PROJECT MANUAL VOLUME II

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SECTION 09 90 00
PAINT & APPLICATIONS

PART 1 – GENERAL

1.1 SECTION INCLUDES:
   A. Surface preparation.
   B. Application of paints.

1.2 SUBMITTALS:
   A. Product Data: Provide data on all finishing products, including MSDS sheets.
   B. Manufacturer's Instructions: Indicate special surface preparation procedures.
   C. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.3 QUALITY ASSURANCE:
   A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.4 ENVIRONMENTAL REQUIREMENTS:
   A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

PART 2 - PRODUCTS

2.1 MATERIALS:
   A. Paint shall be automotive grade acrylic polyurethane manufactured by Matthews Paint Company or approved equal.

2.2 PAINT SYSTEMS – SIGNAGE:
   A. Aluminum
      1. One coat of high-build aluminum primer sealer.
      2. Two coats of acrylic polyurethane
      3. One coat of clear polyurethane
PART 3 - EXECUTION

3.1 PREPARATION:

A. Surfaces: Correct defects, fill pinholes, grind welds smooth and clean surfaces, which affect work of this section. Remove or repair all surface defects.

B. Concrete to be painted: Remove contamination and rinse with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

C. Aluminum Surfaces to be painted: Remove all surface contamination, grease, mill scale, weld splatter and dirt. Apply coat of etching primer.

3.2 APPLICATION:

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

3.3 CLEANING:

A. All surfaces to be cleaned after installation of signage is complete.

3.4 SCHEDULE – COLORS:

A. Paint Colors: See page I in the design drawings.

END OF SECTION
SECTION 09 91 00

PORCELAIN ENAMEL FOR SIGNAGE COMPONENTS

PART 1 - GENERAL

1.1 DOCUMENTS: These specifications form part of the Contract Documents and are to be read, interpreted and coordinated with all other parts of the document.

1.2 SCOPE: These specifications apply only to the manufacture and supply of signs and graphic images in porcelain enamel on steel.

1.3 DEFINITIONS:

A. Porcelain Enamel: Porcelain enamel on steel is a substantially vitreous (glassy) inorganic coating bonded to metal by fusion at temperatures above 1400° Fahrenheit. Porcelain enamel is not to be confused with baked paints or organic enamels.

B. Steel: For purposes of this specification, "steel" is special purpose enameling iron or steel as defined by ASTM A424 Type 1. The standard thickness for most applications is 16 gauge (.060"). If required, the steel can be as thick as 14 gauge (.075"), and as thin as 18 gauge (.048"). Please note that porcelain enamel edge "burn-off" can occur on steel lighter than 16 gauge.

C. Frits/Glazes/Oxides: Specially formulated porcelain enamel frits, glazes and oxides as supplied by Ferro, Chivit, APEC, Pemco, and Degussa. These materials when combined and processed in final form shall have no less than a Class A acid resistance rating as defined by ASTM C282 Citric Acid Spot Test.

D. Art: The graphic material and images as supplied by or directed under the supervision of the customer on this project. This includes electronic files, mechanicals, text, photographs, transparencies, film and other graphic source materials.

E. Approvals: Approvals shall be obtained at each stage of production and are the responsibility of the customer as submitted by the supplier. Work shall not proceed without the proper written authorizations.

F. Fasteners: Stainless steel or cadmium plated steel

G. Laminates: Laminate material shall be bonded to the back surface of the porcelain enamel sign panel to meet structural and flatness criteria.

H. Adhesives: Adhesives used to bond laminates shall be neoprene based cement. Adhesive shall be water resistant and heat resistant up to 100 degrees C.

1.4 REFERENCE STANDARDS:

A. Porcelain Enamel Institute: "Specification for Architectural Porcelain Enamel on Steel PEI S-100 (65)", by the Porcelain Enamel Institute, Arlington, VA, USA.

PART 2 - GENERAL REQUIREMENTS

The following requirements must be provided by the supplier and approved by the customer prior to fabrication.

2.1 REFERENCES: Supplier shall provide references for as many as 10 clients who have used their services to the satisfaction of the customer.

2.2 RELATED WORK: Related work shall be carried out by a qualified contractor as approved by the owner.

2.3 INSTALLATION: Installation shall be performed in a workmanlike fashion consistent with porcelain enamel requirements. Porcelain enamel company shall provide instructions if installation is to be performed by others.

2.4 INSTALLATION MATERIALS: As specified and detailed in design drawings.

2.5 QUALIFICATION: Suppliers of materials and services shall have five years previous experience with projects of this scope.

2.6 SUBMITTALS AND SAMPLES: Provide 3 sets of color samples per 10430 Section 1.4.

2.7 QUALITY ASSURANCE: Quality of the entire project must conform to the specifications and bid submittals as approved by the customer.

A. Experience: Craftsmen shall have a minimum of five years proven experience in this type of work.

B. Evidence: The supplier shall provide the customer with evidence of having successfully completed the manufacture of two projects of similar scope within the preceding three years.

C. Specific Submittal: The supplier shall provide specific samples of color matching and graphic resolution ability to the customer for approval.

2.8 ENVIRONMENTAL: The supplier shall be able to demonstrate compliance with all workers’ safety and environmental regulations in affect at the location of manufacture.

2.9 WARRANTY: The supplier shall provide a signed written warranty issued in the name of the customer stating that the porcelain enamel signage has a guaranteed life of twenty-five years from date of delivery against fading and five years against spalling, pinholes, discoloration, staining, or rusting.

2.10 WRITTEN GUARANTEE: The supplier shall also certify in writing that the porcelain enameling will be performed in accordance with the current edition of the PEI Technical Manual: section PEI 1001 – "Specification for Architectural Porcelain Enamel on Steel for Exterior Use", as issued by the Porcelain Enamel Institute of WA, DC.

2.11 ACCEPTABLE MANUFACTURER: KVO Industries (or approved equal), 1825 Empire Industrial Ct, Ste A, Santa Rosa, CA 95403, Tel: 707-573-6868, Fax: 707-573-6888.

PART 3- FABRICATION AND PROCESS

3.1 METAL APPROVALS: The supplier shall generate individual shop drawings from construction drawings provided by the customer. Fabrication shall not commence until said shop drawings have been approved.
3.2 **METAL FABRICATION:** Steel substrates shall be machine fabricated in accordance with approved shop drawings and shall exhibit straight lines, square corners and/or smooth bends, and shall be free of twists, kinks, warps, dents, and other imperfections which may affect appearance or serviceability. Curved sections shall be formed to smooth and even radii.

3.3 **FLATNESS:** Finished panels shall have a maximum variation of .188" in a convex direction when measured perpendicular to the nominal plane of the panel face. Variation in the concave direction shall be limited to .094" from the actual plane of the panel face. These tolerances are for panels with a face area of 8 sq. ft. or less. Proportionately greater allowance will be permitted for panels of greater areas.

3.4 **SQUARENESS:** Panels of less than 8 square feet shall be square within .063" as measured across the diagonal and within .094" on panels over 8 square feet.

3.5 **WELDING:** Fusion welds must be free of porosity, inclusions, foreign matter, cracks and pinholes. Any wire or rod fillers used must match the chemical composition of the base metal. All welds shall be ground and sanded smooth to match the radius of the mechanical break. Refer to Porcelain Enamel Institute Technical Manual "PEI-201" section 7.

3.6 **HOLES AND CUTOUTS:** The cutting of any holes shall be made by mechanical equipment and shall be completed prior to applying the enamel coating. All machined edges shall be sufficiently ground to hold a porcelain coating.

3.7 **FORMING:** All forming shall be via mechanical equipment and shall be completed prior to the porcelain enamel coating.

3.8 **METAL PREPARATION / CLEANING:**

   A. Degreasing: Prior to the enameling process, all parts shall be degreased by immersion in an approved degreasing fluid. Oil residues must be completely removed to ensure proper porcelain adhesion to the steel substrate.

   B. Rinsing: All parts must be adequately rinsed prior to the phosphate coating process.

   C. Coating: Immediately after rinsing, all parts shall be immersed in a phosphate coating solution to avoid rusting of steel prior to and during the enameling process.

3.9 **PORCELAIN ENAMELING:** A porcelain enamel ground coat shall be applied to all areas of each unit, including backside and flanges, by spraying methods recognized by PEI and VEDC. At least one additional separately fired cover coating shall be applied to the face, sides, and flanges of each unit. For corrosion protection and flatness, one additional cover coating shall be applied to the backside of each panel.

3.10 **FINISH:** The cover coat shall not exhibit any breaks, gas bubbles, scumming, hairlines, stress lines or other surface defects when visually inspected.

3.11 **FINISH AND BACKGROUND COLOR CONTROL:** The color and finish shall match samples previously submitted by the supplier and approved by the customer within (2) NBS units (Note: a 1-2 NBS unit variation is barely perceptible to the human eye.)

3.12 **GROUND COAT AND COVER COAT THICKNESS:** Ground coat and cover coat applications shall be applied in accordance with PEI recommendations to a thickness range between 0.004" to 0.020", as required by the supplier to suit the intended use.
3.13 **FIRING:** Panels shall be fired at temperatures above 1400° Fahrenheit in a furnace specifically designed for porcelain enamel manufacturing. After firing, each panel shall be submitted to a visual inspection compared to the customer approved control sample for color consistency.

**PART 4 - ART AND IMAGING**

4.1 **ART PREPARATION:** The supplier shall produce film positives and / or negatives from mechanical artwork or electronic art files as supplied by the customer.

4.2 **ART APPROVALS:** All artwork, including laser separations, digital color composites, color keys, bluelines, and/or full size film shall be submitted to the customer for approval before it is reproduced in porcelain enamel.

4.3 **ART WORK:** Original artwork shall not be harmed in any way (writing, cutting, folding, rough handling, etc.) and shall be returned to the client upon successful completion and acceptance of the project.

4.4 **IMAGING:** The application of graphics shall be done using various imaging techniques as required to satisfy the design intent.

   A. Line Art / Spot Color Application: Line art and / or spot color shall be printed over background colors in perfect registration, with uniform edges, at a minimum output resolution of 1200 DPI. Line weight thickness shall be printed at a minimum of 1/2 point and type shall be printed at a minimum size of 6 points. The supplier is responsible for the appropriate trapping where colors touch.

   B. Four Color Process: For panels up to nine square feet, four color process imaging shall be in perfect registration in a resolution of not less than 150 lines per inch (LPI). Please note: 150LPI requires a minimum input resolution of 300 dots per inch (DPI) at full size, and a minimum output resolution of 2400DPI. For panels greater than nine square feet, four-color process imaging shall be in perfect registration in a resolution of not less than 100LPI (200DPI minimum input resolution and 1200DPI minimum output resolution). If requested, supplier must be able to print at a maximum resolution of 300LPI (600DPI input resolution, and 3600DPI output resolution) for panels which have a maximum dimension of 36" in either direction.

   C. Technical Proficiency: Supplier shall be proficient in the following imaging techniques and able to demonstrate capabilities to the customer: reproduction of photographs or original art by halftone, duotone, and four color process, as well as special imaging techniques including hand painting, stencil brushing, spraying textures, and air brushing.

   D. Screen Printing Pastes: Screen printing pastes shall be milled to a 400-mesh particle size or smaller and shall have sufficient glass content to be acid-resistant, corrosion proof, opaque, UV proof, and vandal resistant.

4.5 **COLOR MATCHING:** The supplier shall demonstrate proficiency in matching a wide range of colors as represented by color systems such as the Pantone Matching System (PMS), Matthews Paints, Toyo Inks, etc.

**PART 5 – TRANSPORT AND DELIVERY**

5.1 **INSPECTION:** Prior to crating, finished panels shall be inspected for blemishes, chips and flatness. Any panel not meeting the requirements of this specification shall be rejected and promptly replaced.
5.2 **CLEANING:** All panels shall be cleaned in advance of packaging and/or crating.

5.3 **CRATING:** All sign panels shall be packed in wooden crates that completely enclose them from exposure to the environment and/or equipment. The crates shall be lined with packing material so as to prevent movement of panels within the crates.

5.4 **DELIVERY:** The responsibility of shipping shall be established per the contract as agreed upon by the supplier and the customer.

5.5 **FREIGHT CLAIMS:** The receiver shall be responsible for reporting to the supplier any damage incurred during shipping and/or any freight claims within 48 hours of receipt.

**PART 6 - MAINTENANCE**

6.1 **MAINTENANCE:** The supplier shall provide to the customer instruction documentation addressing the care, cleaning and maintenance of materials for incorporation into maintenance manuals.

**PART 7 - INSTALLATION**

7.1 **INSTALLATION:** Installation shall be the responsibility of the customer based on supplier recommendations.

7.2 **ADHESIVES:** When required, apply construction grade adhesive as shown on drawings and/or recommended by supplier.

7.3 **INSPECTION - SIGN PANELS:** The customer shall be responsible for inspecting completed signage for clarity, proper registration of images, clean backgrounds, correct colors, complete and appropriate thickness of porcelain enamel coverage, blemishes, defects and general workmanship.

7.4 **INSPECTION – INSTALLATION:** The customer shall be responsible for inspecting the installation site and coordinating the installation schedule.

7.5 **STORAGE AND PROTECTION:** The customer shall be responsible for the storage of porcelain enamel signage units and related materials in an orderly and systemized fashion and in a manner that prevents damage and/or theft.

7.6 **TRANSPORT PROTECTION:** The customer shall be responsible for protecting all porcelain enamel signage units from any and all damage during transportation to installation site.

7.7 **WORKMANSHIP:** The customer shall be responsible for ensuring that all signage units are installed square, plumb, and level in accordance with applicable drawings and specifications.

7.8 **FINAL SIGNAGE CLEANING:** The customer shall be responsible for cleaning the installed porcelain enamel signage with a quality glass cleaner, and ensuring the removal of all fingerprints, silicone, dirt, shavings, adhesive, dust particles, etc.

7.9 **SITE CLEANUP:** The customer shall be responsible for cleaning the installation site prior to vacating the premises. Individual attention should be given to any and all work areas, walls, and/or floors that may have been soiled during the installation process.

**PART 8 - SCHEDULE – PORCELAIN COLORS**

8.1 **PORCELAIN COLORS:** See Colors, Page W.1

END OF SECTION
SIGNAGE GENERAL – SECTION 10 1400

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. The work included under this section consists of furnishing all products, materials, finishes, supplies, equipment, tools and transportation, and performing all labor and services necessary for, required in connection with, or properly incidental to remove existing signage and furnish and/or install new signage as described in this section of the specifications, shown on the accompanying drawings, or reasonably implied therefrom, except as hereinafter specifically excluded. Scope of work includes removal of existing signs as well as the manufacture and installation of new signage described herein and in the sign location plans and design drawings.

B. Sign contractor shall provide to-scale face layouts for all signs from directional messages provided by the Designer and shall produce final, print ready map artwork for each unique directory map. Designer will provide base map artwork in all 4 orientations.

C. Items to be installed include:

1. Vehicular directional signs
2. Parking lot identification signage
3. Pedestrian wayfinding signage
4. Information & wayfinding kiosks
5. Building identification ground signs
6. Parking area identification signage
7. Building mounted graphics
8. Decorative Banners
9. Parking regulatory signage

B. Related work includes but is not limited to:

1. Site concrete at hardscape installation locations
2. Landscape at softscape installation locations.

1.03 STANDARDS

A. 2013 California Building Code, Title 24

B. 2013 ADA Standards for Accessibility Design


D. Environmental Protections Agency (EPA).


I. ASTM G 53-91 Standard Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials.

1.04 SUBMITTALS

A. Project Schedule: Within one week after approval to proceed, contractor shall submit a project schedule that includes time for submittals, product and material lead times, fabrication duration and installation period.

B. Sign Face and Map Layouts: Submit electronic files (PDF) of scaled layouts of every sign face and map layout for Client approval.

C. Color Samples: Submit three sets of 6"x6" samples of each color for approval. See design drawings for complete color and materials list.

D. Digital Prints: Provide 3 full size sample prints of one directory map for print quality and color matching review.

E. Shop Drawings: Submit electronic files (PDF) of shop drawings showing detailed fabrication techniques, materials, connections, fastener locations etc.

F. Maintenance Data: Submit electronic file (PDF) data on cleaning, touch-up, and repair of painted and coated surfaces.

G. Product Data Sheets. Supply product data sheets in electronic format (PDF), including MSDS sheets for all products used in the manufacture and installation of signage.

H. As-Built Drawings. Supply electronic files in PDF format of final as-built drawings after completion of the punch list.

1.05 DELIVERY & STORAGE

A. Deliver materials to job in manufacturer's original sealed containers with brand name marked thereon. Protect materials from damage.

B. Package to prevent damage or deterioration during shipment, handling, storage and installation. Maintain protective covering in place and in good repair until removal is necessary.

C. Deliver signs only when the site and mounting services are ready for installation work to proceed.

D. Store products in dry condition inside enclosed facilities.
PART 2 PRODUCTS

A. Aluminum:
   2. Extrusions and Tubing: ASTM B221.

B. Adhesive vinyl to be 3M or approved equal.

C. Paint products to be low VOC Matthews Acrylic Polyurethane or approved equal in colors specified. All finishes to be satin. See section 09 90 00

D. Acrylic Sheet. Rohm & Haas or approved equal, sizes and thicknesses as shown.

E. Silicone adhesive to be Dow Corning or approved equal, clear, unless otherwise specified.

F. Screen-printing enamel to be Inktech or approved equal.

G. Large format digital printed images shall be digitally printed on adhesive vinyl with a minimum resolution of 144 DPI at full size. Provide clear graffiti resistant overlay on all images.

H. Porcelain enamel to be KVO Industries (http://www.kvoindustries.com) or approved equal.

I. Cast In Place Concrete: See page S.1 of structural drawings.

PART 3 - MANUFACTURER

3.01 CAPABILITIES & EXPERIENCE

A. Manufacturer to have “in-house” manufacturing capabilities, with experience in excess of 5 years in the architectural signage business, dedicated project management and documented history of successful delivery of public-sector exterior signage programs.

PART 4 - FABRICATION

4.01 CUTTING & FINISHING:

A. All materials shall be cut with proper equipment using sharp blades. Shapes shall have square corners, straight edges and shall be sized as shown in the design drawings. Blade/cutter marks and scratches will not be accepted.

B. Materials shall be prepared and primed according to product manufacture's instructions before painting.

C. Finishes shall be applied according to product manufacturer's instructions, then properly cured and protected after application.

4.02 APPLICATION OF GRAPHICS:

A. All graphics shall be cut and, etched or printed to comply with the specified typeface and graphic shapes.

B. Graphics and type shall be clean and crisp without deformation of characters, ticks, gaps or irregularities.
C. Radiused corners from cutting equipment are not acceptable.

D. Finished surfaces shall be protected from damage during application of graphics.

4.03 PAINT PREPARATION & APPLICATION: See section 09 9000

4.03 FABRICATION

A. Do not scale drawings for dimensions. Contractor to verify and be responsible for all dimensions and conditions shown by these drawings. Resident Engineer to be notified of any discrepancy in drawing, in field directions or conditions, and/or of any changes required for all such construction details.

B. The Sign Contractor, by commencing work of this section, assumes overall responsibility, as part of his warranty of work, to assure that assemblies, components and parts shown or required within the work of the section, comply with the Contract Documents. The Contractor shall further warrant: That all components, specified or required to satisfactorily complete the installation are compatible with each other and with conditions of installations.

C. Design components to allow for expansion and contraction for a minimum material temperature variation of 56 degree C (100 degree F), without causing buckling, excessive opening of joints or over-stressing of adhesives, welds and fasteners.

D. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary flanges, lugs and brackets for assembly of units.

E. Use concealed fasteners whenever and wherever possible. Indicate all fastener locations on shop drawings.

F. Shop fabricate so far as practicable.

G. Joints shall be fastened flush to conceal reinforcement, or welded where thickness or section permits.

H. Contact surfaces of connected members must be assembled so joints will be tight and practically unnoticeable, without use of filling compound.

I. Finished signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern.

J. Plane surfaces shall be smooth, flat and without oil-canning, free of rack and twist or any other deformation. Maximum variation from plane of surface: plus or minus 0.4 mm (0.015 inch). Restore texture to filed or cut areas.

K. Level or straighten wrought work. Members shall have sharp lines and angles and smooth surfaces.

L. Extruded members to be free from extrusion marks.

M. Exposed ends and edges shall be milled smooth, with corners slightly rounded.

N. Design joints exposed to weather to exclude water.
O. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Miter and finish edge joints tightly to give appearance of solid material.

P. All painted surfaces shall be properly primed. Finish coating of paint to have complete coverage on all faces and edges, unless otherwise specified, with no light or thin applications allowing substrate or primer to show. Finished surface shall be smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections. See Section 09 9000.

Q. Movable parts, including hardware, are to be cleaned and adjusted to operate as designed without binding or deformation of members. Center doors and covers in opening, leg or frame. All contact surfaces shall fit tight and even without forcing or warping components.

R. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.

S. All fasteners to be non-corrosive, stainless steel or approved equal.

T. Security head screw to be used for all fasteners. Contractor to coordination type of security screws used with campus facilities department.

U. Packaging: Completed signs shall be packed for shipment to the project site to protect from damage.

PART 5 - COORDINATION & INSTALLATION

5.1 COORDINATION & INSPECTION

A. Signage contractor shall coordinate with the Client or general contractor the proper timing of signage installation so as not to conflict with the school schedule and/or other work.

B. Signage contractor shall inspect the site prior to installation and give written notice of any conditions adversely affecting the installation of signage.

C. Sign contractor shall survey each sign location and take field dimensions as needed to ensure proper installation.

5.2 INSTALLATION

A. Signs shall be installed plumb, level and true. Align with adjacent work where shown.

B. Sign contractor shall provide all equipment, adhesives and fasteners required to install all signs included in these documents.

C. Sign location and surrounding surfaces shall be left clean and all debris related to signage installation shall be removed. Installed signs shall be wiped clean. Care shall be taken not to damage landscape or soil surrounding surfaces. If damage or soiling of surrounding hardscape or landscape is found to be caused by signage installation, costs for repair and cleaning of damaged or soiled surfaces shall be the responsibility of the sign contractor.

D. All pier holes and footings shall be excavated by hand using caution to avoid underground utilizes. Any damage to utilizes shall be repaired by signage contractor and systems returned to original working order.
5.3 PUNCHLIST AND PROJECT CLOSEOUT

A. Sign contractor shall review all installed work with the Client or Client's representative and make all required punchlist corrections. Once complete, the sign contractor shall back-check all punchlist items and receive Client's final approval of installation.

B. Deliver as-built drawings to the Client

PART 6 - SIGNAGE PROGRAM

6.1 SIGNAGE DESIGN

A. All signage design, typical face layouts, colors, materials and installation methods are described in the design documents.

6.2 SIGN LOCATIONS

A. Sign location plans can be found in the design documents.

B. Pre-Install Site Review: Prior to beginning installation, review locations of all new signs in the field with the Client or Client’s representative to establish exact locations and resolve field conflicts.

C. Location Conflicts: If, in the course of installation, unanticipated conflicts such as underground utilities arise, the Client or Client’s representative shall be immediately notified and an adjusted sign location determined by the Client or Client’s representative.
6.3 SIGN MESSAGES

A. Sign face layouts and/or a complete list of required signs and text messages to be included on each sign is included in the design documents.

B. Sign messages and layouts may be adjusted or changed per owner and/or designer input during the submittal phase. When the change only affects applied text and graphics, not the signage structure, the owner shall not incur additional costs.

END OF SECTION
DEMOLITION - SECTION 31 11 13

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Demolition work as shown on the Drawings and as specified in this Section. The work includes:
   1. Demolition of concrete and asphalt paving including aggregate base.
   2. Saw-cutting of existing concrete and asphalt as required.
   3. Irrigation adjustment

B. Related work includes but is not limited to:
   1. Earthwork
   2. Restoration of

1.03 Surfaces SUBMITTALS

A. Indicate on the project schedule submittal, proposed time for demolition work in this Section, including shut-off time and capping of utility service if applicable.

1.04 QUALITY ASSURANCE

A. Reviews: Prior to any demolition work, prepare protection measures for review by the Engineer.

1.05 SITE CONDITIONS

A. Explosives: Use of explosives for demolition work is not permitted.

B. Traffic: Conduct demolition operations and the removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied facilities without permission from Owner.

C. Protection: Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent damage to adjacent buildings, structures, other facilities, and injury to persons. See Special Provisions for additional information regarding building access.

D. Damage: Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.

PART 2 -PRODUCTS

Not applicable.

PART 3 - EXECUTION

3.01 SITE CLEARING

A. General
   1. Contractor shall clear and grub areas only as necessary to construct improvements shown on the Drawings.
2. Use only hand methods for grubbing inside the drip line of trees indicated to be preserved and protected, unless otherwise approved by the Engineer. This includes trees that may be outside and adjacent to the Limit of Work.

B. Clearing and Grubbing
   1. Remove vegetation, improvements, and obstructions protruding through the ground surface and/or interfering with installation of new construction. Removal includes stumps and roots.
   2. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.
   3. Remove all organic matter in unpaved areas to be replanted, to a sufficient depth to remove such material. The depth of stripping will vary with the type and density of vegetation across the project site and with the time of year.

C. Stripping
   1. Strip topsoil from all unpaved areas to be improved with paving or structures. Remove heavy growths of grass from areas before stripping topsoil.

3.02 DEMOLITION

A. Pollution Controls:
   1. Use water sprinkling, temporary enclosures, and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level.
   2. Comply with governing regulations pertaining to environmental protection. Do not use water when it may create hazardous or objectionable conditions such as flooding.
   3. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by the Owner or governing authorities.

B. General: Remove above and below grade pavements, curbing and other conditions necessary to permit new construction and other work as indicated on the Drawings. Removal of underground pipe or conduit interfering with construction is included under this Section.

C. Damage: Return adjacent areas to condition existing prior to the start of the work.

D. Saw-cutting: All asphalt and concrete to be removed for installation of signs shall be saw-cut.

E. Salvaged Items: All items noted for salvage and not to be re-used on site shall be delivered to the Owner unless directed otherwise by the Engineer.

3.03 IRRIGATION ADJUSTMENT

A. General:
   1. Trench as required to access only those parts of the irrigation system to be adjusted.
   2. Cap or adjust sprinkler heads / lines as necessary.
   3. Salvage irrigation equipment needed to be removed for new construction.
   4. Backfill and restore adjusted and adjacent areas to condition existing prior to the start of the work.

3.04 CLEAN-UP

A. Disposal Waste materials are defined as all materials generated by demolition or excavation that are not identified for salvage or re-use by the Owner. Waste materials shall be disposed of legally off-site.

END OF SECTION
 PART 1 — GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for Earthwork and Grading as shown on the Drawings and as specified in this Section. The work includes but is not limited to:
   1. Rough grading and excavations
   2. Providing, processing, placement, and compaction of any fill materials necessary to meet the designed lines and grades.

B. Related work includes but is not limited to:
   1. Demolition
   2. Restoration of Surfaces

1.03 STANDARDS

A. Unless otherwise shown or specified, all materials and methods shall conform to the appropriate current sections of:
   1. The State of California Department of Transportation (CALTRANS) Standard Specifications, except for measurement and payment requirements.
   2. Applicable ASTM Specifications as they reasonably apply to this work.

1.04 DEFINITIONS

A. Relative Compaction: is defined as the in-place dry density of the compacted soil divided by the laboratory compacted maximum dry density as determined by the relevant ASTM specified herein, latest edition, expressed as a percentage.
   1. Relative compaction is determined according to ASTM D1557-78 (Modified Proctor Density) for all fill, bedding, sub-grade, and backfill work.

B. Finish Grade: is defined as the finished top surface of the soil after all grading and soil preparation activities, and prior to installation of mulch.

1.05 QUALITY ASSURANCE

A. Seasonal Limits: No fill material shall be placed, spread, or rolled during unfavorable weather conditions. When work is interrupted by heavy rains, fill operations shall not resume until field density tests indicate the moisture content and density of fill meet the specified requirements and approved by the Engineer.

B. Unusual Conditions: In the event that any unusual soil conditions are encountered during grading operations, the Engineer shall be immediately notified. Unsuitable material encountered below the natural grade shall be excavated and disposed of as directed by the Engineer and paid for as Extra Work. Unsuitable material is defined in Section 19-2.02 of the CALTRANS Standard Specifications.
PART 2 - PRODUCTS

2.01 MATERIALS

A. Fill: Inorganic on-site fill and sub-soil may be used as structural fill to achieve final grades, provided the fill contains no debris and is free of rocks or clods greater than 6-inches in maximum dimension, and no more than 15 percent by weight of rocks larger than 3-inches. Samples of any proposed imported fill shall be submitted to the Engineer for appropriate testing and approval no less than (5) five working days prior to the anticipated job site delivery. Fill material shall meet the following requirements:
   1. Have a sand equivalent greater than 20%
   2. Have not more than 15% passing the 200 sieve.
   3. Have an R-Value of not less than 50.

B. Sand: for bedding and backfill for underground utilities including irrigation mainline and 1-inch water service line shall conform to the sieve analysis below:

<table>
<thead>
<tr>
<th>Sieve Size:</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>#30 (600 um)</td>
<td>at least 75%</td>
</tr>
<tr>
<td>#100 (150 um)</td>
<td>less than or equal to 5%</td>
</tr>
</tbody>
</table>

PART 3 - EXECUTION

3.01 GENERAL

A. Keep all excavations (including, pits, trenches, footings, etc.) entirely free from water. Protect excavations from rain or water from any source during construction. Use suitable pumping equipment or other means as required by the conditions. Continue pumping as necessary until the completion of the project. When operations are interrupted by unfavorable weather conditions, prepare areas by grading and compaction to avoid ponding and prevent surface drainage over fill slopes, in order to avoid erosion. Grading operations for erosion control shall be as approved by the Engineer. Once excavation and grading commence, no surface drainage shall be allowed to flow onto adjacent properties.

3.02 SITE PREPARATION, EXCAVATION & GRADING

A. Depressions, voids, or unsuitable material encountered shall be excavated to expose firm soil as directed by the Engineer. Backfill and compaction to design grade shall be approved by the Engineer. When earthwork or trenching conditions are determined by the Engineer to be unsuitable material, the work shall be performed as defined in Section 19-2.02 Unsuitable Material of the Standard Specifications.

B. Excavation work shall include sloping and rounding tops and ends of excavations.

3.03 SUB-GRADE PREPARATION

A. A minimum of 8-inches the in-place sub-grade soil shall be scarified, moisture conditioned to 1%-3% above optimum value, and compacted to a relative compaction of at least 95% per ASTM D1557 under all foundations/footings.

B. All soft or wet sub-grade soil encountered during earthwork and grading should be stabilized prior to placement of fill and further construction. This may involve scarifying and air-drying of the soil, or excavation and replacement of the wet soil with dry soil. Obtain prior approval of proposed method of stabilization from the Engineer.

3.04 UTILITY TRENCHES

A. General: Trenching for underground piping, electrical conduits, etc. shall be done by the trade installing the pipe or conduit.
B. Excavation: Trenches shall be excavated to the depth required for laying pipe or conduit plus required allowance for bedding material under the pipe. Over excavated areas shall be brought back to proper grade with compacted bedding material.
   1. Trenches shall be excavated wide enough to provide adequate working space to align and lay pipe or to construct the utility trench, make up and inspect joints, and allow placing and compaction of bedding material.
   2. The maximum trench width at the top of the pipe shall not exceed the pipe outside diameter plus 12- inches on each side of the pipe.

B. Utility lines shall be located outside the root zone of all trees if possible. In cases where alternative routes are not available, utility conduit, pipe, wire and drain lines shall be tunneled under major roots. Major roots are determined to be those that exceed two (2) inches in diameter. In no case shall utility lines be permitted within six (6) feet of the trunk. Immediately contact the Engineer if the Drawings conflict with this.

C. All approved construction work within the root zone of trees shall observe the following minimum tree protection:
   1. Hand trench at point or line of grade cuts closest to the trunk to expose major roots 2-inches in diameter or larger. In cases where rock or unusually dense soil prevents hand trenching, mechanical equipment may be approved by the Engineer, provided that work inside the drip-line is closely supervised by the Owner’s authorized representative to prevent tearing or other damage to major roots.

D. Bedding and Backfill: Bedding shall extend upwards from the bottom of the trench to the extent shown on the Drawings.
   1. Bedding for underground utilities including irrigation and solid drain lines shall consist of sub-soil or sand as defined herein.
   2. In planting areas excluding natural turf sports fields, sand bedding may be jetted or ponded into place and shall be compacted to equal that of the adjacent prepared sub-grade as specified herein. Mechanical compaction may be necessary to achieve this required density. If the bedding is jetted or ponded, the operation should be closely supervised and provisions should be made for the removal of excess water.
   3. Maintain near surface soils as uniform as possible with existing upper stratum soils when backfilling in planting areas.
   4. Backfill shall be compacted to equal that of the adjacent prepared sub-grade as specified herein.

3.5 EXCESS SOIL DISPOSAL

A. Excess excavation material shall be disposed of at an off-site location, disposal facility to be approved by the Engineer.

END OF SECTION
RESTORATION OF SURFACES - SECTION 32 50 00

PART 1 — GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION OF WORK

A. Extent: Furnish all labor, material, equipment, tools, and incidentals necessary for restoring surfaces affected by installation of signs and associated electrical work and as specified in this Section. The work includes but is not limited to:
   1. Asphalt Paving restoration.
   2. Concrete Paving restoration.
   3. Paver restoration
   4. Pavement Marking restoration
   5. Irrigation Modifications
   6. Irrigation and Planting restoration

B. Related work includes but is not limited to:
   1. Demolition
   2. Signage
   3. Electrical

1.03 QUALITY ASSURANCE

A. Unless otherwise shown or specified, all materials and methods shall conform at a minimum to the appropriate current sections of:
   1. The State of California Department of Transportation (CALTRANS) Standard Specifications, except for measurement and payment requirements.

B. Used skilled workers trained in and best practices associated with each type of surface restoration.

PART 2 -PRODUCTS

2.01 MATERIALS

A. General: materials used for surface restoration of surfaces shall match the original or the Standard Specifications, whichever is more stringent.

PART 3 - EXECUTION

3.01 GENERAL

A. Quality of work associated with restoration of surfaces shall match original or the Standard Specifications, whichever is more stringent.

B. Protect adjacent flexible paving surfaces from collapsing as a result of excavations.

3.02 ASPHALT PAVING RESTORATION

A. The base course shall be Class II Aggregate Base, equal in depth to the existing structural section, or 8-inches in depth, whichever is greater.
B. The wearing surface for shall be asphalt concrete equal in thickness to the existing pavement, or 3-inches in depth, whichever is greater. The asphalt concrete shall be 1/2" max medium Asphalt Concrete.

3.03 CONCRETE PAVING RESTORATION

A. The base course shall be Class II Aggregate Base, equal in depth to the existing structural section, or 6-inches in depth, whichever is greater.

B. The wearing surface shall be 6-sack concrete equal in thickness to the existing concrete section, or 4-inches in depth for pedestrian concrete and 6-inches in depth for vehicular concrete, whichever is greater.

C. Concrete paving color and finish shall match the adjacent existing finish, including direction of broom finish and joints.

3.04 PAVEMENT MARKING RESTORATION

A. Restore pavement markings affected by construction in kind or better, and to the satisfaction of the Engineer.

3.05 PAVER RESTORATION

A. Remove pavers (stone, concrete, brick or other) carefully as required to avoid damage to adjacent pavers. Restore paver areas affected by construction using the stockpiled pavers, to the satisfaction of the Engineer. Return extra pavers to the Owner unless instructed to be disposed of.

3.06 IRRIGATION & PLANTING RESTORATION

A. Replace plant material and irrigations systems affected by construction in kind or better, and to the satisfaction of the Engineer. The work includes modifications to irrigation systems as required to provide adequate irrigation coverage of the adjacent areas. The work does not include replacing plant material within the footprint of the signs which have been removed with the approval of the Engineer.

C. Turf areas affected by construction shall be replaced with Sod in kind or better. Hydoseed is permitted only after confirmation by the Engineer.

END OF SECTION