SECTION 10 1404 – WAYFINDING SIGNAGE

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies terminal exterior and interior identification, informational, regulatory and directional signs as indicated in the project sign type drawings. Provide all documentation, engineering, materials and labor as necessary for the fabrication and installation of the specified sign program.

1.2 APPLICABLE STANDARDS AND PUBLICATIONS - Unless otherwise noted, utilize the most recent publications of the referenced standards and publications.

A. International Building Code, With Houston Amendments

B. ATBCB Design Guidelines for Signage in relation to the Americans With Disabilities Act

C. Uniform Sign Code

D. American National Standards Institute (ANSI)

E. American Society for Testing & Materials (ASTM)

F. 49 U.S.C Section 5323, SAFETEA-LU Section 3023 – Buy America

G. All other applicable local, state and federal codes and standards.

1.3 CONTRACTOR QUALIFICATIONS

A. It is required that the sign contractor currently and regularly manufactures and installs sign programs similar to that specified in this project with a minimum of five years of experience.

1.4 QUALITY ASSURANCE

A. The sign contractor is responsible for the quality of all materials and workmanship required for execution of the work specified in this section, whether executed by their own firm or firms subcontracting of supplying on their behalf. Sign contractor is responsible for providing their subcontractors with all pertinent project documents, information and coordination.

1.5 SUBMITTAL REQUIREMENTS

A. Shop Drawings – Provide shop drawings indicating the manufacture and installation details of all sign types including but not limited to sign structures, footings, mounting, attachments, typography, layouts, lighting,

colors and finishes. Where applicable, provide stamped structural engineered drawings and calculations, by a Texas licensed engineer, for all structural sign elements.

B. Samples – Provide – 8" x 10" samples of each color and material finish in quantities called for in this specification, until final approval is received.

C. Typography – Provide plots of complete character sets of each specified font at 3" cap height.

D. Manufacturer's Data – Provide manufacturer's specifications, data, installation details, maintenance instructions and other information for complete products specified within this section.

1.6 PERMITS

A. It is required that the selected sign fabricator obtain all necessary permits for the fabrication and installation of this sign program from Houston Airport System (HAS).

PART 2 - PRODUCTS

2.1 GENERAL

A. Provide graphics elements as completed units produced to the greatest extent possible by a single manufacturer, including necessary and incidental mounting accessories, fittings and connectors.

1. Contractor Responsibility - The sign contractor, by commencing work on this section, assumes overall responsibility in assuring that materials, components, assemblies and installations as shown or required as a part of the work within this section or other related sections complies with the requirements of the contract documents and as a part of the warranty of the work. The contractor shall further warrant, that all components specified or incidentally required are compatible with each other and adjoining installation conditions, that there are no conditions which will cause materials or assemblies to perform to their full life expectancy, that materials are compatible to adjoining substrates, finishes, materials and work by other trades, and that the individual parts and overall systems are effectively integrated and correct.
2. Interpretations of Contract Drawings - Do not scale drawings for dimensions. Use only written dimensions provided on drawings, unless they are discrepancies found. Contractor is responsible for verifying all dimensions and conditions shown on drawings. The Designer is to be notified of any discrepancy in drawings or conditions requiring changes or that prevent a proper installation of the graphics elements.
3. Site Conditions - Most of this sign project scope involves removing and changing out of graphics of existing sign elements in the terminal. Contractor to coordinate with existing conditions and documents. Field inspection and measurements must be done by the contractor for all elements in this project to insure the scope is clear and the approach taken to retrofit these signs will assure customer service will not be adversely affected during the installation of these elements or the gate number change when airlines commence their operations.

2.2 STANDARDS

A. Typography

1. Refer to Graphics Standards Sheet in Sign Type Drawings.
2. Pedestrian Wayfinding Fonts
   a. ClearviewText Medium – All standard wayfinding word messages
   b. ClearviewOne Book Condensed – All supplemental wayfinding word messages (i.e. via, to, etc.)
3. Letter Spacing
   a. Utilize letterspacing as indicated in sign type drawings. Provide full size samples of layouts for sign types specified in submittal section of this specification.

B. Colors (Note: PMS = Pantone Matching System; all paint, film and digitally printed colors to be perfectly matched to PMS colors as listed here)

1. Branded Terminal/Parking Garage Wayfinding Identification and Symbol Backgrounds:
   a. Terminal A/Parking A = PMS 349C
   b. Terminal B/Parking B = PMS 2597C
   c. Terminal C/Parking C = PMS 300C
   d. Terminal D/Parking D = PMS 187C
   e. Terminal E/Parking E = PMS 1655C
2. Global Watermark Accent Graphics:
   a. Terminal A = PMS 349C
   b. Terminal B = PMS 2597C
   c. Terminal C = PMS 300C
   d. Terminal D = PMS 187C
   e. Terminal E = PMS 1655C
3. Inter-Terminal Train Area Identification and Symbol Backgrounds:
   a. Primary ID color = PMS 3965C
   b. Global Watermark Accent Graphics = PMS 3975C
4. Wayfinding Sign Face Backgrounds = PMS 433C
5. Divider Line/Supplemental Background Graphics = PMS 432C
6. Wayfinding Message Text/Universal Symbol Artwork = White
7. Exposed/Decorative Mounting Hardware = match MAP paint #413425SP
8. Safety Red = PMS 186C
9. Warning Yellow = PMS 116C

C. Finishes

1. Standard paint finishes to be satin sheen (Matthews Acrylic Polyurethane or Owner Owner approved equal)

2.3 SIGN TYPES

A. Refer to sign type drawings located on drawing sheets 1-13 thru **2-68 for Terminal C Wayfinding and 1-22 thru 2-46 for Terminal C Garage Wayfinding** for specifications and information on individual sign types.

2.4 MATERIALS

A. Aluminum

1. Sheet and Plate - Utilize domestically sourced 6061 alloy, ASTM B221 unless otherwise notified, or other alloy is required to fulfill performance requirements. Utilize sizes, alloys, tempers and gauges as necessary to fulfill performance requirements, and to provide proper characteristics for fabrication, assembly and finishing as called for in the contract documents.
2. Extrusions and Tubing - Utilize domestically sourced 6061 alloy, ASTM B221 unless otherwise notified, or other alloy is required to fulfill performance requirements. Utilize sizes, alloys, tempers and gauges as necessary to fulfill performance requirements, and to provide proper characteristics for fabrication, assembly and finishing as called for in the contract documents. Minimum wall thickness is .125 inch unless otherwise specified.
3. Where attaching aluminum components to steel, provide coating or other barrier between metals to prevent galvanic oxidization.

B. Steel

1. Structural Tubing - Utilize domestically sourced sizes, alloys, tempers and gauges as necessary to fulfill performance requirements and to provide proper characteristics for fabrication, assembly and finishing as called for in the contract documents.
2. Sheet and Plate - Utilize domestically sourced sizes, alloys, tempers and gauges as necessary to fulfill performance requirements, and to provide proper characteristics for fabrication, assembly and finishing as called for in the contract documents.
3. Structural Assemblies - Fabricate and assemble in shop to the greatest extent possible, following AISC specifications.
4. Connections - Weld or bolt shop connections as called for in project documents or shop drawings. Bolt field connections unless welded connections are specifically called for in design or engineering specifications.
5. Welded Construction - Comply with AWS code for procedures, appearance, quality of welds and methods used in correcting welded work. Utilize only certified welders.
6. Galvanized Steel – Hot dipped galvanized after components have been cut to size.

C. Paint

1. Acrylic Polyurethane (Low VOC) - Multi-component catalytic opaque coating material consisting of pigmented base and activator. Follow manufacturer's specifications for ingredient ratios, surface preparation, priming, application methods, drying and handling of finishes.
2. Paint finish shall be smooth and consistent, free of surface imperfections, orange peel texture, scratches, gouges, drips, bubbles, uneven coating application, overspray or other surface imperfections.
3. Utilize Matthews Satin MAP or Owner Owner approved equal.
4. Surface coatings are to be compatible with adhesives and other materials utilized to apply graphics or other elements to their surface, with no discoloration or other deterioration.
5. Provide MAP graffiti resistant satin clear coat on all sign surfaces.

D. Fasteners

1. Unless otherwise specified, utilize stainless steel fasteners for mechanical connections. Upon installation, paint finish any exposed fasteners to match surrounding finish.

E. Foam Tape

1. Double sided acrylic adhesive closed cell urethane foam tape, 3M Series A20, #4016 or equal. Preparation of sign and mounting surface and installation techniques to be in accordance with manufacturer’s specifications.

F. Silicone Sealant

1. Clear silicone based commercial grade adhesive as manufactured by General Electric. Preparation of sign and mounting surface and installation techniques to be in accordance with manufacturer's specifications.

G. Vinyl Graphics

1. Utilize 3M vinyl products suitable for applicable installation surfaces.
2. Subject to compliance with requirements, provide 3M Diamond Grade DG3 Series 4090 white reflective sheeting or Owner approved equal with digitally printed image. Colors and images vary, refer to sign type layouts. The digital print shall be protected by 3M ElectroCut film series 1170 clear UV protection film or Owner approved equal with a PMMA top film.
3. Digital Image - The printing resolution shall be a minimum of 540 dots per inch (DPI). All numbers, letters, symbols and borders or backgrounds on signs shall be digitally printed (directly or through reverse image) before the sheeting is adhered to the panels, unless otherwise approved by engineer. ~~Final signs to be printed with custom blue or gray as approved by owner.~~
4. Digital Printing Process - The inkjet printer must be capable of printing with a resolution of 540 dots per inch on a media of 48 inches wide, at a minimum. **Seamless** digital printing must be performed using an environmentally friendly, flexible, UV incandescent, curable ink. The overlaminate must be applied with the use of a laminator capable of heating to 170 degrees Fahrenheit with a nip pressure of 90 pounds per square inch. All digitally printing shall be done in a workmanlike manner and as recommended by the manufacturer of the reflective sheeting **as needed for exterior signage.**
5. Warranty - Image durability, special or custom colors that are used in the manufacturing of digitally printed graphics, which are not defined by ASTM D4965, must be warranted for a period of 8 years and shall not excessively fade, discolor, crack, peel, blister or lose reflectivity such that the signs become visually unsuitable for their intended purpose.

H. Painted Graphics

1. Utilize correct paint products designed to adhere to the variety of installation surfaces occurring on this project.

I. Acrylic

1. Acrylic Sheet: ASTM D 4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).

PART 3 - EXECUTION

3.1 FABRICATION

A. Design, fabricate and install components to allow for expansion and contraction within a minimum of a 100-degree F temperature range, without causing excessive opening, buckling or overstressing of joints, adhesives, welds and fasteners.

B. Form work to specified sizes, shapes and profiles, with true curves, lines and angles. Provide necessary brackets, lugs and mounting points as required for assembly. Use concealed fasteners wherever possible.

C. Shop fabricate as much as is practical, minimizing field fabrication. Fasten joints flush to conceal attachments, or weld, grind smooth and finish joints where possible.

D. Shop and field assembled joints are to be true and tight, with minimal use of filling compounds. Finish hollow sign elements with matching material on all faces, tops, bottoms and ends, so that elements have the appearance of solid material.

E. Signs shall have a consistent, smooth surface, with even texture, straight edges and flat panel surfaces. Panel surfaces are to be flat and true with a maximum surface tolerance is 1/8 inch for 10 feet in length. Lines, joints and miters are to be smooth and sharp, with profiles accurate and ornament true to pattern.

F. Extruded members are to be free of extrusion marks.

G. Pre-drill holes for bolts and screws. Exposed ends and edges of panels are to be milled smooth with slightly eased edges.

H. All painted surfaces are to have proper surface preparation and priming prior to application of finish coatings. Finish is to be even with no light application allowing substrate or primer to show.

I. All moveable parts, including hardware are to be assembled and finished to allow for smooth operation without binding, deformation or distortion of adjoining members. All contact surfaces are to fit tight without forcing or warping components.

J. Shop Applied Vinyl: Align vinyl film in final position and apply to surface. Firmly press film from the middle outward to obtain good bond without blisters or fish-mouths.

3.2 INSTALLATION

A. Protect products against damage during field handling and installation. Protect adjacent existing materials, finishes and landscaping as necessary to prevent damage. Touch up exposed hardware to match color and finish of surrounding surface after installation.

B. Coordinate timing of installation work with HAS operations and project management to insure execution of work does not interfere with the smooth, normal operation of this facility.

C. Mount signs in proper alignment, level and plumb in accordance with the contract documents. Where not otherwise specified, signs shall be installed where best suited to provide a consistent appearance throughout the project.

D. Contractor shall own and be responsible for all signs that are damaged. lost or stolen while materials are on the job site, and until the final acceptance of the job by the owner.

E. Correct or remove signs or installation work deemed by the owner as unsafe immediately upon notification.

F. Upon completing installation, clean all sign surfaces and adjacent building surfaces affected by sign installation prior to calling for inspection. Replace any damaged landscaping materials to match condition prior to installation.

G. For all sign elements ~~related to gate number changes, make sign face changes to reflect new gate numbering, then provide easily removable cover so that current gate numbers can be easily changed to new gate numbers on the date of the change.~~ **related to gate number changes, make sign face changes to reflect new gate numbering, then provide easily removable cover so that current gate numbers can be easily changed to new gate numbers on the date of the change.**

H. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION