SECTION 10.14.33
ILLUMINATED SIGNS

PART 1 GENERAL

1.01 SUMMARY
A. This Section includes the following:
   1. Panel signs, back-lit.
   2. Dimensional characters (letters and numbers) for exterior use.
   3. Illuminated characters (letters and numbers) for interior use.
   4. Signage accessories.
B. Related Sections include the following:
   1. See Division 26 Sections for electrical service and connections for illuminated characters and for
      access to remote transformers.

1.02 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. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement,
   accessories, and installation details.
   1. Provide message list for each sign, including large-scale details of wording, lettering and artwork.
   2. Wiring Diagrams: Submit separate diagrams for back-lit panel sections and for internally lit
      individual illuminated characters.
C. Samples for Initial Selection: For each type of sign material indicated that involves color selection.
D. Samples for Verification: For each type of sign, include the following Samples to verify color selected:
   1. Panel Signs: Full-size Samples of each type of sign required.
   2. Dimensional Characters: Full-size Samples of each type of dimensional character (letter and
      number) required. Show character style, material, finish, and method of attachment.
   4. Approved samples will not be returned for installation into Project.
E. Qualification Data: For Installer.
F. Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance
   manuals.
G. Mock-Ups: Vendor shall fabricate and submit for approval, including operable lighting, mock-ups of
   each separate sign type. Approved mock-ups may be incorporated into final work. Mock-ups shall be
   provided of individual letters, one panel section of back-lit graphics, and each other type as me be
   required by Architect. Requirement for mock-ups may not be used as a justification for an extension to
   the project time schedule.

1.03 QUALITY ASSURANCE
A. Installer Qualifications: An employer of workers trained and approved by signage manufacturer.
B. Source Limitations: Obtain each sign type through one source from a single manufacturer.
C. Regulatory Requirements: Comply 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.
1.04 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.

1.05 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. Ensure that transformers are accessible after completion of Work.

1.06 WARRANTIES
   A. Vendor warrants that the materials and finished installations are in full conformance with the requirements of the Construction Documents, and are free of defects in material, workmanship and design for one year from acceptance of the finished installation by the Owner.
   B. Included in Vendor’s warranty is labor and material to correct defects before or after materials are installed.
   C. Vendor warranty includes lamps and ballasts replacement for the first 90 days after acceptance by the Owner.
   D. Vendor warrants that the materials and all rights thereto are owned by Vendor prior to delivery, and that all materials and images do not violate any third party’s copyright, patent, trade secret or other proprietary rights.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.
      1. Image360 Signs, Inc., Knoxville, Tennessee.
      2. SignCo, Knoxville, Tennessee
      3. YESCO, Utah.
      4. Lithonia Display, Lithonia, Georgia.

2.02 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 (1.5 mm) measured diagonally.
   B. Cast-Acrylic Sheet: Manufacturer's standard and as follows:
      1. Color: As selected by Architect from manufacturer's full range of custom colors.
   C. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), 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.
   D. Frames: Fabricate frames to profile indicated; comply with the following requirements for materials and corner conditions:
1. Material: Aluminum, extruded.
2. Corner Condition: Rounded to radius indicated.

E. Laminated Panels: Permanently laminate face panels to backing sheets of material; use manufacturer's standard process.

F. Brackets: Fabricate brackets and fittings for bracket-mounted signs from extruded aluminum to suit panel sign construction and mounting conditions indicated. Factory-paint brackets in color matching color of panel cabinet.

G. Graphic Content and Style: Provide sign copy that complies with requirements indicated on Drawings and/or on artwork supplied on electronic media by Architect, for size, style, spacing, content, mounting height and location, material, finishes, and colors of signage.

H. Colored Coatings for Acrylic Sheet: Provide Pantone Matching System (PMS) colored coatings, including inks and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and are nonfading for application intended. Required colors are PMS 282 - ETSU Blue, and PMS 123 - ETSU Gold.

### 2.03 DIMENSIONAL CHARACTERS

A. Cast-Acrylic Sheet: Manufacturer's standard and as follows:
   1. Color: As selected by Architect from manufacturer's full range.

B. Cutout Characters: Cut characters from solid plate of thickness and metal indicated. Produce precisely cut characters with square cut, smooth, eased edges. Comply with requirements indicated for finish, style, and size.
   1. Metal: Aluminum.

C. Fabricated Characters: Fabricate letters and numbers to required sizes and styles, using metals and thicknesses indicated. Form exposed faces and sides of characters to produce surfaces free from warp and distortion. Include internal bracing for stability and attachment of mounting accessories. Comply with requirements indicated for finish, style, and size.
   1. Aluminum Sheet: Not less than 0.090 inch (2.30 mm) thick.
   2. Character Height: As indicated on Drawings.
   3. Character Style: As indicated on Drawings.

D. Illuminated Characters: Illuminate characters in manner indicated using manufacturer's standard lighting components using LED lamps, transformers, insulators, and other components. Make provisions for servicing, as indicated on Drawings, and concealing connections to building electrical system. Coordinate electrical characteristics with those of power supply provided.

   1. Backlighted Characters: Provide concealed LED lamps of number indicated or required by size of characters. Include manufacturer's hardware for projection mounting of characters at distance from wall surface indicated. All LED's are bright white, unless noted otherwise. All LED lamps shall be of US manufacture.
   2. Facelighted Characters: Fabricate character faces from translucent acrylic sheet of thickness indicated. Attach characters to sheet metal back channels. Provide lighting tubes of number and spacing required to illuminate sign faces evenly.

### 2.04 ACCESSORIES

A. Vinyl Film: Provide opaque nonreflective vinyl film, 0.0035-inch (0.089-mm) minimum thickness, with pressure-sensitive adhesive backing suitable for both exterior and interior applications.

B. Mounting Methods: Use concealed fasteners fabricated from materials that are not corrosive to sign material and mounting surface.

C. Anchors and Inserts: Provide nonferrous-metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.
2.05 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. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

2.06 ALUMINUM FINISHES
A. Clear Anodic Finish: Manufacturer's standard clear anodic coating, 0.018 mm or thicker, over a satin mechanical finish.
B. Baked-Enamel Finish: Manufacturer's standard baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating, and painting.
   1. Color: As selected by Architect from manufacturer's full range of custom colors, to match existing signage enclosures.

PART 3 EXECUTION

3.01 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.

3.02 INSTALLATION
A. General: 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. Dimensional Characters: Mount characters using standard fastening methods recommended in writing by manufacturer for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners.
   1. Flush Mounting: Mount characters with backs in contact with wall surface.
   2. Projected Mounting: Mount characters at projection distance from wall surface indicated.
C. Illuminated Characters:
   1. Run wires into wall construction through conduit. Use insulators as necessary for neon lighting wiring.
   2. Exposed-to-view wiring or conduit on wall face is not permitted.
   3. Engage a licensed electrician to connect wiring to power source.
3.03  CLEANING AND PROTECTION

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

3.04  SIGN BURN-IN

   A. All sign lighting components shall be operated and burned-in for a period not less than one full calendar week.

END OF SECTION