

SECTION 10430: SPECIALTY SIGNS

PART 1: GENERAL

1.01 DESCRIPTION

- A. This section specifies furnishing and installing Specialty Signs. The extent and location of “Specialty Signs” is indicated on the contract drawings and includes public-related signs within the exterior of the facility as shown on the drawings (“AS” series drawings) and includes non-illuminated and illuminated signs.
- B. The Sign Contractor shall furnish all permits, labor, tools, materials, equipment, facilities, connections, brackets and accessories to fabricate, assemble, package, ship, deliver, handle, unload and install at the work site Specialty Signs and miscellaneous accessories in accordance with this section. The work also includes concrete installation for footings of monument and post-mounted signs.
- C. Specialty Signs and any miscellaneous accessories shall be new, finished as specified, in full compliance with the specification, fully assembled and installed.

1.02 RELATED SECTIONS

- A. Division 3 - Concrete
- B. Division 5 - Metals
- C. Division 9 - Finishes
- D. Division 16 – Electrical

1.03 STANDARDS

- A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:
 - 1. NPCA: National Paint and Coatings Association
 - 2. AA: Aluminum Association - Aluminum Standards Data, Designation System for Aluminum Finishes, Engineering Data for Aluminum Structures
 - 3. AWS: American Welding Society: D1.1; Structural Welding Code – Steel, D1.2; Structural Welding Code – Aluminum
 - 4. NAAMM: National Architectural Metal Manufacturers: Metal Finishes Manual
 - 5. SSPC: Society for Protective Coatings: Steel Structures Painting Manual; Volume 2
 - 6. UL: Underwriters Laboratories
 - 7. Americans with Disabilities Act (ADA and ADAAG)
- B. All work products described in this section shall conform to the highest standards of each of the respective trades.

1.04 QUALITY ASSURANCE

- A. **QUALIFICATIONS:** The Sign Contractor shall be an established firm regularly engaged in the fabrication and installation of Specialty Signs. They shall have experience in fabricating and installing signage units of types and sizes similar to those shown in the contract drawings and with experience in projects similar in cost, number of signs, and complexity of signs, for a minimum of five years and with sufficient production capacity to produce and install required units without causing delay to work.
- B. **COORDINATION:** The Sign Contractor is responsible for coordination with other contractors. Signs in this project may require extensive coordination with other systems. The Sign Contractor shall maintain documentation of coordination with the Project Manager (PM), Designer, architect and/or engineer (A/E), Owner and other contractors to prevent foreseeable installation problems. Any conflicts shall be brought to the immediate attention of the Project Manager for prompt resolution/revision prior to fabrication.
- C. **RESPONSIBILITY:** The Sign Contractor shall be responsible for the quality of all materials and workmanship required for the execution of this Contract including the materials and workmanship of any firms who act as his subcontractors. The Sign Contractor shall be responsible for providing subcontractors with complete and up-to-date drawings, specifications, graphics schedule and other information issued by the Project Manager.
- D. **QUALITY:** Completed work shall find materials structurally sound, free from scratches, abrasions, distortions, chips, breaks, blisters, holes, splits or other disfigurement considered as imperfections for the specific material as judged solely by the Project Manager and corrections shall be made without additional cost to the Owner or impact to the schedule.
- E. **WELDING INSPECTION:** The Sign Contractor shall provide full time welding inspection and testing by an independent testing agency for all shop and field welds. Sign Contractor shall submit inspection and test reports to Project Manager if requested.
- F. **APPROVALS FROM REGULATORY AGENCIES:** Where appropriate, Sign Contractor shall coordinate with and obtain approval from City Planning Division, DOT, Fire Inspector and other Regulatory Agencies with jurisdiction directly. All information to be sent to Project Manager for review and approval prior to Sign Contractor contacting and submitting to the regulatory agencies.
- G. **UNIFORMITY OF MANUFACTURER:** For each sign form and graphic process indicated furnish products of a single manufacturer.
- H. **ARTWORK:** The Owner or Project Manager will provide master artwork required for Specialty Signs for any special graphics, including logos and symbols. Master artwork provided will be in Adobe Illustrator, Macromedia Freehand, AutoCAD, and/or EPS file format. Sign Contractor is responsible for demonstrating in-house ability to work with and execute final production artwork from the computer files provided. Sign Contractor is responsible for generating all sign layouts. Sign Contractor will make any revisions to the sign layouts/artwork to the satisfaction of the Project Manager or Owner. Sign Contractor will be responsible for output of all final artwork.
- I. **LETTERING AND GRAPHICS:** All lettering and other sign graphics shall be computer generated and cut or photographically reproduced. Hand-rendered or hand-cut lettering or other graphics are not acceptable. All fonts and graphics are as shown in the contract drawings.
- J. **STRUCTURAL DESIGN:** The Sign Contractor shall retain a qualified Structural Engineer, licensed to practice in the State of Washington for the structural design of all signs and supports. Specialty Signs to be engineered to withstand the effects of wind, weather, temperature, gravity and seismic conditions per applicable codes. Also provide for thermal movements of sign components to prevent buckling, opening of joints, overstressing of components, failure of connections and other detrimental effects.

- K. **TERMS:** The terms Sign Contractor, Sign Fabricator and Sign Installer are used interchangeably and refer to the same source in performance of work specified.

1.05 SUBMITTALS

- A. **GENERAL:** Submit the following in accordance with Section 00000 Submittals.
- B. **PRODUCT DATA:** Manufacturer's specifications, data, product properties and installation instructions. Include manufacturer's construction details relative to materials, individual components, profiles, and finishes for each type of sign required. Provide manufacturer's recommendations for maintenance and cleaning requirements for exterior and interior sign surfaces.
- C. **SHOP DRAWINGS:** Submit within 30 days following Notice to Proceed (NTP) in duplicate, Shop Drawings for all Specialty Signs required by the Contract Documents or subsequently required by Contract Changes. The Sign Contractor shall review the Shop Drawings for compliance with the Contract Documents and shall certify that he has done so by stamp, or otherwise affixed to each copy thereof.
 - 1. **DRAWING DETAILS:** The Shop Drawings are to document all materials, including part numbers, product numbers and color references. The Shop Drawings shall illustrate all means of mounting and attachment in elevation, plan and side views, and sections, and shall include proper coordination with building sections for connections to wall, ceilings and floors and miscellaneous structural steel. For each type of Specialty Sign include plans, elevations, and large-scale sections of typical members and other components. Show all sign components, fittings, parts, attachments, grounds, reinforcement, accessories, graphic layout, specific messages and graphics, joining, installation procedures, and complete anchoring and supporting systems for the various applications and mounting details. Show general assembly of components, relationship to adjoining construction, complete fabrication details of sign housing, hangers, mounting. Also include lighting, schematic wiring diagrams and electrical loads.
 - 2. **PERFORMANCE DESIGN:** Drawings shall clearly show provisions for all performance functions described herein. Differences from the Contract Drawings shall be clearly identified and brought to the Project Manager's attention in writing.
 - 3. **STRUCTURAL DESIGN:** Include calculations substantiating conformance with design criteria. Submit structural drawings for foundations and sign supports, signed and sealed by a qualified Structural Engineer licensed to practice in the appropriate jurisdiction.
 - 4. **VERIFY FIELD CONDITIONS:** Sign Contractor shall verify field conditions, all sign locations and sign quantities and take field measurements prior to preparation of Shop Drawings and fabrication to ensure proper fitting. Show recorded measurements on Shop Drawings.
- D. **PROJECT SCHEDULE:** Coordinate production and installation schedule with the Project Manager to avoid delay and submit this schedule in writing. Identify dates for all submittals, reviews and approvals including Shop Drawings, samples, prototypes, in-shop reviews, in-field installation reviews and punch lists.
- E. **CERTIFICATIONS:** When requested by the Project Manager, submit certificates indicating that all materials and products used on the project meet or exceed specified requirements.
- F. **SAMPLES:** Submit samples, in duplicate, of the color and finish of exposed materials for approval before proceeding. The review of samples will be for color, gloss, finish, texture and fit. Compliance with all other requirements is the exclusive responsibility of the Sign Contractor. Submit two samples each for approval of the following materials and assemblies prior to proceeding with the work (minimum 12" x 12" panels or minimum 12" sections) in the thicknesses specified herein. When

requested, furnished full-size samples of sign materials. Approved samples to be retained by the Project Manager.

1. PAINTED ALUMINUM PANELS: Finish paint samples, including specified clear coats, on specified panels to match the following:
 - a. Color Scheme A: Matthews MP02103 / MP11988 / MP00962, satin finish
 - b. Color Scheme B: Matthews MP11183 / MP05576 / MP06494, satin finish
 - c. Color Scheme C: Matthews MP00804 / MP00825 / MP11958, satin finish
 - d. Color Scheme D: Matthews MP04998 / MP11309 / MP07663, satin finish
 - e. Color Scheme E: Matthews MP14402 / MP11936 / MP07489, satin finish
 - f. Color Scheme F: Matthews MP05462 / MP07856 / MP01025, satin finish
 - g. Color Scheme G: Matthews MP00142 / MP08046 / MP01451, satin finish
 - h. Color Scheme H: Matthews MP00818 / MP01510 / MP01529, satin finish
 - i. Matthews 42202SP Natural White, satin finish
 - j. Matthews 41335SP Anodic Black, satin finish
 - k. Matthews MP14353, satin finish
 - l. Matthews MP07327, satin finish
 2. PAINTED ALUMINUM LETTERS: Matthews 42202SP Natural White or Matthews 41335SP Anodic Black, satin finish painted on aluminum or steel letter mechanically fastened to aluminum or steel panel specified per sign type.
 3. STONE VENEER: Eldorado Stone, Slate Gray Stacked Stone
 4. PATTERNS/ARTWORK: Representational section of map artwork digital vinyl graphic, mounted to 2mm Dibond. Provide full-size plots of artwork for each sign for review and approval prior to fabrication.
- G. MAINTENANCE MANUAL: Sign Contractor to provide a detailed document approximately 10 to 15 8 1/2" x 11" pages in length for the procedures for periodic inspection, cleaning and maintenance of the signs. Photographs illustrating maintenance procedures shall be included. Include manufacturers' names and parts numbers for all equipment which might require replacement, such as transformers, fluorescent tubes, timers, switches, etc. Cleaning and maintenance instructions from material suppliers shall be included in the manual. Include 1 hard copy and PDF.

1.06 PROTOTYPE SIGNS

- A. GENERAL: Upon approval of the Shop Drawings and Samples, proceed with the fabrication and delivery of one complete, full-size prototype Specialty Sign, type A3, suitable for subsequent installation. Include completed face and graphics. Include lighting and external components to allow sign to be electrified. When approved by Project Manager, the Prototypes shall be considered as one completed sign unit.

1. Prototype signs to be delivered to Project Site and installed in location to be determined by the Project Manager as indicated on the drawings.
 2. Extent of prototype shall include all components required for a complete installation.
 3. Alter or revise prototype as directed to obtain the approval of the Project Manager. Approved Prototypes shall serve as a standard of quality for specified item(s) for the project and may remain as a permanent part of the Work if in the same condition as new at the time of final acceptance.
 4. Prototypes shall be reviewed by the Designer, Construction Manager, Owner, Material Manufacturer's representatives and representatives of other trades or sub-contractors affected by prototype installation prior to and after installation by the Sign Contractor. Reviews will be managed and conducted by Project Manager.
- B. PROTOTYPE INSTALLATION: Submit for Project Manager's approval a detailed description of installation procedures and guidelines, along with a conceptual sequence of installation, for approved Prototype Signs. Once plan is accepted, the Sign Contractor shall install the Prototype Signs and gain approval for the installed signs prior to proceeding with installation of remaining signs.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. DELIVERY: Deliver fabricated Specialty Sign units and component parts to Project Site completely identified per Shop Drawings. Coordinate delivery with the Project Manager so that all signs can be installed in a timely manner. Provide a written schedule of deliveries and verify delivery and installation procedures with the Project Manager.
- B. PACKAGING: Deliver Specialty Signs in cartons or crates to provide protection during transit and storage at the work site. Specialty Signs shall be delivered to the work site in original unopened packages, clearly labeled with manufacturer's name and identification as shown on approved Shop Drawings or submittals. Packaging shall be made with labels fixed identifying clearly the type and quantity of the Specialty Signs, and the locations where these signs will be installed.
- C. STORAGE: Prior to delivery, verify with Project Manager if on-site storage will be provided by the Owner or General Contractor. Store Specialty Signs under cover. Protect stored materials against corrosion, deterioration of any kind, and damage. Place all units on at least 4-inch high sills on floors in a manner that will prevent damage and rusting. Avoid the use of non-vented plastic or canvas shelters, which could create a humidity chamber or contact with soil or exposure to the elements. Storage of fabricated items is the responsibility of the Sign Contractor.
- D. PROTECTION: Protect Specialty Signs to prevent scratches, stains, discoloration or other damage during shipping, installation and from weather until installed. Replace items damaged during fabrication, handling, shipment, storage or erection. No damaged Work shall be accepted; items with minor defects or scratches will be considered as damaged, unless otherwise specified. Provide adequate protection for all signs to insure other trades can complete their work without damaging any signs. Keep covered with polyethylene film or other protective covering. Keep cementitious and bulk materials, such as cement and same, dry and protected from contamination by foreign materials.
- E. INSPECTION AND DAMAGE: Inspect Specialty Signs upon delivery to Project site for damage. Do not install damaged sign components. Repair minor damages provided that the finished items are equal in all respects to new work and is acceptable to the Project Manager; otherwise, remove and replace damaged sign components.

1.08 WARRANTY

- A. GENERAL: Sign Contractor shall unconditionally warrant materials and workmanship for a period of

five years from the date of final acceptance of the Project by the Owner.

- B. COVERED ITEMS: Warranty shall cover but not be limited to:
1. Color fastness against fading or chalking.
 2. Assembly, construction and operation.
 3. Defects in materials and application including fading, discoloration, peeling, cracking, blistering, delamination.
 4. Cracks or separation of components due to normal heat and environmental conditions, workmanship and assembly methods.
 5. Electrical components.
- C. REPLACEMENT: Any part found to be defective due to faulty materials and/or workmanship shall be replaced at no cost to the Owner. Sign Contractor shall assume all costs involved with the execution of same. Sign Contractor shall assume full responsibility for the removal and replacement of all other finishes required to affect such repair and/or replacement.

1.09 TRAFFIC CONTROL

- A. TRAFFIC CONTROL PLANS: No later than twenty-one (21) days prior to scheduled installation of the first Specialty Sign, submit to the Project Manager's approval individual traffic control plans for each sign installation location adjacent or within to public right of ways. This submittal shall be in addition to the submittal requirements listed in Section 00000 for the overall construction project and shall specifically address signage installation and associated work.
- B. TRAFFIC CONTROL SUPERVISOR: The Sign Contractor shall designate a dedicated Traffic Control Supervisor (TCS) for the signage installations adjacent to or within public right of ways, and submit qualifications in accordance with Section 00000. Additionally, provide evidence that the designated TCS will be dedicated to the sign installation work. The Project Manager reserves the right to require additional personnel and an additional, separate TCS to support the signage installation.

PART 2: PRODUCTS

2.01 FASTENERS, HARDWARE AND ADHESIVES

- A. GENERAL: All fasteners shall be concealed unless otherwise indicated.
- B. GENERAL: Torx #15 for all exposed fasteners, non-corrosive to sign material and/or mounting surface, or approved equal. Finish to match color of sign to which applied.
- C. ANCHORS: Stainless steel, minimum pull-out strength of 2,000 pounds, HILTI Kwik Bolt III or equal.
- D. BOLTS: ASTM F593 - Stainless Steel bolts, hex cap screws and studs.
- E. NUTS: ASTM F594 - Stainless steel nuts.
- F. WASHERS: Material to match bolts.
- G. SILICONE ADHESIVE SEALANT: Non-acid curing silicone adhesive sealant, either clear color of match the substrate, General Electric brand or equal.

- H. EPOXY ADHESIVE: To secure mounting studs in substrate, non-staining, waterproof epoxy adhesive recommended by the manufacturer for adhesion to the substrate shown, color to match substrate.
- I. PIANO HINGE: Stainless steel, continuous, suitable for weight of associated display window.
- J. STEEL HARDWARE: ASTM A153 zinc coating (hot-dip) on steel and iron hardware.

2.02 STRUCTURAL METALS

- A. SQUARE AND RECTANGULAR TUBE: Structural tubing shall conform to ASTM A500-78 Grade B cold-formed welded and seamless carbon steel structural tubing in shapes.
- B. SIGN SUPPORTS:
 - 1. Fabricate from steel shapes and tubing as shown.
 - 2. Factory clear coat prior to attaching signs.
- C. Carbon grade steel for all-purpose bolted or welded construction shall conform to ASTM A36.
- D. COLD FINISHED STEEL BARS: ASTM A108 steel bar, carbon, and alloy, cold finished, grade as selected by fabricator and approved by Project Manager.
- E. STEEL: Plates, channels and angles to be ASTM A36 commercial steel sheet, carbon (.15 maximum percent) cold-rolled.
- F. SHAPES AND FABRICATIONS: ASTM A123 zinc (hot-dip galvanized) coatings on iron and steel products.

2.03 ALUMINUM SHAPED METALS AND TRIM

- A. ALUMINUM EXTRUSIONS: Alloy and temper recommended by aluminum producer for type of use and finish indicated, and with the strength and durability properties specified in ASTM B221 aluminum and aluminum alloy extruded bars, rods, wire, profiles, and tubes, for 6063-T5. Minimum wall thickness shall be 0.125 inch unless otherwise shown.

2.04 ALUMINUM SHEET SIGN FACES AND PANELS

- A. ALUMINUM SIGN FACES: 0.125 inch plate aluminum as indicated on the drawings. All exposed surface area to be painted as noted on drawings. All pieces shall be true, square, and free from warping, bending, blemishes and scratches.
- B. SHEET ALUMINUM: ASTM B209 aluminum and aluminum alloy sheet plate, Alloy 3003-H14, standard one-side bright finish, flat sheet, size and thickness as shown. Otherwise with 0.125 inch thickness.

2.05 ALUMINUM EXTRUSION SIGN CABINETS

- A. GENERAL: Aluminum extrusion cabinet and retainer system, maximum 7" combined width. Howard Industries, Andco, ABC, Northwest Sign Supply, Denco or equal. Extruded sign cabinet system shall allow for ease of interior access for servicing lamps by Maintenance Crews.
 - 1. INFORMATION DISPLAYS:

- a. Exposed retainers, maximum 1.5" width, sufficient to support tempered glass display windows.
- b. Face retainer sections shall hinge from the side and utilize two cam locks (all keyed alike) per window.

2.06 ALUMINUM COMPOSIT MATERIAL

- A. DIBOND SIGN PANELS: 2mm aluminum composite material as indicated in the drawings. All pieces shall be true, square, and free from warping, bending, blemishes and scratches.
- B. Refer to Dibond Fabrication Manual for manufacturer specifications.
- C. SOURCE: Alcan Composites USA Inc. - www.alcancompositesusa.com

2.07 VINYL FILM

A. GENERAL:

1. Provide vinyl graphics materials, including films, adhesives, inks, in-fills and coatings by one manufacturer to assure compatibility of sign system components.
2. Use UV-stable pigmented inks suitable for exterior use.
3. Vinyl Film Graphics: Vinyl film graphics and/or backgrounds shall be placed on sign faces as noted in the elevations and sections. Vinyl to be applied only by mechanics skilled in vinyl application and experienced in producing high-class work.
4. Shop conditions of the sign manufacturer shall be clean, free of air dust and of proper temperature.
5. Applied vinyl film shall be free of air bubbles, dirt and dust bubbles, lines shall be accurately and sharply cut by computerized cutting equipment, free of light leaks or dark spots, tightly seamed, and applied per manufacturer's specifications.
6. Refer to the following 3M bulletins for product information:
 - a. 4.1 Cutting/Scoring
 - b. 4.3 Application Tapes, Pre-masking and Prespacing techniques
 - c. 3M Inkjet Inks and Media Bulletin Matrix – Technical Information
 - d. 5.1 Substrate Selection
 - e. 6.5 Storage, Handling, Maintenance, Removal of Films, Sheetings
 - f. Above-mentioned bulletins are available from 3M Commercial Graphics Division, 3M Center, Building 220-6W-06, St. Paul, MN. 55144-1000, 1-800-328-3908.
7. Use application tape (SCPM) as specified in bulletin 4.3 and 3M pre-spacing tape (SCPS-2) as specified in bulletin 4.3.

B. OPAQUE VINYL FILM

1. 3M Scotchcal (and Gerber) adhesive backed opaque film, series 220 in various colors as specified

herein, applied to exterior (first) surface.

a. Color 4: 220-10 White suitable for high-resolution full-color digital printing.

C. SUBSTITUTES: Similar products manufactured by other manufacturers will be considered if in conformance with these specifications and submitted in accordance with Section 01300 Submittal.

2.08 PAINT

A. GENERAL:

1. Provide special, factory mixed colors as scheduled. Provide appropriate primer and/or base coat as recommended by the paint manufacturer.
2. Refer to the following Matthews Paint Bulletins for product information:
 - a. MPC102: Satin MAP
 - b. MPC125: Epoxy Primer 274 908SP White
 - c. MPC175: MAP SOA 365SP Semi Gloss Clear
 - d. Above-mentioned bulletins are available at the Matthews Paint website (<http://corporateportal.ppg.com/na/refinish/matthews/default.htm>) or from Matthews Paint 8201 100th St. Pleasant Prairie, WI 53158, 1-800-323-6593.

B. PRIMER COAT:

1. Corrosion-resistant Epoxy prime coating for steel and aluminum.
2. SOURCE: 274 808SP / 274 908SP White by Matthews Paint.
3. COLOR: to compliment color of topcoat.
4. DRY FILM THICKNESS: 1.5 to 2.0 mils per coat as recommended by manufacturer.

C. TOPCOAT - ACRYLIC POLYURETHANE ENAMEL:

1. Matthews Paint Company VOC MAP
2. SOURCE: Satin MAP
3. COLOR: Various colors as specified below.
 - a. Color 1A – Matthews MP02103, satin finish
 - b. Color 2A – Matthews MP11988, satin finish
 - c. Color 3A – Matthews MP00962, satin finish
 - d. Color 1B – Matthews MP11183, satin finish
 - e. Color 2B – Matthews MP05576, satin finish
 - f. Color 3B – Matthews MP06494, satin finish

- g. Color 1C – Matthews MP00804, satin finish
- h. Color 2C – Matthews MP00825, satin finish
- i. Color 3C – Matthews MP11958, satin finish
- j. Color 1D – Matthews MP04998, satin finish
- k. Color 2D – Matthews MP11309, satin finish
- l. Color 3D – Matthews MP07663, satin finish
- m. Color 1E – Matthews MP14402, satin finish
- n. Color 2E – Matthews MP11936, satin finish
- o. Color 3E – Matthews MP07489, satin finish
- p. Color 1F – Matthews MP05462, satin finish
- q. Color 2F – Matthews MP07856, satin finish
- r. Color 3F – Matthews MP01025, satin finish
- s. Color 1G – Matthews MP00142, satin finish
- t. Color 2G – Matthews MP08046, satin finish
- u. Color 3G – Matthews MP01451, satin finish
- v. Color 1H – Matthews MP00818, satin finish
- w. Color 2H – Matthews MP01510, satin finish
- x. Color 3H – Matthews MP01529, satin finish
- y. Color 4 – Matthews 42202SP Natural White, satin finish
- z. Color 5 – Matthews 41335SP Anodic Black, satin finish
- aa. Color 6 – Matthews MP14353, satin finish
- bb. Color 6 – Matthews MP07327, satin finish

4. DRY FILM THICKNESS: 2.0 mils minimum per coat as recommended by manufacturer.

D. CLEAT COAT - ULTRAVIOLET INHIBITOR:

- 1. Maintains gloss retention, protects color of substrate underneath from ultraviolet rays. Allows most graffiti to clean with appropriate solvent.
- 2. SOURCE: SOA 365SP by Matthews Paint
- 3. COLOR: Clear

4. DRY FILM THICKNESS: 2.0 mils minimum per coat as recommended by manufacturer.

E. FINISHES:

1. Prepare surfaces and shop; apply the following materials per paint and coating system manufacturer's recommendations.
2. Matthews Acrylic Polyurethane Coating System:
 - a. GENERAL: Apply to internal aluminum and steel after fabrication. Coordinate prime coat with body and finish coats.
 - b. SURFACE PREP: Remove oil and grease with volatile solvents. Sand bare metal areas, re-clean, wipe with clean damp cloth to remove residue, surface must be dry before application.
 - c. PRIMER COAT: 274 908SP3/274 909SP Epoxy Primer; color to compliment color of topcoat; 1.5 to 2.0 mils dry film thickness per coat as recommended by manufacturer.
 - d. TOPCOAT: Matthews Acrylic Polyurethane; matte finish as selected; minimum 2.0 mils dry film thickness per coat as recommended by manufacturer.
 - e. CLEAR COAT: Matthews Acrylic Polyurethane SOA 365SP; Semi Gloss clear coating as selected; 2.0 mils per coat as recommended by manufacturer.

2.09 ELECTRICAL

- A. GENERAL: The Sign Contractor is responsible for coordination with the Owner and other contractors to assist in the design and placement of conduit, as needed.

B. FLUORESCENT ILLUMINATION:

1. FIXTURE: RS Series Remote Strip T5 fixtures or approved equal. Remote ballast.
2. SOURCE: LaMar Lighting 485 Smith Street, Farmington, NY 11735 : Ph. 631-777-7700
www.lamarlighting.com
3. Follow manufacturer's guidelines for installation.

C. LANDSCAPE LIGHTING:

1. FIXTURE: AllScape SL-29, include Asymmetric Fluorescent Reflector, Directional Shield and Debris Cover. Sign Contractor to verify all required components.
2. SOURCE: AllScape 2930 South Fairview Street, Santa Ana, CA 92704 : Ph. 714-668-3660
www.alllighting.com
3. Follow manufacturer's guidelines for installation.

D. SWITCHES:

1. PHOTOVOLTAIC SENSOR SWITCH: All illuminated signs are to be controlled by photovoltaic sensors. Each sign shall be switched on and off in its entirety by each sensor.
2. Provide exterior toggle switch on each sign per UL requirements.

- E. UL APPROVED: All signs shall be UL approved.
- 2.10 TOOLS: Provide one Torx #15 screwdriver for each sign.
- 2.11 BITUMINOUS COATING
 - A. Apply suitable Bituminous coatings where required, following manufacturer's recommendations.
- 2.12 GROUT
 - A. Provide fine grout complying with ASTM C476 grout and masonry, for sign post installation in drilled holes in concrete.
- 2.13 CONCRETE
 - A. MATERIALS:
 - 1. PORTLAND CEMENT: ASTM C150.
 - 2. FINE AGGREGATE: ASTM C33-07, restriction on reactive materials applies.
 - 3. COARSE AGGREGATE: ASTM C33-07, size number 7, Class 4S, restriction on reactive material applies.
 - 4. COLOR: Natural.
 - 5. WATER: Potable.
 - B. MIX: Design mix to produce concrete of maximum durability with minimum shrinkage and permeability in accordance with ACI 211.1. Do not vary approved proportions of ingredient with written approval. Do not use calcium chloride in mix.
 - 1. ACI Class 3500 air-entrained concrete.
 - 2. AIR CONTENT: 5 to 8 percent by volume.
 - C. EXPANSION MATERIAL: Preformed non-stating cork joint filler of thickness and width to align with and match existing joint fillers where applicable; ASTM D1752, Type II.
 - D. Contractor to provide working drawings with design calculations for foundation and post embedment for all post and panel systems.
- 2.14 MASONRY BASE
 - A. CONCRETE MASONARY UNITS: ASTM C129-06.
 - B. Contractor to provide working drawings with design calculations for monument masonry base for all required sign types.
- 2.15 EXPOSED AGGREGATE
 - A. GENERAL: The Sign Contractor is responsible for coordination with the Owner to assist in the selection of decorative aggregate.
 - B. DECORATIVE AGGREGATE: 3mm – 6mm, rounded product.

- C. COLORING PIGMENT: Carbon black powder or emulsified liquid specifically designed to color exterior concrete and mortar without affecting air-entrainment, strength or durability; formulated so as to disperse in water without floating, to uniformly disperse in plastic concrete, and to provide a uniformly color finish concrete; Carblak by Euclid Chemical Company, Carbo Jet by Sonneborn, or equal.

2.16 PRECAST CONCRETE

- A. STONE VENEER-FACED PRECAST CONCRETE: STP996-EB.
 - 1. Eldorado Stone: Slate Gray Stacked Stone, or approved equal.
 - 2. SOURCE: Eldorado Stone 1370 Grand Ave. Bldg B, San Marcos, CA 92078 : Ph. 800-925-1491 <http://www.eldoradostone.com/>
 - 3. Follow manufacturers specifications for Dry-stack Grout technique.

2.17 MULTI-PANEL DIRECTORY

- A. Slatz multi-panel directory system. Refer to manufacturer specifications for all required components.
 - 1. SOURCE: Clarke Systems 1857 Walnut St. Allentown, PA 18104 : 1-800-331-1891

2.18 TEMPERED GLASS

- A. Tempered glass to be laminated, 1/4" thick, clear colored.

2.19 CAM LOCKS

- A. All cam locks on noted Specialty Signs are to be keyed identically. Provide ____ keys per sign.

PART 3: EXECUTION

3.01 GENERAL

- A. Examine existing conditions, surfaces and construction. Give written notice to the Project Manager of conditions adversely affecting installation, performance and quality of work. Do not proceed until all conditions are satisfactory

3.02 FABRICATION

- A. GENERAL: Comply with requirements indicated for material, thickness, finishes, colors, designs, shapes, sizes and details of construction.
- B. STRUCTURAL FRAME: The framework of all signs shall have sufficient strength and rigidity to support the weight and horizontal loads (earthquake) of the entire sign assembly, from mounting point located as indicated in the mounting detail drawings, without noticeable deformation due to deflection or warping of any part of the assembly. Separate aluminum from steel with suitable paint, or dielectric separation. Galvanization will not be permitted.
 - 1. All items shall be fabricated to comply with wind loading and other requirements of U.B.C. and other applicable codes.
- C. All vertical and horizontal joints in the sign faces, trim and supports shall be true and tight under conditions of expansion and contraction of the faces and under conditions of reinstallation of lamps

and ballasts by maintenance crews.

- D. Allow for thermal movement resulting from a maximum ambient temperature change (range) of 100 deg. F (55.5 deg C). Design, fabricate and install panel sign assemblies to prevent buckling, opening up of joints, and overstressing welds and fasteners.
- E. Welded Connections: Comply with AWS for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of the exposed side. Clean exposed welded surfaces of welding flux and dress on all exposed and contact surfaces.
- F. Welding to be with E-70xx electrodes and shall be performed by WABO certified welders in conformance with AISC and AWS standards. Only pre-qualified welds (as defined by AWS) shall be used.
- G. Fabricate sign faces, panels and trim pieces to comply with requirements indicated for materials, dimensions, thickness, color, finishes, size and details of construction. Produce smooth, even, sign panel surfaces fabricated to remain flat under installed conditions. Fabricate sign trim panels with smooth mechanically finished edges to match front of panel where panels are welded or soldered.
 - 1. Mill joints to a tight hairline fit. Form joints exposed to the weather to exclude water penetration. Provide crisp, clean reveals in sign panel as indicated in construction documents.
 - 2. Joints: Carefully match exposed work to produce continuity of line and design. Machine accurately, fit components rigidly together at joints and contact points with hairline joints. Joints permitted only where indicated in the construction documents. Grind and polish and ease edges, tool marks not permitted.
 - 3. File and smooth all edges for a seamless appearance. Ease all square corners slightly.
 - 4. Fabricate brackets and fittings for bracket-mounted signs from steel, stainless steel, and aluminum to suit sign construction and mounting conditions indicated in the drawings.
 - 5. Coordinate dimensions and attachment methods to produce signs with closely fitting joints. Align edges and surfaces with one another in the relationship indicated on construction documents.
 - 6. Increase backing materials as required to produce surfaces without distortion, buckles, warp or other surface deformations.
 - 7. No fractures at bends or brake form die marks permitted.
 - 8. Welding: Weld and/or solder metal joints, grind smooth, and polish. Methods and procedures per referenced Standards and manufacturer's recommendations. Weld distortions visible in surfaces exposed to view not permitted.
 - 9. Continuously weld joints and seams except where other methods are indicated; grind, fill and dress welds to produce smooth flush exposed surfaces with welds invisible after final finishing.
 - 10. All sign faces shall be removable and replaceable, without damage to the faces or the sign cabinet assembly.
 - 11. Where required, provide means for service access inside of sign without disassembly or removal of sign. Where access fasteners are located within public's reach, provide suitable mechanism to prohibit tampering.
- H. Fabricate letters and other graphics to required sizes and styles, using metals and thicknesses indicated.

Produce characters with sharp corners, and precisely formed lines and profiles, free from defects. Drill and tap to receive threaded mounting studs. Include internal bracing for stability and attachment of mounting accessories. Comply with requirements indicated for finish, style, and size.

- I. Pre-assemble panel signs in the shop to the greatest extent possible to minimize field assembly. Disassemble signs only necessary for shipping and handling limitations. Clearly mark units for reassemble and installation, in a location not exposed to view after final assembly.

- J. All fasteners to be concealed, unless otherwise indicated.

K. ILLUMINATION:

- 1. GENERAL: Spacing and quantity of lamps shall provide even illumination across entirety of sign face graphics without bright (hot) or dim (cold) areas. Space lamps and arrange so that the entire illuminated graphic area has uniform and consistent light intensity.

L. ELECTRICAL WORK:

- 1. Electrical Work: All materials and equipment shall be new and UL-approved for the purpose used. Accomplish all work in accordance with all applicable electrical construction codes and electrical safety codes.
- 2. Paint all exposed raceways and boxes with one prime coat and one finish coat of enamel. Colors shall match the surface to which the raceway or box is secured. Submit a sample or color chart to the Project Manager for approval.
- 3. When voltage and circuit designations are not shown on the drawings, verify these voltages and connection points before proceeding with the manufacturer of the electrical portions of the signs and lighting.

M. COLOR CONSISTENCY:

- 1. GENERAL: Finished colors to be even and constant across sign panels and adjacent surfaces, as well as uniform with other signs.

- N. CONCRETE: Sign Contractor to provide engineering details and design for sign foundations and pedestals, and shall coordinate with others who will provide them. Sign contractor's details shall include spacing and sizes of J-bolts or other means for attachment of signs.

O. GRAPHIC CONTENT

- 1. The Sign Contractor is responsible for the quality of the graphics on all sign units. All applications of graphics to be of highest quality and resolution. Prior to fabrication, Sign Contractor to advise Project Manager if any supplied artwork is incompatible or if resolution is inadequate to achieve highest quality.
- 2. GRAPHIC CONTENT AND STYLE: All sign face graphics shall comply with the layouts shown in the drawings, including sizes, styles, spacing, content, positions, materials, finishes and colors. Digital graphics to match specified Pantone colors.
- 3. FABRICATED CHARACTERS:
- 4. Provide signs with supremely legible, high-resolution graphics. All graphics shall be computer plotter cut and/or digitally printed; hand-cut or rendered graphics are not acceptable.

5. Vinyl graphics shall be straight and true with no bubbles. Vinyl graphics shall be provided with pressure sensitive adhesive backing in the colors and styles shown on the drawings.
- P. FINISHES: Prepare surfaces and apply paint, vinyl film and other finishes in strict accordance with the product manufacturer's printed instructions.
1. Polyurethane Enamel Coating System:
 - a. General: Apply to internal aluminum and steel after fabrication. Coordinate prime coat with body and finish coats.
 - b. Surface Prep: Remove oil and grease with volatile solvents.
 - c. Prime Coat: Epoxy-polyamide coating; color close to color of finish coat; 4.0 to 6.0 dry film thickness.
 - d. Finish Coat: Polyurethane enamel; matte finish as selected; 2.0 to 5.0 dry film thickness.

3.03 DEMOLITION

- A. GENERAL: Remove and dispose existing signs where noted in the drawings. Remove sign faces, sign cabinets bases, conduits and hardware flush to finished grade. Patch or backfill any holes left by removals; patch or backfill material to match adjacent finished grade.

3.04 INSTALLATIONS

- A. GENERAL: Locate sign units and accessories where shown and scheduled, using graphics and architectural drawings, using mounting method for the type described and to comply with manufacturer's instructions.
- B. PRE-INSTALLATION MEETING: Prior to the installation, meet with Project Manager at the project site to review material selection, installation procedures, coordination with other trades, special details and conditions, standard of workmanship. The meeting shall include the architect, general contractor, owner, sign contractor, material manufacturer's representative and reps of other trades or sub-contractors affected by the installation. Examine mock-ups and samples as a basis for installation of graphics and signage.
- C. INSTALLATION: Work shall be erected by skilled workmen especially trained in this type of work. The Sign Contractor is responsible for complete installation of all signs.
 1. Execute drilling, cutting and fitting carefully and fit at job before finishing. Install all signs rigidly and properly to steel and structure as indicated.
 2. Install with fasteners as shown in construction documents and as required.
 3. Install work plumb, level, true and straight with no distortion, Shim as required using concealed stainless steel shims. Install at heights indicated, with sign surfaces free from distortion and other defects in appearance.
 4. Do all cutting and patching required for installation of the work. Perform all cutting and patching carefully to prevent damage to the structure and work of other trades. All cutting and patching shall be done by mechanics skilled in the trade affected and subject to approval of the Project Manager.
 5. Promptly remove and dispose all waste material and rubbish from the site. At completion of the

work, clean all lighting fixtures and signs and check for satisfactory operation.

6. Conduit and Wiring: Outlet boxes or box extensions shall be processed steel suitable for the installation and prepared for painting as described below, not less than 1-1/2" deep and 4" square or octagonal.

D. General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.

E. Select appropriate mounting methods from subparagraphs below.

F. Mechanical Fasteners: Use non-removable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

G. 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.

3.05 CLEANING

A. GENERAL: Remove smears, spots and other markings. Do not use alkaline or abrasive cleaning agents.

3.06 FIELD TOUCH-UP

A. GENERAL: Touch up minor scratches per manufacturer's recommended product and system; match original finish for colors and gloss.

3.07 DAMAGED SURFACES

A. GENERAL: Repair adjacent surfaces damaged by work of this section at no additional cost to Owner.

B. SIGNS: Sign Contractor to repair any damage to any area of a sign.

3.08 ELECTRICAL SOURCE: Owner will provide electrical power to within 5 feet of each sign. Sign Contractor to provide final connections and will energize all signs.

3.09 TEMPORARY COVERS: Signs which are installed prior to their assigned function being open to public use shall be covered by the Sign Contractor to conceal the face from view. Coverings shall be dark gray or black plastic, neatly affixed to the sign face with matching or concealed fasteners. When coverings are removed, clean the signs and treat plastic faces with anti-static solution. The Sign Contractor shall assume that all signs will require such coverings.

~~PART 4. MEASUREMENT AND PAYMENT~~

~~4.01 MEASUREMENT~~

~~A. Specialty Signs will be measured for payment by the individual units fabricated, installed and accepted complete in place, as listed in the Unit Price Schedule.~~

~~4.02 PAYMENT~~

~~A. Payment will be made for the number of Specialty Signs of each type as measured above at the lump sum price listed in the Unit Price Schedule for each item as follows:~~