SECTION 101400

SIGNS AND GRAPHIC ELEMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Perform all work required to furnish and install the signs and graphic devices as indicated by the Contract Documents, and to furnish all supplementary items necessary for the complete and proper installation.

1. Contract Documents include but are not limited to:
    a. Sign Message Schedule. Message Schedule indicates text copy of individual signs.
    b. Signage Location Plans. Signage Location Plans indicate location key of individual signs.
    c. Design Intent Documents. Design Intent indicate schematic design description, details, layouts and requirements of typical sign types.

B. The Section includes:

1. Identifying devices as shown on the Design Intent Documents, complete and as specified include the following:
    a. Site / Exterior Signs
        1) E1 Replacement Directional - Large
        2) E3 Signature Identity
        3) E4 Stair Tower Logo
        4) E5 Bridge Identity
        5) E6 Replacement Building Monument
        6) E7 Replacement Main Entrance
        7) E8 Demolition

C. References:

1. Accessibility Code: 2017 NJAC (2017 A117.1W/Amends)
   2010 ADA Standards for Accessible Design (SAD)
2. Building Code: 2021 NJBC (2021 International Building Code W/Amends)
3. Fire Code: 2021 NJFC (2021 IFC W/Amends)
4. Electrical: 2020 NEC (NFPA 70)
5. Health Facility Licensure Rules: 2022 Guidelines for Design and Construction of Healthcare Facilities (FGI)
6. Energy Code: 2021 NJE (2021 IECCW/Amends)

D. Related Sections:

1. 01 81 13 – Sustainable Construction Requirements
2. 05 12 00 – Structural Steel Framing
3. 09 70 00 – Wall Finishes

1.2 SYSTEM DESCRIPTION

A. Design Requirements:
   1. Drawings are schematic and are intended to establish dimensions of units, sight lines, profiles and locations for the work.
   2. Adjustments to the identifying devices may only be made within the limits of the established design intent of the drawings and specifications, and any such adjustments shall be identified on the submittals.
   3. Letter styles:
      a. Univers LT Std / 55 Roman
      b. Univers LT Std / 65 Bold
   4. Unless otherwise noted, text kerning is set to optical, tracking set to 0.
   5. The Designer will provide electronic finished art only as noted in the Design Intent Documents.
   6. All artwork and guides provided by Designer will be in Adobe Illustrator version 2025 or newer. Fabricator is required to have compatible software.

B. Message Requirements.
   1. Follow the legend in the Message Schedule for individual signs messages.
      a. The Message Schedule shall supersede the Design Intent Documentation.
      b. Any discrepancies in nomenclature within the Message Schedule should be brought to the attention of the Designer.

C. Structural Requirements:
   1. Details on the drawings indicate the design intent for the sign structures but do not necessarily include fabricating details required for the complete structural integrity of the identifying devices.
   2. The Fabricator is responsible for the complete structural design of the identifying devices and to incorporate a minimum safety factor of three.
   3. If structural engineering is required, engage a structural engineer that is registered in the state in which the project is located.
   4. Design the structural aspects of the following identifying devices:
      a. Exterior monument signs.
      b. Exterior pylon signs.
      c. Exterior wall mounted signs.
      d. Other identifying devices that, by nature of their size, location, or exposure to potential problems, require structural consideration.
   5. Design Loads: Engineer for loads as required by local building and seismic codes.
   6. Wind Load: Engineer to withstand the effects of a minimum 100 mph wind load acting inward and outward, normal to the plane of the wall for exterior signs.
   7. Expansion and Contraction: Engineer to provide for expansion and contraction movement of framing members and components without damage to exterior finishes, connection failure, undue or excessive strain on assembly, fasteners and anchors, reduction of performance, or other detrimental effects when subject to a maximum ambient temperature of 120 degrees F, which may result in a metal surface temperature range of 180 degrees F and a minimum ambient temperature of 10 degrees F. Base engineering calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.

D. Regulatory Requirements:

1. Sign Fabricator is responsible for securing all permits required from applicable local governing agencies, or any other agency having jurisdiction.
2. Sign Fabricator is responsible for knowledge of process for securing all required permits.
3. Allow adequate time for permit acquisition, including jurisdictions requiring any type of committee review or extended permit acquisition process.

E. Infiltration and Condensed Water Management:
1. All exterior units to incorporate provisions for resisting the infiltration of rain and the collection of condensation within the sign assemblies.
2. All exterior units to incorporate provisions for guttering, weeping infiltrated and condensed water out of the sign assemblies to the exterior. Coordinate with adjacent wall components.

F. Dimensional Tolerances: Provide sign assemblies, including anchorages that accommodate tolerances of existing building frames and other adjacent construction.

G. Control of Corrosion: Prevent galvanic action and other forms of corrosion by isolating metals and other materials from direct contact with incompatible materials.

H. Electrical Work: All electrical work required, as integral part of signage work is responsibility of Signage Fabricator. Fabricator is responsible for providing conduit, wire, and power supplies and enclosures for integral signage work as show on drawings. Sign Fabricator to coordinate with Electrical Contractor and General Contractor for power requirements. All illuminated signage must illuminate evenly without hot or cold spots and without shadowing or show-thru of internal components either when turned on or left off.

1.3 SUBMITTALS

A. General: Submit the following until final acceptance according to the Conditions of the Contract.

B. Shop Drawings / Coordination Drawings are the fabricator or contractor’s drawn version of information shown in the contract documents. The shop drawings are to show more detail than the construction documents and are drawn to explain the fabrication and/or installation of the individual sign elements. Do not reproduce Contract Documents or copy standard printed information as the basis of Shop Drawings.
1. Include plans, elevations and large-scale sections of typical members and other components.
2. Include dimensions, internal construction, identification of products and materials indicated, compliance with specified standards, notation of coordination requirements, notation of dimensions established by field measurement & certifications that products are appropriate for installation indicated.
3. Show anchors, grounds, layout, reinforcement, accessories and installation details.
4. Architectural dimensions & conditions on-site as required to successfully determine element sizes and installation methods.
5. For signs supported by or anchored to permanent construction, provide setting drawings, templates, and directions for installation of anchor bolts and other anchors to be installed as a unit of Work in other Sections.

6. Internal Electrical Engineering and light fixture requirements and power requirements to each location. Include locations of disconnect switches, UL Labels, power and mounting penetration locations.
7. All drawings are to be drawn to a standard Architectural scale with the scale indicated on the drawing. For sheets with multiple scales used, each drawing should have the scale indicated directly below the drawing.
8. Provide message layout for each sign required, including large-scale details of wording and lettering layout.
9. Samples for verification of text layout, provide full or half scale printouts of each sign type required.
10. Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 11”x17”, but no larger than 30”x42”.
11. Submit electronic pdf version to designer.

C. Samples include but are not limited to complete units of repetitively used materials and swatches showing color, texture and pattern.
1. Provide five (5) samples each not less than 4” long of the aluminum extrusions.
2. Provide five (5) samples each not less than 4”x 4” of each metal pattern specified.
3. Provide five (5) samples each not less than 4” x 4” for each acrylic material, color, texture and pattern specified.
4. Provide five (5) samples each not less than 4” x 4” for each vinyl film type and color specified.
5. Provide five (5) samples each not less than 4” x 4” for each paint color and finish specified.
6. Provide five (5) samples each not less than 4” x 4” for each ink color and finish specified.
7. Place a permanent label on back of each sample with Project name, Date, Descriptive information, Approval marking and notes area, Approval acceptance line.

D. Mockups are full-size assemblies for review of construction, coordination, testing, or operation; they are not Samples. Required only as noted or as required when Contractor does not suitably render details in shop drawing submittals.

E. Product Data: Collect product data into a single submittal for each element of construction or system. Mark each copy to show which choices and options are applicable to the project, including indication of specific sign types the product data applies to. Do not submit project data until compliance with requirements of the Contract Documents has been confirmed.
1. Product Data include, but are not limited to, the following:
a. Fabricator 's product Specifications.
b. Fabricator's installation instructions.
c. Standard color charts.
d. Catalog cuts.
2. Illumination Data:
a. Indicate luminance of internally illuminated signage during daytime and nighttime hours as measured across illuminated elements.

F. Structural Engineering data calculations and stamped documents for record.

G. Regulatory Requirements with authorized agency approval for record.

H. Permits with authorized agency approval for record.

I. Maintenance and Operating Manuals for record.
   1. Submit two (2) hardcopies of Maintenance and Operating Manuals and one (1) electronic pdf version.
   2. Furnish complete manuals describing the materials, devices, and procedures to be followed in operating, cleaning, and maintaining the Work. Include Fabricator's brochures and parts lists describing the actual materials used in the Work, including metal alloys, finishes, electrical components, and other major components.
   3. Assemble manuals for component parts into single binders identified for each system.

J. Submittal Procedures: Transmit each submittal to the Designer sufficiently in advance of scheduled performance of related construction activities to avoid delay.
   1. Place a permanent label or title block on each submittal with the following information:
      a. Project name
      b. Date
      c. Name and address of Contractor
      d. Number and title of appropriate Specification Section
      e. Drawing number and detail references, as appropriate
      f. Similar definitive information as necessary
      g. Approval marking and notes area.
      h. Approval acceptance line.

K. Designer's Actions: Except for submittals for the record, for information and similar purposes, the designer will review each submittal and mark to indicate the action taken and return.
   1. Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are forthcoming.
   2. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for re-submittals.
      a. Allow a minimum of 1 week for the Designer's review of each submittal.
      b. Allow additional time if the Designer must delay processing to permit coordination with subsequent submittals
      c. The Designer will advise the Contractor when a submittal being processed must be delayed for coordination.
      d. The Designer will not authorize an extension of time because of the Contractor's failure to transmit submittals to the Designer sufficiently in advance of the Work to permit processing.

1.4 QUALITY ASSURANCE

A. Sign Fabricator Qualifications:
   1. Firm experienced in producing signs like those indicated for this Project, with a record of successful in-service performance of not less than 5 years, and sufficient production capacity to produce sign units required without causing delay in the work.
   2. Firm experienced in installing signs like those indicated for this Project, with a record of successful in-service performance of not less than 5 years.

3. Supervision: A supervisor shall be on the jobsite during times that specified work is in process, and who is experienced in installing signs similar to type and scope required for this project.
4. Subcontractor Qualifications: Engage a firm experienced in producing graphic devices like those indicated for this Project, with a record of successful in-service performance of not less than 5 years, and sufficient production capacity to produce sign units required without causing delay in the work.
5. Single Source Responsibility: For each separate material, pre-manufactured product, or sign type specified, obtain materials and products for that material or product, from one source of a single fabricator.
6. Single Fabricator Responsibility: The Sign Fabricator shall use the same Sub-Contractor, fabricator, or fabricator for the assembly and fabrication of each of the sign materials, products, services, and techniques / methods specified (i.e., use the same company for all cast acrylic work, the same company for all painting, the same company for all aluminum work, etc.).
7. Electrical Work: Personnel performing electrical work shall be properly licensed according to all appropriate jurisdictional licensing regulations.
8. Luminous Work: Firm experienced in producing LED lighting for signs like those indicated for this Project, with a record of successful in-service performance of not less than 5 years. Sign Fabricator shall have UL Certification, and assemblies should display standard marks and labels per UL Requirements.

B. Design Standards:
1. Aluminum: Design and fabricate aluminum members according to applicable provisions of the American Architectural Manufacturers Association (AAMA), standards and specifications.
2. LED: Design and fabricate luminous lighting according to applicable provisions of the following:
   a. Underwriters Laboratories, Inc.:
      1) UL 48, the Standard for Electric Signs.
      2) UL 879, the Standard for Electric Sign Components.
      3) UL 879A, Standard for LED Sign.
      4) UL 1598, Luminaries.
   b. Luminous Lighting Installation Manual(s) as published by the International Association of Electrical Inspectors (IAEI).
   c. National Electronic Code (NEC).
   d. Building Code: 2021 NJBC (2021 International Building Code W/Amends)
   e. Fire Code: 2021 NJFC (2021 IFC W/Amends)
   f. Electrical: 2020 NEC (NFPA 70)

C. Quality Standards:
1. Electrical Components: Provide lighting fixtures and electrical components for illuminated signs that are labeled and listed by Underwriters Laboratories, Inc. (UL), and comply with applicable National Electrical Manufacturers Association (NEMA), standards.
2. Aluminum Welding Standards: Comply with American Welding Society (AWS), “Structural Welding Code” D1.2.

D. Discrepancies:
1. Sign Contractor shall notify the Designer of any discrepancies in the Design Intent Drawings, Sign Location Plans, or Message Schedule, in field dimensions or conditions and/or changes required in construction details.

E. Regulatory Requirements:
   1. Comply with all provisions of the 2010 ADA Standards for Accessible Design (ADA), Architectural Barriers Act (ABA) Standards 2015, and 2017 NJAC (2017 A117.W/Amends).
   2. Comply with applicable local governing agencies laws, ordinances, and regulations for the use of exterior identifying devices.
   3. Comply with all local building and seismic codes.

1.5 PROJECT CONDITIONS

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication to ensure proper fitting. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay.

B. Final exterior and interior construction will be in progress for the entire duration of the work required by this Project. There will be a significant number of people in and around all of the buildings.

C. There will be no defined limits of construction for this Project, all work will be exposed to and will be in close proximity of other building trades, staff, movers, and to vehicles on the streets and roads.

D. Streets, roads, access to any building, and corridors within any building shall not be closed or otherwise restricted without the expressed written permission of the Owner.

E. Due to construction in progress at the site and interior of all buildings, the Contractor of this job shall cooperate and coordinate this work with the General Contractor and the Owner.

F. Sign Fabricator to coordinate all sign concrete foundation installations with General Contractor to insure completion of foundations prior to completion of landscaping. Protect all completed concrete foundation work while during landscaping installation, until the date of Acceptance of completed sign units.

1.6 COORDINATION

A. For signs to be supported by or anchored to permanent construction, provide installers with specific requirements for anchorage devices. Furnish templates for installation.

B. Coordinate location of remote transformers or power supplies with building construction. Ensure that power supplies and transformers are accessible after completion of work.

C. Coordinate with other specification section and detail drawings.

1.7 ELECTRICAL

A. All electrical installation, procedures and materials will be in accordance with the following:
   1. National Electrical Code (NEC)
   2. American National Standards Institute (ANSI)
   3. Institute of Electrical & Electronics Engineer (IEEE)
   4. National Electrical Contractors Association (NECA)

5. National Fire Protection Association (NFPA)
6. National Electrical Manufacturers Association (NEMA)
7. Underwriters' Laboratories, Inc. (UL)

1.8 WARRANTY

A. Length and Requirements of Warranties and Guarantees:
   1. Except as otherwise specified, the Fabricator warrants and guarantees all signs / graphics elements of the Contract Work against defects and deficiencies in materials, equipment or workmanship for two (2) years from the date of the Acceptance of the product unless the manufacturer's warranty is longer.
   2. Upon receipt of written notice from the Owner of the discovery of any defects or deficiencies, the Fabricator shall remedy the defects and deficiencies and replace any property damaged there from occurring within the warranty and guarantee period.
   3. In case of Contract Work performed by Fabricator and/or suppliers and where guarantees are required by the Owner, the Fabricator shall secure warranties from said firms addressed to and in favor of Owner; deliver copies of same to the Owner, through the Designer, upon completion of the Contract Work; guarantee and assume full responsibility for the full period of said warranties.
   4. Delivery of said guarantees shall not relieve the Fabricator from any obligation from assumed under any other provisions of this Contract.

B. What the Warrantee-Guarantee Represents:
   1. The Fabricator warrants to the Owner that signs and graphics elements products furnished under this contract will be of good quality and new, unless otherwise required or permitted by the Contract Documents, that the Contract Work will be free from defect, deficiencies or damage not inherent in the quality required or permitted, and that the Contract Work will conform with the requirements of the Contract Documents.
   2. Contract Work not conforming to these requirements may be considered unacceptable.
   3. The Fabricator's warranty excludes remedy or damage, or defect caused by abuse, modifications not executed by the Fabricator, improper operation, or normal wear and tear under normal usage.

C. Warranty-Guarantee Form:
   1. The Fabricator shall submit to the Owner, a notarized warranty-guarantee for the Contract Work and special warranty-guarantees required by the specifications on the Fabricator's letterhead.
   2. Submittal of all warranty-guarantees is required as prerequisite to the Final Payment.

PART 2 - PRODUCTS

2.1 FABRICATORS

A. Acceptable fabricators: Subject to compliance with requirements, fabricators offering products that may be incorporated in the Contract Work must show a minimum of 5 years manufacturing and installing similar signs.

B. Acceptable fabricators include, but are not limited to, the following:

Design Communications, Ltd.
153 W 27th Street
New York, NY 10001
Tom Barton
201-952-2129
tbarton@dclnyc.com

Stratus
8959 Tyler Blvd.
Mentor, OH 44060
Vince Desantis
847-212-9541
Vince.desantis@onestratus.com

YESCO
999 Tabor Road
Morris Plains, NJ 07950
Jeremiah Gobena
973-343-7963
egobena@yesco.com

2.2 PRODUCT STANDARDS

A. The Contract Documents are based on the products listed below to establish a standard of quality. The Designer may consider other available Fabricators with products having equivalent characteristics provided deviations are minor and do not change the intended aesthetic, functional and performance requirements as judged.

2.3 MATERIALS

A. Acrylic Sheet:
   1. Provide extruded or continuous cast methyl methacrylate monomer plastic sheet, in sizes and thickness indicated, with a minimum flexural strength of 16,000 psi when tested according to ASTM D790, with a minimum allowable continuous service temperature of 176 degrees F (80 degrees C) and of the following general types:
   2. Transparent Sheet: Where sheet material is indicated as “clear”, provide colorless sheet in finish indicated, with light transmittance of 92 percent, when tested according to the requirements of ASTM D1003.
   3. Day/Night Sheet: Specifically for exterior applications that appear black in daylight and white when back-lit illuminated. Use Plaskolite Optix-L Black/White 2028. 0.177” nominal thickness.
   4. Manufacturers (or equal):
      a. Plaskolite. 400 W Nationwide Blvd, Ste. 400, Columbus, OH 43215. 800.848.9124.
      b. Rohm & Haas. 100 Independence Mall West, Philadelphia, PA 19106. 215.592.3000.

B. Aluminum Extrusions and Tubes:
   1. Aluminum extrusions of alloy and Temper recommended by the sign fabricator for the type of use and finish indicated with not less than the strength and durability properties specified in ASTM B221 for 6063-T5.

C. Aluminum Plate:
   1. Alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated and not less than the strength and durability and properties of the alloy and temper specified for ASTM B209.

D. Aluminum Sheet:
   1. 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 and with not less than the strength and durability properties of the alloy and temper specified for ASTM 209, 6061-T6.

E. Awning and Sign Flexible Facing:
   1. Translucent white pigmented vinyl substrate with polyester scrim, 20oz weight.
   2. Smooth semi-gloss facing.
   3. Capable of accepting translucent graphic film, thermal ink jet printing or direct to substrate piezo ink jet printing.
   4. Material seams:
      a. Roll width up to 203cm to be seam free.
      b. Widths over 203cm to have seam with strength of 9kg/cm, located no closer than 45cm from attachment hardware.
   5. Store material in cool, dry environment away from direct sunlight.

F. LED (Light Emitting Diodes):
   1. Configure LED modules to produce bright, even and consistent illumination of translucent graphic faces.
   2. Provide LED color appropriate to translucent face color based on manufacturer recommendation, to render clear saturated color at graphic faces.
   3. Provide access to transformers and wiring. Do not use exposed raceways or connections.
   4. Provide all power supplies, support and installation hardware, and product required for successful installation. Use styles and sizes appropriate for location and graphic element requirements. This includes low profile, compact and miniature transformers.
   5. Manufacturers:
      a. Agilight. 1074 Arion Circle, Ste. 116, San Antonio, TX 78216. 866.482.0203.
      b. Bitro. 300 Lodi St., Hackensack, NJ 07601. 201.641.1004.
      c. GE Lighting. 888.694.3533.
      d. Principle / Sloan LED. 5725 Olivas Park Dr., Ventura, CA 93003. 888.747.4533.

G. Polycarbonate Sheeting:
   1. Provide extruded or continuous cast polycarbonate sheet, in sizes and thickness indicated of the following general types:

2. Transparent Sheet: Where sheet material is indicated as “clear”, provide colorless sheet in finish indicated, with light transmittance of 92 percent, when tested according to the requirements of ASTM D1003.
3. Opaque Sheet: Where sheet material is indicated as “opaque”, provide colored opaque sheet in colors and finishes as selected from the manufacturer’s standards.

H. Stainless Steel / Aluminum - General:
1. Provide metal free from pitting, seam marks, roller marks, stains, discolorations, and other imperfections where exposed to view on finished units.

I. Stainless Steel / Aluminum - Shapes, and Bars:
1. ASTM A 36.
2. Finish as indicated in finish schedule.
3. Type S, Grade A, standard weight (schedule 40), unless otherwise indicated, or another weight required by structural loads.

J. Steel Aluminum Welding Electrodes and Filler Metal:
1. Provide type and alloy of filler metal and electrodes as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.

K. Vinyl Film - Letter and Symbol:
1. Cast Vinyl film with pressure sensitive adhesive backing, suitable for exterior applications. Colors as indicated.
2. Thickness: 2 mil (0.05 mm) without adhesive, 2.5 to 3.5 mils (0.063 to 0.09 mm) with adhesive.
3. Translucent Films:
   a. 3M series 3630 Translucent Films.
4. Light Management Films:
   a. 3M series 3635 Light Management Films.
   b. Avery Dennison series 900 Light Control Films.
   c. Arlon 5500 series Diffuser Films.

L. Vinyl Film - Digital Printed Graphics:
1. Translucent:
   a. Printing on 3M Envision Translucent Graphic Film IJ3730 using translucent UV cured weather-resistant ink.
   b. Printer to have C, M, Y and K print heads (minimum) with UV curable inks and UV LED Lamp to cure ink while printing. Minimum reproduction print quality up to 1440 dpi.
   c. Store all substrates, inks and prints in a temperature, dust and humidity-controlled room.
   d. All graphics are to be processed and applied according to manufacturer’s specifications.
   e. Protective overlaminate. Applied according to manufacturer specifications.
      1) 3M 3660M Overlaminate, Matte Face Finish.

2.4 PRE-MANUFACTURED UNITS

A. Fasteners: Concealed fasteners fabricated from metals that are non-corrosive and are compatible with the sign material and mounting surface.

B. Anchors and Inserts: Nonferrous metal or hot-dipped 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.

C. Tape: Double coated, 1/32 inch thick, very high bond, foam tape.

D. Adhesive: Liquid silicone-adhesive or two-part epoxy recommended by the applicable sign material manufacturer.

E. Sheet Adhesive for Cast Acrylic Sheets: Double sided, very high bond, optically clear sheet adhesive manufactured for the laminating of cast acrylic sheets.

2.5 FABRICATION

A. General:
1. Comply with requirements indicated for materials, thickness, finishes, colors, designs, shapes, sizes, and details.
2. Produce smooth, even, level sign surfaces, constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally.
3. Fabricated work shall be free of burrs, pitting, cutting edges, sharp corners, nicks, dents, and scratches. Painted surfaces shall be properly prepared, and shall be free of brush marks, streaks, laps, runs, or pile-up of paint, with uniform opaque coverage. Unless otherwise indicated, edges of signs shall be painted the same color as the face.
4. Finish seams and joints on exposed surfaces shall be imperceptible in finished work.
5. Edges treated by sanding, buffing, or polishing to eliminate any visible tooling marks.
6. Edges should be square and perpendicular to the face unless otherwise indicated on contract drawings.
7. Except as indicated, finish surfaces smooth.
8. Furnish flat surfaces without bulges, oil canning, or other physical deformities.
9. Furnish curved surfaces with smooth, free-flowing shape.
10. Carefully follow fabricator’s recommended fabricating procedures regarding expansion, contraction, fastening, and restraining of acrylic plastic.
11. Exercise care to ensure that polished surfaces are unblemished in finished work.
12. All Contractor painting shall be performed in a controlled and dust free environment.
13. Allow adequate time for paint finishes to off-gas prior to applying vinyl film or overlaminate.

B. Graphic Content and Style: Provide sign copy that complies with the requirements indicated for size, style, spacing, content, position, material, finishes, and colors of letters, numbers, and other graphic elements.
1. Line breaks of manufactured signs shall match line breaks in message schedule.

2. Message Schedule content takes precedence over Design Intent messages.

C. Unframed Signs: Fabricate signs with mechanically and smoothly square cut edges and square cut corners.

D. Laminated Signs: Permanently laminate face panels to backing sheets of material and thickness indicated using the Fabricator's standard process.

E. Cut Letters / Stencil Cut Letters: Machine-engraved letters from acrylic or metal as indicated to produce cutters mechanically linked to master templates in a pantographic system or equivalent process capable of producing characters of the style indicated with sharply formed edges.
1. Inside corners shall be a minimum diameter where the radius is not perceivable.
2. Tolerances for inside and outside corners where a cut letter pushes through a stencil letter should be consistent and even with a gap less than .03125”.

F. Surface Copy: Apply copy and graphics to the first surface of acrylic sheet coated with opaque paints forming the panel face by the surface silk screen process to produce precisely formed opaque images free of rough edges

G. Applied Vinyl Copy: Die-cut characters from vinyl film with pressure-sensitive adhesive backing, color and sizes as indicated and applied to the exposed face of the opaque acrylic sheet or the clear acrylic sheet with opaque color coating subsurface to form the sign face.

H. Illuminated Cabinets and Letters:
1. All illuminated signs to be integrated into the Building Lighting Management System.
2. Illuminated Letter forms must have drain holes that comply with UL requirements. Drain holes to have “top hat” to reduce visibly noticeable light leaking.

I. Fasteners and Supports:
1. Bolts, nylon insert lock nuts: ASTM A 320, Grade B stainless steel.
2. Rivets for signs: ASTM B 316, Alloy 6063-T61 or equivalent. Aluminum alloy blind rivets of self-plugging variety may be substituted for solid aluminum alloy rivets, subject to acceptance by Engineer / Architect.
3. Use concealed fasteners fabricated from metals not corrosive to sign material and mounting surface.
4. Anchors and Inserts: Use nonferrous metal or hot dipped 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.
5. Adhesives, where used for wall mounted signs, shall be Loctite PL Premium Construction Adhesive with a bond strength of >100 lbs. per 2 square feet, or approved equal. Adhesive application install temperature shall be between 42°F to 94°F. Adhesive properties shall be, but not limited to the following: Low VOC, waterproof, paintable, non-flammable and Greenguard certified. Allow 24 hours for adhesive to cure or per the sign material fabricator’s recommendations.

J. Cantilever Sign Supports:
1. Pipe for poles and arms: steel pipe, ASTM A53, Grade B, Type E or S.
2. Gusset, flange, and base plates: ASTM A 36.

3. Castings: Free of sharp edges and irregularities. Pole top and end cap castings: ASTM A 126, Class A.
4. Bolts: Connect arm connection flanges with galvanized high strength steel bolts, nuts, and washers per ASTM A 325. Hot dip galvanized fasteners per ASTM A 153. Galvanized nuts shall be tapped oversized per ASTM A 563, and Supplementary requirement S1, "Lubricant and Test for Coated Nuts."
5. Welding: Applicable requirements of Sections of Division 05.

2.6 FINISHES BY FABRICATOR

A. Painting:
1. The term “paint” includes enamels, paints, sealers, fillers, stains, and coating systems whether used as prime, intermediate or finish coats.
2. Use colored paints and coatings, including inks, for copy and background colors, that are recommended by product manufacturers for optimum adherence to surface and are non-fading for the application intended.
3. Use Acrylic Urethane or Polyurethane Low VOC or Ultra Low VOC paint system.
4. Use the proper reducer, catalyst and accelerator (as required) for each application.
5. Formulate paint products with anti-mildew agents especially formulated for the project location for both interior and exterior areas. In addition, include carefully balanced ultraviolet inhibitors for exterior products.
6. Properly clean and prepare substrates prior to undercoat and topcoat application.
7. Use the correct primer and application technique for every specific substrate. Follow manufacturers recommendations for type of primer, keeping primer and paint within the same system.
8. Allow specified times between coats. For primers, topcoats, and clears, extend flash times between each coat application per manufacturer recommendation.
9. Paint shall have the minimum cure time as recommended by the manufacturer prior to final assembly, crating or shipping.
10. All paint to be MPC Matthews Paint, Sherwin-Williams Sign Coatings, or AkzoNobel brand unless otherwise specified.
    a. Matthews Paint, 760 Pittsburgh Drive, Delaware, OH 43015, 800.323.5693, www.matthewspaint.com.
    b. Sherwin-Williams, 101 W. Prospect Avenue. Cleveland, Ohio 44115, 216.566.2000, www.sherwin-williams.com.
    c. AkzoNobel, 1845 Maxwell Drive, Troy, Michigan 48084, 800.618.1010, www.akzonobel.com.

B. Screen Printing:
1. Screen Printing ink shall be a manufacturer’s standard product suited for silkscreen technology and shall be available in a published system with full range of accent or pure spectrum colors, and any mixture of colors. Use inks that were manufactured within the last six months and are free from skins, lumps, and any foreign matter. Oils, thinners, and driers shall comply with the ink manufacturer’s recommendations.
2. Screen material shall be either:
    a. Stainless steel, nylon, or polyester with 250 lines per inch, or finer.
    b. 16XX cloth fabric for printing
3. Execute silk screening from photo screens or negatives. Do not use images shown on the drawings as camera-ready artwork.

4. Execute silk screen-printing in a manner to ensure edges and corners of finished letterforms or symbols are sharp, true and clean. Letterforms or symbols with rounded positive or negative corners, edge build-up, or bleedings, etc. will not be accepted.
5. Image finished to match specified & approved colors; bleed through of colors is not acceptable.
6. Prior to printing, all surfaces should be prepped per manufacturers recommended methods.

C. Direct to Substrate Printing:
1. Direct Substrate Printers shall provide high-quality, full color images directly onto a variety of flat substrates. Substrate examples include (but are not limited to) Acrylic, PVC, Polycarbonate, Aluminum, Stainless Steel, Wood, etc.
2. Printer to have C, M, Y, K, CL and W print heads (minimum) with UV curable inks and UV LED Lamp to cure ink while printing. Minimum reproduction print quality up to 1440 dpi. Flatbed printing size for substrates up to (and including) 48” x 96”. Printer to accept substrates up to 2” thick.
3. Printer to have white ink capabilities to create under-coat / primer on dark substrates and opaque under-coat / primer on clear substrates. Clear ink to provide protective over-coating and variable sheen finishes including full-surface glossy printing. Printer to have mask pattern capability to effectively curb visible banding. Printer to have variable drop function to produce smooth and natural gradations.
4. Prior to printing, all surfaces should be prepped per manufacturers recommended methods.

D. Powder Coating Graphics:
1. Permanent imaging thermally embedded in flat surfaces and dimensional objects.
2. Characteristics: Coating shall be super durable polyurethane powder coated finish that is resistant to abrasion, humidity and corrosion. It shall be anti-graffiti, scratch resistant and 05080-2 non-combustible. The coating process shall be applicable for both interior and exterior applications. Coating shall withstand high traffic and extreme weather. Available characteristics include anti-skid, antimicrobial, post-formable and super texture.
3. Powder Coating with Embedded Image. Coating shall be resistant to abrasion, humidity and corrosion; anti-graffiti, scratch resistant, non-combustible, super-durable (UV resistant), and TGIC free (non-toxic). Suitable for both interior and exterior applications. Coating shall withstand high traffic and extreme weather.

PART 3 - EXECUTION

3.1 STORAGE

A. Long-term storage on the job site of finish product will not be allowed.

3.2 EXAMINATION

A. The Fabricator shall inspect substrate surfaces to receive identifying devices and associated work and conditions under which the identifying devices will be installed to determine if there are conditions that will adversely affect the execution of the work, and permanence and quality of work. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Fabricator.

B. Owner and Designer reserve the right to examine work in fabrication shop prior to shipment to the Project Site.

3.3 INSTALLATION

A. General: Contractor shall locate sign units and accessories as indicated on drawings (locations not indicated on drawings shall be field located by designer, using mounting methods of the type described and in compliance with the fabricator's instructions. Install signs level, plumb, square, free from warp or twist, maintaining dimensional tolerances, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.

B. Exterior ground mounted signs: Contractor to have all utilities located and identified prior to field locating exact placement with designer.

C. Field paint touchup: Any required paint finish touchup required in field must match the surrounding paint finish and be visually imperceivable. Any metallic paint finishes must use an aerosol spray system with incorporated Hardener, similar to Matthews EZSpray. Protect surrounding area from overspray.

3.4 CLEANING AND PROTECTION

A. After installation, clean soiled sign surfaces according to the Fabricators instructions. Protect units from damage until Acceptance.

B. Remove waste materials, rubbish and debris from the site and legally dispose of at public or private dumping areas off the Owner’s property.

3.5 SELECTIVE DEMOLITION

A. General: Demolish and remove existing signage and graphic elements only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically.
2. Neatly remove signage elements to minimize and limit any wall damage. Use cutting methods least likely to damage construction to remain or adjoining construction.
3. Remove debris and materials and clean area to match surrounding conditions.
4. Dispose of demolished items and materials promptly.

B. Existing Facilities: Comply with building manager's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during selective demolition operations.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent surfaces caused by selective demolition operations.

B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Disposal: Transport demolished materials off Owner's property and legally disposes of them.

PART 4 - ATTACHMENTS

4.1 MESSAGE SCHEDULE

A. Site / Exterior Sign Message Schedule, Reference Attachment 01.

END OF SECTION