. Ramps: Manufacturer's standard ramp construction of width and slope indicated, but not steeper than 1:12, with raised-disc rubber or vinyl floor covering, and of same materials, performance, and construction requirements as access flooring.
- F. Steps: Provide steps of size and arrangement indicated with floor covering to match access flooring.
  - 1. Apply nonslip aluminum nosings to treads, unless otherwise indicated.
- G. Panel Lifting Device: Manufacturer's standard portable lifting device of type required for lifting panels with floor covering provided. Provide 8 lifting devices of each type required.
- H. Perimeter Support: Where indicated, provide manufacturer's standard method for supporting panel edge and form transition between access flooring and adjoining floor covering at same level as access flooring.
- I. Adhesive: As recommended by access flooring manufacturer.
  - 1. Volatile organic compound content: Not more than 70 grams per liter.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Preinstallation Adhesive Field Test: Before installing pedestals, field test their adhesion to subfloor surfaces as follows:
  - 1. In areas representative of each subfloor surface, set typical pedestal assemblies in same adhesive and methods required for completed work.
  - 2. Allow test installation to cure for 30 days, with a pressure of 25 pounds applied vertically to pedestals during this period.
  - 3. After curing, apply lateral load against a straight steel bar inserted 2 inches into pedestal stems. Measure the force needed to cause adhesive failure of pedestal base.
  - 4. Proceed with installation only after tests show compliance with performance requirement specified for pedestals' capability to resist overturning moment.
- B. Locate each pedestal, complete any necessary subfloor preparation, and vacuum clean subfloor to remove dust, dirt, and construction debris before beginning installation.

### 3.2 INSTALLATION

- A. Install access flooring system and accessories under supervision of access flooring manufacturer's authorized representative to produce a rigid, firm installation that complies with performance requirements and is free of vibration, rocking, rattles, and squeaks.
- B. Set pedestals in adhesive as recommended by access flooring manufacturer to provide full bearing of pedestal base on subfloor.
- C. Lay out floor panel installation to keep the number of cut panels at floor perimeter to a minimum.
  - 1. Scribe perimeter panels to provide a close fit with adjoining construction with no voids greater than 1/8 inch where panels abut vertical surfaces.
    - a. Install perimeter seal where panels meet vertical surfaces.
  - 2. To prevent dusting, seal cut edges of panels with sealer recommended by panel manufacturer:
    - a. Under Alternate No. 17, install joint seals at panels left exposed under the Interior's Package.
- D. Scribe underfloor-cavity dividers to closely fit against subfloor surfaces and seal with mastic to maintain plenum effect within underfloor cavity.
- E. Scribe vertical closures to closely fit against subfloor and adjacent finish floor surfaces.
  - 1. Set in mastic and seal to maintain plenum effect within underfloor cavity.
- F. Clean dust, dirt, and construction debris caused by floor installation, including vacuuming subfloor area, as installation of floor panels proceeds.
- G. Do not cut and trim access flooring components or perform other dirt-or-debris-producing operations in rooms where floor is being installed, has been installed, or is scheduled to be installed.
- H. Level installed access flooring to within 0.10 inch of true level over entire access flooring area and within 0.062 inch in any 10-foot distance.

### 3.3 ADJUSTING, CLEANING, AND PROTECTION

- A. After completing installation, vacuum clean access flooring and cover with continuous sheets of reinforced paper or plastic.
  - 1. Maintain protective covering until time of Substantial Completion.
- B. Replace access flooring panels that are stained, scratched, otherwise damaged, or not complying with specified requirements.

END OF SECTION 10270

**SECTION 10420 - DEDICATION PLAQUE**

**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. Cast-metal plaque.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of plaque.
- B. Shop Drawings: Shop Drawings: Include elevation and mounting methods, grounds, mounting heights, layout, spacing, accessories, and installation details.
  - 1. Provide full size rubbing of wording, lettering, and artwork.
    - a. Owner will provide half size drawing indicating design of plaque.
- C. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- D. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- E. Samples:
  - 1. Casting: Show representative texture, character style, spacing, finish, and method of attachment.

**PART 2 - PRODUCTS**

2.1 CAST-METAL PLAQUES

- A. General: Provide castings free from pits, scale, sand holes, and other defects.
  - 1. Comply with requirements specified for metal, border style, background texture, and finish and in required thickness, size, shape, and copy.
- B. Bronze Casting: Cast virgin ingots (85-5-5-5 Standard U. S. bronze alloy).
  - 1. Border and faces of raised letters: Satin/brushed finish.
  - 2. Background: Leatherette finish.
  - 3. Finish:
    - a. Chemically cleaned and etched.
    - b. Treated with Alodine.
    - c. Sprayed with 2 coats of clear acrylic lacquer.
  - 4. Size: 36 inches wide by 24 inches high.
  - 5. Border design: Raised, satin/brushed finish.
  - 6. Letter style: "Seneca," satin/brushed finish.
  - 7. Background: Leatherette finish, oxidized-dark bronze.
  - 8. Text: Include project name, year contract awarded, names of board of regents at time of award of general contract, and names of Architect and Contractor.
    - a. For bidding purposes, assume 60 large characters and 350 small characters.
    - b. Owner will provide exact wording at a later date.

9. Mounting: Rosettes and fasteners matching plaque finish.
10. Manufacturer's: Provide dedication plaque from the following:
  - a. The Southwell Company, San Antonio, Texas.

## 2.2 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal anchors and inserts.
  1. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors.
  2. Furnish inserts, as required, to be set into concrete or masonry work.

## **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. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. General: Locate plaque where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
  1. Install plaque level, plumb, and at heights indicated.
- B. Erection Tolerances:
  1. Maximum variation from plumb: 1/16 inch per height of plaque.

### 3.3 CLEANING AND PROTECTION

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

END OF SECTION 10420

**SECTION 10431 - SIGNS**

**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. Panel signs.
  - 2. Dimensional characters (letters) for exterior use.
  - 3. Signage accessories.
- B. Related Sections include the following:
  - 1. Division 10 Section "Dedication Plaque."
  - 2. See Division 16 Sections for electrical service and connections for illuminated characters and for access to remote transformers.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide signs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
  - 1. Wind loads: Determine wind loads and resulting design pressures applicable to Project according to the following, based on mean roof heights above grade as indicated on Drawings:
    - a. International Building Code, 2000 Edition.
      - 1) Wind speed: 120 miles per hour, with 3-second gust.
      - 2) Exposure: B.
      - 3) Importance factor: 1.00
- B. Thermal Movements: Provide post and panel signs 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 degrees F, ambient; 180 degrees F, material surfaces.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.
- B. Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components.
  - 1. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
  - 2. Show location of electrical service connections.
  - 3. Provide message list for each sign, including large-scale details of wording, lettering, and artwork.
  - 4. Wiring diagrams: For illuminated signs
  - 5. Include full-size templates for cutout characters.

- C. Samples:
  - 1. For each type of sign material indicated that involves color selection.
  - 2. Full-size Samples of each type of dimensional character (letter and number) required.
    - a. Show character style, material, finish, and method of attachment.
- D. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of signage manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain each sign type through one source from a single manufacturer.
- C. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.
- D. 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.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

1.7 COORDINATION

- A. For signs supported by or anchored to permanent construction, advise installers of anchorage devices about specific requirements for placement of anchorage devices and similar items to be used for attaching signs.
  - 1. For signs supported by or anchored to permanent construction, furnish templates for installation of anchorage devices.
- B. Coordinate location of remote transformers with building construction.
  - 1. Ensure that transformers are accessible after completion of Work.

**PART 2 - PRODUCTS**

2.1 ILLUMINATED PANEL SIGNS

- A. General: Provide panel signs that comply with requirements indicated for materials, thicknesses, finishes, colors, designs, shapes, sizes, and details of construction.
  - 1. Produce smooth panel sign surfaces constructed to remain flat under installed conditions within tolerance of plus or minus 1/16 inch measured diagonally.
- B. Cast-Acrylic Sheet: Manufacturer's standard and as follows:
  - 1. Color: As selected by Architect from manufacturer's full range.
- C. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with not less than the strength and durability properties of 5005-H15.
  - 1. Thickness: As determined by sign manufacturer for specific Project conditions.

- D. Frames: Fabricate frames to profile indicated; comply with the following requirements for materials and corner conditions:
  - 1. Material: Aluminum, extruded.
  - 2. Corner condition: Square.
- E. Graphic Content and Style: Provide sign copy that complies with requirements indicated on artwork supplied on electronic media by Owner for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.
- F. Fabrication:
  - 1. Provide internal illumination using concealed, internally wired, fluorescent-strip fixture system or white neon lighting to illuminate message panels uniformly with minimum halation and without light leaks.
    - a. Make provisions for servicing and for concealed connection to electric service.
    - b. Coordinate electrical characteristics with those of power supply provided.
    - c. Light source: As required by sign-panel size.
    - d. Ballasts: Energy-saving, high power factor, Class P, electromagnetic type, designed for use with high-output lamps, and with automatic reset thermal protection.
      - 1) Ballasts comply with ANSI C82.1, bear Certified Ballast Manufacturer Certification labels, and are rated for minus 20 degrees F starting temperature.
  - 2. Welded connections: Comply with AWS standards for recommended practices in shop welding.
    - a. Provide welds behind finished surfaces without distortion or discoloration of exposed side.
    - b. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
  - 3. Mill joints to tight, hairline fit.
    - a. Form joints exposed to weather to exclude water penetration.
  - 4. Preassemble signs in the shop to greatest extent possible.
    - a. Disassemble signs only as necessary for shipping and handling limitations.
    - b. Clearly mark units for reassembly and installation, in location not exposed to view after final assembly.
  - 5. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous
  - 6. Fabrication tolerances:
    - a. Squareness: 1/16-inch maximum difference in diagonal measurements.
    - b. Maximum offset between faces: 1/32 inch.
    - c. Maximum misalignment of adjacent members: 1/32 inch.
    - d. Maximum bow: 1/16 inch in 48 inches.
    - e. Maximum deviation from plane: 1/16 inch in 48 inches.

## 2.2 DIMENSIONAL CHARACTERS

- A. Cutout Characters: Cut characters from solid plate of thickness and metal indicated.
  - 1. Produce precisely cut characters with square cut, smooth, eased edges.
  - 2. Comply with requirements indicated for finish, style, and size.
  - 3. Metal: Aluminum.
    - a. Thickness: 1/2 inch.
  - 4. Fabricated letters and numbers to required sizes and styles, using metals and thicknesses indicated.
    - a. Form exposed faces and sides of characters to produce surfaces free from warp and distortion.
    - b. Include internal bracing for stability and attachment of mounting accessories. Comply with requirements indicated for finish, style, and size.
  - 5. Character height:
    - a. First letter of each word: 20 inches.
    - b. Other letters: 18 inches.
  - 6. Character style: Times Roman.

## 2.3 NON-ILLUMINATED PANEL SIGNS

- A. Accessible Parking Signs:
  - 1. Material: 18-gage bonderized steel or 0.080 inch thick aluminum.
  - 2. Size: 12 inches wide by 18 inches high.
  - 3. Finish: Sign manufacturers standard baked enamel paint.
    - a. Colors:
      - 1) Border: White.
      - 2) Background: Blue.
      - 3) Copy: White.
  - 4. Copy: "HANDICAPPED PARKING" with handicap symbol.
- B. Van Accessible Parking Signs:
  - 1. Material: 18-gage bonderized steel or 0.080 inch thick aluminum.
  - 2. Size: 12 inches wide by 6 inches high.
  - 3. Finish: Sign manufacturers standard baked enamel paint.
    - a. Colors:
      - 1) Border: White.
      - 2) Background: Blue.
      - 3) Copy: White.
  - 4. Copy style: Match handicap parking signs.
  - 5. Copy: "VAN ACCESSIBLE".
- C. Symbols of Accessibility: Provide 6-inch- high symbol fabricated from opaque nonreflective vinyl film, 0.0035-inch nominal thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.

## 2.4 ACCESSORIES

- A. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance.
  - 1. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors.
  - 2. Furnish inserts, as required, to be set into concrete or masonry work.
- B. Parking Sign Mounting Post: ASTM A53, Type E, Grade A, Schedule 40 steel pipe, hot dipped galvanized finish.
  - 1. Hydrostatic test not required.
  - 2. Size: 1-3/4 inch outside diameter.
- C. Concrete: Class A2 as specified under Division 3 Section "Cast-In-Place Concrete."

## 2.5 FINISHES, GENERAL

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

## 2.6 ALUMINUM FINISHES

- A. Dimensional Characters: Manufacturer's standard clear anodic coating, 0.018 mm or thicker, over a satin (directionally textured) mechanical finish.

- B. Illuminated Sign Exposed Aluminum Surface Finish:
  - 1. Primer: 1 coat epoxy-polyamide primer, maximum VOC of 362 grams per liter, 3.0 to 5.0 mils dry film thickness.
    - a. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
      - 1) Tnemec Company, Inc: Series 66 Hi-Build Epoxoline.
  - 2. Color coat: 1 coat aliphatic acrylic polyurethane enamel, maximum VOC of 217 grams per liter, 2.0 to 3.0 mils dry film thickness.
    - a. Color: As selected by Architect from manufacturer's standard colors.
    - b. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
      - 1) Tnemec Company, Inc: Series 1075 Endura-Shield II.
  - 3. Top coat: 1 coat clear finish, maximum VOC of 288 grams per liter, 1.0 to 2.0 dry film thickness.
    - a. Available products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
      - 1) Tnemec Company, Inc: Series 76 Endura-Clear.

### 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. Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
  - 1. Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
- B. Install post in 8-inch diameter by 36-inch deep concrete footings.
  - 1. Set posts plumb and in line.
  - 2. Allow 2-inch concrete coverage at bottom of post.
- C. Illuminated Signs:
  - 1. Whenever dissimilar metals come in contact with each other, or aluminum is in contact with concrete or masonry, apply a protective coating to the contacting surfaces.
  - 2. Run wires into wall construction through conduit.
    - a. Use insulators as necessary for neon lighting wiring.
  - 3. Exposed-to-view wiring or conduit on wall face is not permitted.
  - 4. Engage a licensed electrician to connect wiring to power source.
- D. Erection Tolerances:
  - 1. Maximum variation from plumb: 1/8 inch per height of sign.
  - 2. Maximum offset from true alignment: 1/4 inch.
  - 3. Maximum misalignment of adjacent members: 1/16 inch.
- E. After installation, touch up shop finish at field welds, scratched or damaged areas, bolt connections, and abraded areas.
  - 1. Use same paint material as used for shop factory finish with same dry film thickness as specified for shop factory finish.

3.3 CLEANING AND PROTECTION

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

END OF SECTION 10431

**SECTION 10505 - METAL LOCKERS**

**PART 1 - GENERAL**

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
  - 1. All-welded, metal lockers.
- B. Related Sections include the following:
  - 1. Division 6 Section " Miscellaneous Carpentry" for furring, blocking, and shims required for installing metal lockers and concealed within other construction before metal locker installation.

1.3 DEFINITIONS

- A. Uncoated Steel Sheet Thicknesses: Indicated as the minimum thicknesses.

1.4 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker.
- B. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
- C. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- D. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Show sloping tops, filler panels, recess trim, and other accessories.
  - 2. Include locker identification system.
- E. Samples: Manufacturer's standard color selections for metal lockers, in manufacturer's standard sizes.
- F. Warranty: Special warranty specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative of metal locker manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain metal lockers and accessories through one source from a single manufacturer.
- C. Regulatory Requirements: Where metal lockers are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG) and the Texas Accessibility Code."
  - 1. Provide not less than 1 shelf located no higher than 48 inches above the floor for forward reach.
  - 2. Provide 1 shelf located at bottom of locker no lower than 15 inches above the floor for forward reach.

3. Provide hardware that does not require tight grasping, pinching, or twisting of the wrist, and that operates with a force of not more than 5 pounds.

1.6 DELIVERY, STORAGE, AND HANDLING

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

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify the following by field measurements before fabrication and indicate measurements on Shop Drawings:
  1. Concealed framing, blocking, and reinforcements that support metal lockers before they are enclosed.
  2. Recessed openings.
  3. Established dimensions: Where field measurements cannot be made without delaying the Work, establish recessed opening dimensions and proceed with fabricating metal lockers without field measurements.
    - a. Coordinate wall and floor construction to ensure that actual recessed opening dimensions correspond to established dimensions.

1.8 COORDINATION

- A. Coordinate size and location of bases for metal lockers.
- B. 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.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
  1. Failures include, but are not limited to, the following:
    - a. Structural failures.
    - b. Faulty operation of latches and other door hardware.
  2. Damage from deliberate destruction and vandalism is excluded.
  3. Warranty period: 10 years from date of Substantial Completion.

**PART 2 - PRODUCTS**

2.1 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS) Type B, suitable for exposed applications, containing not less than 28 percent recycled steel.
- B. Fasteners: Zinc- or nickel-plated steel, slotless-type exposed bolt heads, and self-locking nuts or lock washers for nuts on moving parts.
- C. Anchors: Select material, type, size, and finish required for secure anchorage to each substrate.
  1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts for corrosion resistance.
  2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

2.2 ALL-WELDED METAL LOCKERS

- A. Products: Subject to compliance with requirements, provide one of the following:
  1. DeBourgh Mfg. Co.; Sentry Corridor/Personnel Lockers.
  2. List Industries Inc.; Marquis Protector Single-Point Latch Corridor Lockers.
  3. Lyon Workspace Products; All-Welded Lockers.
  4. Penco Products, Inc., Subsidiary of Vesper Corporation; All-Welded Lockers.

- B. Locker Arrangement: Triple tier.
    - 1. Size: 12 inches wide by 18 inches deep by 24 inches high per tier.
  - C. Body: Assembled by welding body components together.
    - 1. Fabricate from unperforated, cold-rolled steel sheet with thicknesses as follows:
      - a. Tops, bottoms, and sides: 0.0528 inch thick.
      - b. Backs: 0.0428 inch thick.
      - c. Shelves: 0.0528 inch thick, with double bend at front and single bend at sides and back.
  - D. Frames: Channel formed; fabricated from 0.0528-inch- thick, cold-rolled steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames.
    - 1. Form continuous, integral door strike full height on vertical main frames.
  - E. Doors: One-piece; fabricated from 0.0677-inch- thick, cold-rolled steel sheet; formed into channel shape with double bend at vertical edges, and with right-angle single bend at horizontal edges.
    - 1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
    - 2. Door style: Vented panel with not less than two louver openings at top and bottom, or three louver openings at top or bottom for triple-tier lockers.
  - F. Hinges: Welded to door and attached to door frame with not less than 2 factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
    - 1. Knuckle hinges: Steel, full loop, 5 or 7 knuckles, tight pin; minimum 2 inches high.
      - a. Provide not less than 3 hinges for each door more than 42 inches high.
  - G. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond face of door; pry resistant.
    - 1. Multipoint latching: Finger-lift latch control designed for use with padlocks.
      - a. Latch hooks: Equip doors less than 48 inches high with 2 latch hooks; fabricated from minimum 0.1116-inch- thick steel; 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.
  - H. Equipment: Equip each metal locker with identification plate and the following, unless otherwise indicated:
    - 1. One double-prong ceiling hook.
  - I. Accessories:
    - 1. Continuous sloping tops: Fabricated from minimum 0.0428-inch- thick, cold-rolled steel sheet; approximately 20-degree pitch.
      - a. Closures: Vertical-end type.
    - 2. Filler panels: Fabricated from 0.0428-inch- thick, cold-rolled steel sheet.
    - 3. Boxed end panels: Fabricated from 0.0528-inch- thick, cold-rolled steel sheet.
  - J. Finish: Powder coat.
    - 1. Color(s): As selected by Architect from manufacturer's full range.
- 2.3 FABRICATION
- A. General: Fabricate metal lockers square, rigid, and without warp; with metal faces flat and free of dents or distortion.
    - 1. Make exposed metal edges free of sharp edges and burrs, and safe to touch.
    - 2. Form body panels, doors, shelves, and accessories from one-piece steel sheet, unless otherwise indicated.
    - 3. Provide fasteners, filler plates, supports, clips, and closures as required for a complete installation.
  - B. Unit Principle: Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments.

- C. All-Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections, with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds flush.
- D. Hooks: Manufacturer's standard ball-pointed type, aluminum or steel; zinc plated.
- E. Identification Plates: Manufacturer's standard etched, embossed, or stamped aluminum plates; with numbers and letters at least 3/8 inch high.
- F. Continuous Sloping Tops: Fabricated in lengths as long as practicable, without visible fasteners at splice locations; finished to match lockers.
- G. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers.
  - 1. Provide slip joint filler angle formed to receive filler panel.
- H. Boxed End Panels: Fabricated with 1-inch- wide edge dimension, and designed for concealing fasteners and holes at exposed ends of nonrecessed metal lockers; finished to match lockers.
  - 1. Provide one-piece panels for double-row (back-to-back) locker ends.
- I. Center Dividers: Full-depth, vertical partitions between bottom and shelf; finished to match lockers.

#### 2.4 STEEL SHEET FINISHES

- A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Factory finish steel surfaces and accessories except stainless steel and chrome-plated surfaces.
- C. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond. Use manufacturer's standard methods.
- D. Powder-Coat Finish: Immediately after cleaning and pretreating, electrostatically apply manufacturer's standard baked-polymer thermosetting powder finish.
  - 1. Comply with resin manufacturer's written instructions for application, baking, and minimum dry film thickness.

### **PART 3 - EXECUTION**

#### 3.1 EXAMINATION

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

#### 3.2 INSTALLATION

- A. General: Install level, plumb, and true; shim as required, using concealed shims.
  - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches on center.
    - a. Install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion, using concealed fasteners.
  - 2. Anchor single rows of metal lockers to walls near top and bottom of lockers.
- B. All-Welded Metal Lockers: Connect groups of all-welded metal lockers together with standard fasteners, with no exposed fasteners on face frames.

- C. Equipment and Accessories: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
  - 1. Attach hooks with at least two fasteners.
  - 2. Identification plates: Identify metal lockers with identification indicated on Submittals.
    - 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.
  - 3. Attach filler panels with concealed fasteners.
    - a. Locate fillers panels where indicated on Drawings.
  - 4. Attach sloping top units to metal lockers, with closures at exposed ends.
  - 5. Attach boxed end panels with concealed fasteners to conceal exposed ends of nonrecessed metal lockers.

### 3.3 ADJUSTING, CLEANING, AND PROTECTION

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

END OF SECTION 10505

**SECTION 10520 - FIRE-PROTECTION SPECIALTIES**

**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. Portable fire extinguishers.
  - 2. Fire-protection cabinets for the following:
    - a. Portable fire extinguishers.
    - b. Fire hose valves.
  - 3. Mounting brackets for fire extinguishers.
- B. Related Sections include the following:
  - 1. Division 7 Section "Through-Penetration Firestop Systems" for firestopping sealants at fire-rated cabinets.

1.3 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fire-protection cabinets.
  - 1. Fire extinguishers: Include rating and classification.
  - 2. Fire-protection cabinets: Include roughing-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type, trim style, and panel style.
  - 3. Show location of knockouts for hose valves.
- B. Quality Assurance Submittals:
  - 1. Recycled content certification: Manufacturer's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and post-industrial recycled content by weight for each Product specified under this Section.
  - 2. Local/regional source certification: Manufacturer or fabricator's certificate indicating location, and distance in miles from the Project Site, of each Product's final assembly, extraction, harvesting, or recovery prior to shipment to the Project Site.
- C. Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fire extinguishers and fire-protection cabinets through one source from a single manufacturer.
- B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.
- D. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements of ASTM E 814 for fire-resistance rating of walls where they are installed.

1.5 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire hoses, hose valves, and hose racks indicated are accommodated.

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of portable 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 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B.
- B. Stainless-Steel Sheet: ASTM A 666, Type 304.
- C. Tempered Float Glass: ASTM C 1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.2 PORTABLE FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers of type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
  - 1. Valves: Nickel-plated polished brass body.
  - 2. Handles and levers: Manufacturer's standard.
  - 3. Instruction labels: Include pictorial marking system complying with NFPA 10, Appendix B.
- B. Wet-Chemical Type FE1: UL-rated 2-A:1-B:C:K, 6.0 liters nominal capacity, with potassium acetate - based chemical in stainless-steel container; with pressure-indicating gage.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
    - a. JL Industries, Inc.
    - b. Larsen's Manufacturing Company.
    - c. Potter Roemer; Div. of Smith Industries, Inc.
- C. Multipurpose Dry-Chemical Type FE2, in Steel Container: UL-rated 4-A:60-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
  - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
    - a. JL Industries, Inc.
    - b. Larsen's Manufacturing Company.
    - c. Potter Roemer; Div. of Smith Industries, Inc.

2.3 FIRE-PROTECTION CABINETS

- A. Fire Extinguisher Cabinet Type FEC 1:
  - 1. Cabinet type: Suitable for fire extinguisher.
  - 2. Cabinet construction: Nonrated.
  - 3. Cabinet material: Enameled-steel sheet.

4. Recessed cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.
    - a. Exposed flat trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) of 1/4 to 5/16 inch.
  5. Cabinet trim material: Same material and finish as door.
  6. Door material: Stainless-steel sheet.
  7. Door style: Vertical duo panel with frame.
  8. Door glazing: Tempered float glass (clear).
  9. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  10. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  11. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.
  12. Products: Subject to compliance with requirements, provide the following:
    - a. Larsen's Manufacturing Company: Model No. SS-2409-R2.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) JL Industries, Inc.
      - 2) Potter Roemer; Div. of Smith Industries, Inc.
- B. Fire Extinguisher Cabinet Type FEC 2:
1. Cabinet type: Suitable for fire extinguisher.
  2. Cabinet construction: 2-hour fire rated.
  3. Cabinet material: Enameled-steel sheet.
  4. Recessed cabinet: Cabinet box recessed in walls of sufficient depth to suit style of trim indicated.
    - a. Exposed flat trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) of 1/4 to 5/16 inch.
  5. Cabinet trim material: Same material and finish as door.
  6. Door material: Stainless-steel sheet.
  7. Door style: Vertical duo panel with frame.
  8. Door glazing: Tempered float glass (clear).
  9. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  10. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  11. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.
  12. Products: Subject to compliance with requirements, provide the following:
    - a. Larsen's Manufacturing Company: Model No. FS SS-2409-R2.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) JL Industries, Inc.
      - 2) Potter Roemer; Div. of Smith Industries, Inc.

- C. Fire Extinguisher Cabinet Type FEC 3:
1. Cabinet type: Suitable for fire extinguisher.
  2. Cabinet construction: Nonrated.
  3. Cabinet material: Enameled-steel sheet.
  4. Semirecessed cabinet: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
    - a. Rolled-edge trim: 2-1/2-inch backbend depth.
  5. Cabinet trim material: Same material and finish as door.
  6. Door material: Stainless-steel sheet.
  7. Door style: Vertical duo panel with frame.
  8. Door glazing: Tempered float glass (clear).
  9. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  10. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  11. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.
  12. Products: Subject to compliance with requirements, provide the following:
    - a. Larsen's Manufacturing Company: Model No. SS-2409-6R.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) JL Industries, Inc.
      - 2) Potter Roemer; Div. of Smith Industries, Inc.
- D. Fire Extinguisher Cabinet Type FEC 4:
1. Cabinet type: Suitable for fire extinguisher.
  2. Cabinet construction: 2-hour fire rated.
  3. Cabinet material: Enameled-steel sheet.
  4. Semirecessed cabinet: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
    - a. Rolled-edge trim: 2-1/2-inch backbend depth.
  5. Cabinet trim material: Same material and finish as door.
  6. Door material: Stainless-steel sheet.
  7. Door style: Vertical duo panel with frame.
  8. Door glazing: Tempered float glass (clear).
  9. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  10. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  11. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.

12. Products: Subject to compliance with requirements, provide the following:
  - a. Larsen's Manufacturing Company: Model No. FS SS-2409-6R.
  - b. Other manufacturers offering products that may be incorporated into the Work are the following:
    - 1) JL Industries, Inc.
    - 2) Potter Roemer; Div. of Smith Industries, Inc.
  
- E. Fire Extinguisher Cabinet Type FEC 5:
  1. Cabinet type: Suitable for fire extinguisher.
  2. Cabinet construction: Nonrated.
  3. Cabinet material: Enameled-steel sheet.
  4. Semirecessed cabinet: Cabinet box partially recessed in walls of shallow depth; with trimless perimeter door frame.
  5. Door material: Stainless-steel sheet.
  6. Door style: Vertical duo panel with frame.
  7. Door glazing: Tempered float glass (clear).
  8. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  9. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  10. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.
  11. Products: Subject to compliance with requirements, provide the following:
    - a. Larsen's Manufacturing Company: Model No. SS-2409-6R, without trim.
    - b. Other manufacturers offering products that may be incorporated into the Work are the following:
      - 1) JL Industries, Inc.
      - 2) Potter Roemer; Div. of Smith Industries, Inc.
  
- F. Fire Extinguisher Cabinet Type FEC 6:
  1. Cabinet type: Suitable for fire extinguisher.
  2. Cabinet construction: 2-hour fire rated.
  3. Cabinet material: Enameled-steel sheet.
  4. Semirecessed cabinet: Cabinet box partially recessed in walls of shallow depth; with trimless perimeter door frame.
  5. Door material: Stainless-steel sheet.
  6. Door style: Vertical duo panel with frame.
  7. Door glazing: Tempered float glass (clear).
  8. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
    - a. Provide projecting door pull and friction latch.
    - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
  9. Accessories:
    - a. Mounting bracket: Manufacturer's standard steel, designed to secure fire extinguisher to fire-protection cabinet, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  10. Finishes:
    - a. Manufacturer's standard baked-enamel paint for the following:
      - 1) Interior of cabinet.
    - b. Stainless steel: No. 4 finish for the following:
      - 1) Door and trim.

11. Products: Subject to compliance with requirements, provide the following:
  - a. Larsen's Manufacturing Company: Model No. FS SS-2409-6R without trim.
  - b. Other manufacturers offering products that may be incorporated into the Work are the following:
    - 1) JL Industries, Inc.
    - 2) Potter Roemer; Div. of Smith Industries, Inc.

G. Fire Valve Cabinet (FVC):

1. Cabinet type: Suitable for fire hose valve.
2. Cabinet construction: Nonrated
3. Cabinet material: Enameled-steel sheet.
4. Semirecessed cabinet: Cabinet box partially recessed in walls of shallow depth to suit style of trim indicated; with one-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
  - a. Rolled-edge trim: 2-1/2-inch backbend depth.
5. Cabinet trim material: Same material and finish as door.
6. Door material: Stainless-steel sheet.
7. Door style: Fully glazed panel with frame.
8. Door glazing: Tempered float glass (clear).
9. Door hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
  - a. Provide projecting door pull and friction latch.
  - b. Provide continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
10. Finishes:
  - a. Manufacturer's standard baked-enamel paint for the following:
    - 1) Interior of cabinet.
  - b. Stainless steel: No. 4 finish for the following:
    - 1) Door and trim.
11. Products: Subject to compliance with requirements, provide the following:
  - a. Larsen's Manufacturing Company: Model No. VC2626-RL.
  - b. Other manufacturers offering products that may be incorporated into the Work are the following:
    - 1) JL Industries, Inc.
    - 2) Potter Roemer; Div. of Smith Industries, Inc.

2.4 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or baked-enamel finish.
  1. Color: Red.
  2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
    - a. JL Industries, Inc.
    - b. Larsen's Manufacturing Company.
    - c. Potter Roemer; Div. of Smith Industries, Inc.

2.5 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. Construct fire-rated cabinets with double walls fabricated from 0.0428-inch- thick, cold-rolled steel sheet lined with minimum 5/8-inch- thick, fire-barrier material.
    - a. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles selected.
  1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
  2. Miter and weld perimeter door frames.

- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.

2.7 STEEL FINISHES

- A. Surface Preparation: Clean surfaces of dirt, oil, grease, mill scale, rust, and other contaminants that could impair paint bond using manufacturer's standard methods.
- B. Factory Priming for Field-Painted Finish: Apply shop primer specified below immediately after surface preparation and pretreatment.
  - 1. Shop primer: Manufacturer's or fabricator's standard, fast-curing, lead- and chromate-free, universal primer, selected for resistance to normal atmospheric corrosion, for compatibility with substrate and field-applied finish paint system indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure.
- C. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat.
  - 1. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.

2.8 STAINLESS-STEEL FINISHES

- A. General: Remove tool and die marks and stretch lines or blend into finish.
  - 1. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches.
    - a. Run grain with long dimension of each piece.
- B. Bright, Directional Polish: No. 4 finish.
- C. When polishing is completed, passivate and rinse surfaces.
  - 1. Remove embedded foreign matter and leave surfaces chemically clean.

**PART 3 - EXECUTION**

3.1 EXAMINATION

- A. Examine roughing-in for hose valves and cabinets to verify actual locations of piping connections before cabinet installation.
- B. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets will be installed.
- C. Examine fire extinguishers for proper charging and tagging.
  - 1. Remove and replace damaged, defective, or undercharged units.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

3.3 INSTALLATION

- A. General: Install fire-protection specialties in locations and at mounting heights indicated or, if not indicated, at heights indicated below:
  - 1. Fire-protection cabinets: 54 inches above finished floor to top of cabinet.
  - 2. Mounting brackets: 54 inches above finished floor to top of fire extinguisher.
- B. Fire-Protection Cabinets: Fasten fire-protection cabinets to structure, square and plumb.
  - 1. Unless otherwise indicated, provide recessed fire-protection cabinets.
    - a. If wall thickness is not adequate for recessed cabinets, provide semirecessed fire-protection cabinets.
  - 2. Fasten mounting brackets to inside surface of fire-protection cabinets, square and plumb.
- C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

3.4 INSTALLATION OF VALVE CABINETS

- A. Field cut opening for pipe at back of cabinet.
- B. Install cabinet with not more than 1/16-inch tolerance between pipe OD and knockout OD.
  - 1. Center pipe within knockout.
- C. Seal through penetrations with firestopping sealant as specified in Division 7 Section "Through-Penetration Firestop Systems."

3.5 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection specialties are installed, unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding.
  - 1. 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 manufacturer.
- 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 10520