SECTION 10 13 00
DIRECTORIES

SPEC WRITER NOTE:

1. Delete //</-----//if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.
2. Coordinate with Medical Center for types of signs, colors or to match existing signs.
3. Coordinate interior sign type designations with VA Signage Design Guide.
4. Coordinate with drawing terminology for correct and uniform nomenclature.
5. Coordinate with electrical for location of junction boxes and service required for lighted directories.

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies interior directories.
B. This section also specifies exterior medical center directional signs, directories and information.

1.2 RELATED WORK

A. Electrical: Related Electrical Specification Sections.
B. Section 10 14 00, SIGNAGE/ Section 10 13 00, DIRECTORIES.
C. Finishes, Division 09, FINISHES.

1.3 MANUFACTURER'S QUALIFICATIONS

Sign manufacturer shall provide evidence that they regularly and presently manufactures signs similar to those specified in this section as one of their principal products.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 00, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
B. Samples: Directory panels and frames, with letters and symbols, each type. Submit 2 sets. One set of samples will be retained by Resident Engineer, other returned to Contractor.
1. Color samples of each color, 150 mm x 150 mm (6 inches x 6 inches).
   Show anticipated range of color and texture.
2. Sample of typeface, arrow and symbols in a typical full size layout.
C. Manufacturer's Literature:
   1. Showing the methods and procedures proposed for the concealed anchorage of the directory system to each surface type.
2. Manufacturer’s printed specifications, anchorage details, installation and maintenance instructions.

D. Samples: Directory location plan, showing location, type and total number of signs required.

E. Shop Drawings: Scaled for manufacture and fabrication of sign types. Identify materials, show joints, welds, anchorage, accessory items, mounting and finishes.

F. Full size layout patterns for dimensional letters.

1.5 DELIVERY AND 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 directories only when the site and mounting services are ready for installation work to proceed.

D. Store products in dry condition inside enclosed facilities.

1.6 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):
   B209-07 ................. Aluminum and Aluminum-Alloy Sheet and Plate
   B221-08 ................. Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and tubes.

C. Federal Specifications (Fed Spec):
   MIL-PRF-8184F .......... Plastic Sheet, Acrylic, Modified.
   MIL-P-46144C .......... Plastic Sheet, Polycarbonate

1.7 MINIMUM SIGN REQUIREMENTS

A. Directional/Informational Signs:
   1. Type Styles: As shown. Characters shall have a width-to-height ratio between 3:5 and 1:1. Characters shall have a stroke width-to-height ratio of between 1:5 and 1:10.
   2. Character Height: minimum 75 mm (3 in) high for overhead signs. As shown, for directional signs.
   4. Mounting Location and Height: As shown.

1.8 COLORS AND FINISHES:

Section 09 06 00, SCHEDULE FOR FINISHES.

PART 2 - PRODUCTS

SPEC WRITER NOTE: Make material requirements agree with applicable
requirements specified in the referenced Applicable Publications. Update and specify only that which applies to the project.

2.1 GENERAL
A. Signs of type, size and design shown on the drawings and as specified.
B. Signs complete with lettering, framing and related components for a complete installation.
C. Provide graphics items as completed units produced by a single manufacturer, including necessary mounting accessories, fittings and fastenings.
D. 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.
E. 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.

2.2 PRODUCTS
A. Aluminum:
   2. Extrusions and Tubing: ASTM B221.
B. Cast Acrylic Sheet: MIL-PRF-8184F; Type II, class 1, Water white non-glare optically clear. Matt finish water white clear acrylic shall not be acceptable.
C. Polycarbonate: MIL-P-46144C; Type I, class 1.
D. Vinyl: 0.1 mm thick machine cut, having a pressure sensitive adhesive and integral colors.
E. Electrical Directories:
   1. General: Furnish and install all lighting, electrical components, fixtures and lamps ready for use in accordance with the sign type drawings, details and specifications.
   2. Refer to Electrical Specifications Section, Division 26, ELECTRICAL, to verify line voltages for sign locations that require electrical signs.
   3. Quality Control: Installed electrical components and sign installations are to bear the label and certification of
Underwriter’s Laboratories, Inc., and are to comply with National Electrical Code as well as applicable federal, state and local codes for installation techniques, fabrication methods and general product safety.


F. Concrete Post Footings: See Section 03 30 53, MISCELLANEOUS CAST-IN-PLACE CONCRETE, Cast-in-place Concrete.

G. Steel: See Section 05 12 00, STRUCTURAL STEEL FRAMING.

2.3 SIGN STANDARDS

A. Topography:
1. Type Style: Helvetica Medium and Helvetica Medium Condensed. Initial caps or all caps as indicated in Sign Message Schedule.
5. All text, arrows, and symbols to be provided in size, colors, typefaces and letter spacing shown. Text shall be a true, clean, accurate reproduction of typeface(s) shown. Text shown in drawings are for layout purposes only; final text for signs is listed in Sign Message Schedule.

B. Project Colors and Finishes: See Section 09 06 00, SCHEDULE FOR FINISHES.

2.4 SIGN TYPES

A. General:
1. The interior sign system is comprised of sign types families that are identified by a letter and number which identify a particular group of signs. An additional number identifies a specific type of sign within that family.
   a. IN indicates a component construction based sign.
2. The exterior sign system shall be comprised of sign types families that are identified by a letter and number which identify a particular group of signs. An additional number identifies a specific type of sign within that family.
3. EI designation indicates exterior internally illuminated sign.
4. EN designation indicates exterior non-illuminated sign.

B. Text and Graphics:
1. Illuminated Signs: Graphics are routed out and backed with 3 mm (0.0125 inch) thick minimum translucent white acrylic diffuser. Diffuser and letter voids are to be mechanically fastened to sign face.
2. Non-illuminated Signs: Surface applied reflective white opaque vinyl graphics.

C. Illuminated Signs:
1. UL approved cabinet to be constructed from aluminum extrusion system with internal fluorescent lamps 230 mm (9 inches) on center maximum.
2. Energy saver fluorescent lamps which shall be turned on or off by photocell.
3. Energy shut off switch shall be mounted on bottom or side away from traffic thoroughfare.
4. The sign face and changeable sign strips are to be 2 mm minimum (0.090 inch) to 3 mm (0.125 inch) thick aluminum. Aluminum faces and changeable strips shall be mounted into framed extruded cabinet face to allow for removal from top or side, so that faces can be changed without affecting extruded sign structure.
5. Changeable strip sign text modules are to be extruded aluminum sliding panels which are retained by a horizontal aluminum channel mounted behind the insert panel joints. Text module heights are 100 mm (4 inches), 150 mm (6 inches) and 200 mm (8 inches).
6. Contractor shall make the sign operable by making the necessary electrical connections to adjacent junction box located in the general area of sign. Electrical connection is to run under grade and up through base. No exposed electrical conduit runs shall be allowed. Coordinate line voltages with site electrical circuit.

D. Post and Panel Signs:
1. Sign shall be constructed of an aluminum extrusion system including the following integral features: water relief channel for proper drainage, integral flanges for attachment of additional structural supports and mounting to posts with minimum 3 mm (0.125 inch) wall thickness. Post caps to be welded or mechanically attached with concealed fasteners.
2. Reveal between the post and sign cabinet is to be extruded aluminum. This extruded connector shall be adjustable to allow for either flush, 12 mm (0.5 inch) or 25 mm (one inch) reveal between the sign post and cabinet or tube.
3. Sign to be installed with direct burial of posts in concrete or with a base plate mounting. Any electrical connections should be run through the posts.

Spec Writer Note: Delete sign types and sign families that are not being used on the project.
E. Illuminated Monument Sign - Sign Type EI-01, and EI-14:
1. Sign shall be an illuminated sign cabinet mounted on a masonry base with a reveal between the base and the cabinet.
2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to base and a frame retainer, maximum 25 mm (1 inch) face dimension, to allow for sign face removal.
3. Sign to be installed with a cast-in-place “J” bolt type mounting to masonry base.

F. Illuminated Monument with Stacking Text Modules - Sign Type EI-02, and EI-15:
1. Sign shall be an illuminated sign cabinet mounted to a concrete base with a reveal between the base and the cabinet.
2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to base, and inter-changeable side loading sign text modules to allow for individual sign panel removal without the removal of the entire face.
3. Sign to be installed with a cast-in-place “J” bolt type mounting to masonry base.

G. Illuminated Monument with Electronic Message Center:
1. Sign shall be an illuminated sign cabinet mounted to a concrete base with a reveal between the base and the cabinet.
2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to base, and inter-changeable side loading sign text modules to allow for individual sign panel removal without the removal of the entire face.
3. Sign to be installed with a cast-in-place “J” bolt type mounting to masonry base.
4. Character height will be 7 pixel font. The pixel pitch will be 216 mm (8.5") center-to-center, 2 pixels per sq. ft. The estimated LED lifetime will be 100,000+ hours. The viewing angle will be 90 degrees horizontal x 40 degrees vertical. Service access to the sign will be
from the front. The graphic capability will include text, graphics, logos, basic animation, multiple font styles and sizes. Power will be 120/240 VAC single phase or 120/208 VAC three phase. Display dimming will have 64 levels (automatic or manual control). The communication options include: RS232, RS422, Serial Fiber, Ethernet Fiber and Radio.

H. Illuminated Post and Panel Sign - Sign Type EI-03:
   1. Sign shall be an illuminated sign cabinet mounted to extruded aluminum posts with an adjustable reveal between the posts and the cabinet.
   2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to posts, extruded aluminum posts, extruded aluminum reveal which is adjustable and a frame retainer, maximum 25 mm (1 inch) face dimension to allow for sign face removal.

I. Illuminated Post with Stacking Text Modules-Sign Type EI-04:
   1. Sign shall be an illuminated sign cabinet mounted to extruded aluminum posts with an adjustable reveal between the posts and the cabinet.
   2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to posts, extruded aluminum posts, extruded aluminum reveal which is adjustable in dimension and interchangeable side loading sign text modules to allow for individual sign panel removal without removal of entire face.

J. Illuminated Wall Panel Sign - Sign Types EI-06 and EI-08:
   1. Sign shall be constructed with an extruded aluminum illuminated sign cabinet configured for wall mounting.
   2. Sign shall be constructed of an aluminum extrusion system including the following integral features: concealed hinge for lamp access, water relief channel for proper drainage, ballast bracket channel, enclosed electrical raceway with cover, internal flanges for attachment of additional structural supports and mounting to wall and a frame retainer (maximum 25 mm (1 inch) face dimension) to allow for sign face removal.
3. Install sign with mechanical fasteners into wall surface behind sign cabinet, with electrical connection also through cabinet back. No exposed support brackets or electrical conduit runs are allowed.

4. Sign Contractor shall make the sign operable by making necessary electrical connections to the junction box located behind sign cabinet. Coordinate line voltages and location of junction box with electrical circuit.

K. Halo Illuminated Dimensional Letters - EI-09:
1. Halo illuminated fabricated aluminum letters. Letters shall be fully welded construction, utilizing a minimum of 3 mm (0.125 inch) wall aluminum for letter faces and edges and 6 mm (0.25 inch) acrylic back diffuser.

2. Internal illumination shall be by 13 mm minimum glass luminous tube, with two strokes minimum per letter. Tubing illuminates white.

3. Mechanically fasten to wall surface utilizing stainless steel angle mounting tabs internal to letter. Space letters a minimum of 65 mm (2.5 inches) away from wall surface. Letters are to be mounted to allow for simple removal of fabricated aluminum letter for maintenance and/or replacement of luminous tubing and other electrical components internal to letter.


L. Non-illuminated Monument with Stacking Text Modules - Sign Type EN-02:
1. Sign is a non-illuminated sign cabinet mounted to a masonry base with a reveal between the base and the cabinet.

2. Sign shall be constructed of an aluminum extrusion system including the following integral features: water relief channel for proper drainage, internal flanges for attachment of additional structural supports and mounting to base, and interchangeable side loading sign text modules to allow for individual sign panel removal without the removal of the entire face.

3. Sign is to be installed with a cast-in-place “J” bolt type mounting to the concrete base.

M. Non-illuminated Post and Panel Sign - Sign Types EN-03, EN-07, EN-08.03, EN-15.01, EN-15.02, EN-15.03, EN-15.04, EN-15.05, and EN-15.07:
1. Sign shall be a non-illuminated sign cabinet mounted to extruded aluminum posts with an adjustable reveal between the posts and the cabinet.

2. Sign shall be constructed of an aluminum extrusion system including the following integral features: water relief channel for proper drainage, internal flanges for attachment of additional structural
supports and mounting to posts, extruded aluminum posts, extruded aluminum reveal which is adjustable and a frame retainer (maximum 25 mm (1 inch) face dimension) to allow for sign face removal.

3. Weld sign cabinet at mitered corners and provide internal bracing as necessary to insure structural rigidity. Shop weld as much as possible. Grind smooth all exposed welds so surface is consistent with surrounding surface, and accepts paint finish in a like manner.

4. The sign faces are to be 2 mm (0.090 inch) thick aluminum. Aluminum faces shall be mounted into the framed extruded cabinet to allow for removal from the top or side, so faces can be changed without affecting extruded sign structure.

N. Non-illuminated Post and Stacking Bar Sign – Sign Type EN-04:

1. Sign shall be aluminum tubes mounted to extruded aluminum posts with an adjustable reveal between the posts and tubes.

2. Sign shall be constructed of an aluminum extrusion system including the following integral features: water relief channel for proper drainage, internal flanges for attachment of additional structural supports and mounting to posts, extruded aluminum posts, extruded aluminum reveal which is adjustable and interchangeable aluminum tube text modules to allow for individual stacking bar removal.

3. The sign text stacking bar modules are extruded aluminum sliding tubes retained by a reveal. The aluminum tube sign text stacking modules shall be mounted to allow for removal from the top, so tubes can be changed without affecting sign structure. Stacking bar (tube) module height is 150 mm (6 inches).

O. Non-illuminated Single Post Sign – Sign Types EN-05, EN-12.3, EN-12.4, EN-12.5, and EN-12.6:

1. Sign shall be constructed of an extruded aluminum square post with an aluminum plate sign panel.

2. Sign panel shall be a 3 mm (0.125 inch) aluminum plate. Panel mechanically fastens to support post with tamper resistant fasteners.

3. Posts shall be aluminum and a minimum 3 mm (0.125 inch) wall thickness. Post caps to be welded or mechanically attached with conceal fasteners.

4. Sign shall be installed with direct burial of post into concrete. If sign is to be installed with a base plate/"J" bolt type mounting, it is noted in the sign message schedule.

P. Non-illuminated Single Post Traffic Regulatory Sign – Sign Type EN-10:

1. Sign shall be constructed of an extruded aluminum square post with an aluminum plate sign panel.
2. Sign panel shall be a 3 mm (0.125 inch) aluminum plate with surface applied reflective vinyl traffic regulatory decals. Panel mechanically fastens to support post with tamper resistant fasteners.

3. Posts shall be aluminum and a minimum 3 mm (0.125 inch) wall thickness. Post caps to be welded or mechanically attached with conceal fasteners.

4. Sign to be installed with direct burial of post into concrete. If sign is to be installed with a base plate/"J" bolt type mounting, it is noted in the sign message schedule.

5. Signs shall be reflective traffic control symbols complying to Department of Transportation, Manual for Uniform Traffic Control Devices in color, shape, proportions, text and symbols.

Q. Non-illuminated Single Post & Panel Street Sign - Sign Type EN-11.1, EN-11.2, and EN15-08:
1. Sign shall be constructed of an extruded aluminum square post, cast or fabricated aluminum post cap/panel retainers and aluminum plate sign panels.
2. Sign panels are 3 mm (0.125 inch) aluminum plate. Panel mechanically fastens to panel retainers with tamper resistant fasteners.
3. Post caps/panel retainers are either cast or fabricated aluminum with a minimum 3 mm (0.125 inch) wall thickness. Post cap element slides over square sign post and mechanically fastens to post with tamper resistant fasteners.
4. Aluminum post with a minimum 3 mm (0.125 inch) wall thickness.
5. Sign to be installed with direct burial of post in concrete. If sign is to be installed with a base plate/"J" bolt type mounting, it is noted in the sign message schedule.

R. Non-illuminated Single Post Street Sign - Sign Type EN-11.3, EN-15.06, and EN-15.09:
1. Sign shall be constructed of an extruded aluminum square post.
2. Posts shall be extruded aluminum with a minimum 3 mm (0.125 inch) wall thickness.
3. Sign to be installed with direct burial of post in concrete. If sign is to be installed with a base plate/"J" bolt type mounting, it is noted in the sign message schedule.

S. Non-illuminated Wall Panel Sign - Sign Types EN-06.1, EN-06.2, EN-06.3, EN-06.4, EN-06.5, EN-06.6 and EN-08:
1. Sign shall be an extruded aluminum illuminated sign panel and frame configured for wall mounting.
2. Sign shall be constructed of an aluminum extrusion system including the following integral features: internal flanges for attachment of
additional structural supports and mounting to wall and a frame retainer (maximum 25 mm (1 inch) face dimension) to allow for sign face removal.

3. Weld sign cabinet at mitered corners and provide internal bracing as necessary to insure structural rigidity. Shop weld as much as possible. Grind smooth all exposed welds so that surface is consistent with surrounding surface, and accepts paint finish in a like manner.

4. The sign faces are to be 2 mm (0.090 inch) thick aluminum with surface applied reflective white vinyl graphics. Aluminum face shall be mounted into the extruded cabinet frame to allow for removal from the top or side, so that faces can be changed without affecting extruded sign structure.

5. Sign is to be installed with mechanical fasteners into wall surface behind the sign. No exposed support brackets are allowed.

T. Non-illuminated Wall Panel Sign – Sign Types EN-06.7 and EN-06.8:

1. Sign shall be constructed with a flat sheet of aluminum for wall mounting.

2. The sign face to be 3 mm (0.125 inch) thick aluminum with surface applied reflective white vinyl graphics.

3. Sign shall be to be installed with mechanical fasteners into wall surface. No exposed support brackets are allowed.

U. Non-Illuminated Cut Out Dimensional Letters – Sign Types EN-09:

1. Cut out aluminum letters which are mill cut (vertical sides) out of 9 mm (0.375 inch), 12 mm (0.5 inch) or 19 mm (0.75 inch) plate depending on sign type.

2. Letters to be studded and mounted with a 9 mm (.375 inch) spacers to wall surface using adhesive appropriate to the surface.

3. Letters painted with acrylic polyurethane in specified color and finish.

V. Non-Illuminated Cut Out Vinyl Letters – Sign Type EN-14: No signs are to be manufactured until final sign message schedule and location review has been completed by the Resident Engineer and forwarded to contractor.

2.4 FABRICATION

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

B. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners whenever and wherever possible.
C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.

D. Contact surfaces of connected members be true. Assembled so joints will be tight and practically unnoticeable, without use of filling compound.

E. Signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces be smooth flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.

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

G. Extruded members to be free from extrusion marks. Square turns and corners sharp, curves true.

H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.

I. Finish hollow signs with matching material on all faces, tops, bottoms and ends. Edge joints tightly mitered to give appearance of solid material.

J. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections.

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

L. 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.

M. No signs are be manufactured until final sign message schedule and location review has been completed by the Resident Engineer & forwarded to contractor.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Protect products against damage during field handling and installation. Protect adjacent existing and newly placed construction, landscaping and finishes as necessary to prevent damage during installation. Paint and
touch up any exposed fasteners and connecting hardware to match color and finish of surrounding surface.

B. Mount signs in proper alignment, level and plumb according to the sign location plan and the dimensions given on elevation and sign location drawings. Where otherwise not dimensioned, signs shall be installed where best suited to provide a consistent appearance throughout the project. When exact position, angle, height or location is in doubt, contact Resident Engineer for clarification.

C. Contractor shall be responsible for all signs that are damaged, lost or stolen while materials are on the job site and up until the completion and final acceptance of the job.

D. Remove or correct signs or installation work Resident Engineer determines as unsafe or as an unsafe condition.

E. At completion of sign installation, clean exposed sign surfaces. Clean and repair any adjoining surfaces and landscaping that became soiled or damaged as a result of installation of signs.

F. Locate signs as shown on the Sign Location Plans.

G. Certain signs may be installed on glass. A blank glass back up is required to be placed on opposite side of glass exactly behind sign being installed. This blank glass back up is to be the same size as sign being installed.

H. Contractor will be responsible for verifying that behind each sign location there are no utility lines that will be affected by installation of signs. Any damage during installation of signs to utilities will be the sole responsibility of the Contractor to correct and repair.

I. Furnish inserts and anchoring devices which must be set in concrete or other material for installation of signs. Provide setting drawings, templates, instructions and directions for installation of anchorage devices which may involve other trades.

--- END ---