

CITY OF NORMAN
Office of the Purchasing Division
Norman, Oklahoma
INVITATION TO BID # 2425-20

The City of Norman, Oklahoma **will** open sealed bids in the office of the Purchasing Agent, City of Norman on the below listed item at 2:00 P.M. on Thursday, October 3, 2024.

MUNICIPAL COMPLEX SIGNAGE PACKAGES

All bids **must** be in the Office of the Purchasing Division, 225 N. Webster Ave., Norman, Oklahoma, 73069, **BEFORE THE FINAL CLOSING HOUR** as shown on the Invitation to Bid. If bid is mailed, to be considered it **should** be addressed as follows:
Attention: Purchasing Division, Opening of Bids, City of Norman, P.O. Box 370, Norman, Oklahoma, 73070. In addition, the bid envelope **should** be plainly marked on both sides indicating the bid number.

The unit price **must** be stated on all items and all totals extended, if required. **BIDDER GUARANTEES UNIT PRICES TO BE CORRECT.** To receive consideration, bids **must** be submitted on the City of Norman "Form for Bidders" and "Bidders Proposal" (if applicable), which are hereby made part of this Invitation to Bid.

Alternate bids **may** be considered. If bidding an alternate, so state on the face of the Form for Bidders and fully describe the merchandise and include Manufacturer's literature. Unless the bidder identifies on the Form for Bidders that an alternate is being bid, the vendor **will** be expected to deliver merchandise as specified. Alternate bids **shall** not be submitted to circumvent the specifications.

The Affairs of the City of Norman, whether in the conduct of its governmental or proprietary functions, involve the health, safety, and welfare of the public; and because the item(s) specified are necessary and proper for the conduct of said affairs, any delay in the delivery of the item(s) being bid can jeopardize the health, safety, and welfare of the public, and can result in the incurring of additional expenses to the City. For these reasons, it is understood by the bidder the date of delivery of the item(s) being bid herein is considered to be an integral part of this bid and **may** be considered in awarding the contract.

Discount and delivery date **must** be plainly stated on the Form for Bidders and Bidders Proposal. Use ink pen or computer in filling in quotation and initial any corrections. Bid and Affidavit **must** be signed in ink by an authorized representative of the company making the bid. **Bidders should submit one original and one duplicate Form for Bidders and Proposals.** All bids **will** be awarded by Section or Sections whichever is in the best interest of the City. Any bidder who fails to return the third consecutive invitation **will** be removed from the bid list. If the above procedures are not followed, bids **may** be disqualified. The right is reserved by the City to reject any or all bids or parts of bids. All bids are public records and are available during regular office hours.

CITY OF NORMAN
Office of the Purchasing Agent
Norman, Oklahoma

FORM FOR BIDDERS NO.: 2425-20

Opening of Bids
City of Norman
Purchasing Dept.
225 N. Webster
Norman, OK 73069

Bid Opening:
10/03/24
2:00 p.m.

Dear Sir:

The undersigned bidder declares that before preparing this bid he read carefully the detailed specifications and that his bid is made with full knowledge of the kind, quality, and quantity of the materials or services to be furnished.

The undersigned bidder offers and proposes to furnish the materials, equipment, or other services hereinafter set forth, in the manner and under the conditions and in accordance with the specifications on file in the Office of the Purchasing Agent.

The quantity of this product to be purchased by the City of Norman may be any number in the anticipated quantity range hereinafter listed. This is an estimated quantity to be purchased, but does not in any way bind the City of Norman to purchase said quantity. Purchase orders are applicable for one year from Council approval date. All bids are to be made on a per unit basis.

All items or materials shall be delivered to the City of Norman with transportation charges prepaid by the bidder.

AFFIDAVIT OF NON-COLLUSION

STATE OF _____)

COUNTY OF _____)ss

_____, of lawful age, being first duly sworn, on oath says, that (s)he is the agent authorized by the bidder to submit the attached bid. Affidavit further states that the bidder has not been a party to any collusion among bidders in restraint to freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any city official or employee as to quantity, quality, or price in the prospective contract, or any other terms of prospective contract; or in any discussion between bidders and any city official concerning exchange of money or other thing of value for special consideration in the letting of a contract; that the bidder/contractor has not paid, given or donated or agreed to pay, give or donate to any officer or employee of the City of Norman, Oklahoma any money or other thing of value, either directly or indirectly, in the procuring of the award of a contract pursuant to this bid.

Bidder

By: _____

Subscribed and sworn to before me on this _____ day of _____, 20_____

NOTARY PUBLIC (or Judge)

My Commission Expires _____

Project Manual



City of Norman

**Municipal Complex
Signage Packages**

Norman, Oklahoma

Issued for Bidding

September 03, 2024



SIGN SPECIFICATIONS

1.0 General

1.1 Related Documents

Design Intent Drawings: These drawings/specifications are for the sole purpose of visual design intent only and not intended for construction purposes.

- A. The Sign Contractor is responsible for engineering, design, construction technique, materials, and installation.
- B. The Designer shall review the shop drawings only for conformance with general design intent and will in no way be responsible or liable for any results of construction from working drawings, materials selection, shop drawings, contract documents or other agreements other than agreement with the Owner authorizing these documents.
- C. Sign Contractor shall verify and be responsible for all dimensions and conditions shown in the Design Intent documents. If dimensions are missing or are unclear — consult the Designer for directions. The Designer must review shop details prior to fabrication.

1.2 Summary

This Section includes performance specifications for exterior and interior sign packages for the City of Norman, Oklahoma.

1.3 Performance Specifications Introduction

The purpose of this document is to serve as a reference which identifies materials, construction specifications, and quality controls, as well as Sign Contractor's responsibilities and obligations. Sign Contractor(s) shall furnish and install signs and/or graphics as detailed in drawings and/or described in these specifications. Refer to these performance specifications for details on Designers expectations of Sign Contractor and fabrication process.

2.0 Definition of Terms

2.1 Documents

Refers to the drawings and specifications, including all addendum and modifications incorporated therein for their execution. When applicable, additional addendum provided by Owner or Designer shall become part of the documents.

2.2 Project Owner

City of Norman
201 W. Gray
Norman, OK 73069
Contact: Brenda Hall, City Clerk

405.366.5405
Brenda.Hall@NormanOK.gov

2.3 Designer

The McKinney Partnership Architects
3600 W. Main, Suite 200
Norman, OK 73072
Contact: Greg Ward, AIA
405.360.1400
gward@tmparch.com

2.4 Sign Contractor/Fabricator

Refers to the group(s), firm(s), or corporation(s) designated in an Agreement with the Owner and shall apply to any such group(s) under contractual obligation to perform any fabrication, installation, finishing, printing, or other work related to signs and graphics, as referred in this document.

2.5 Work

As employed herein, includes any materials, equipment, construction, labor, installation, service or maintenance, and warranties required to complete the fabrication prescribed in these specifications and contract documents. This shall include, but is not limited to, all the sign types shown in the drawings.

2.6 Addendum

Covering changes, corrections, and special interpretations of the drawings and specifications shall become part of the documents.

2.7 Substitutions

When one or more than one product is specified and the Sign Contractor wishes to offer a substitute product which will completely accomplish the purpose of the contract documents, see section 6.0 for the conditions governing all substitutions.

2.8 NIC

Refers to work not included in this contract.

2.9 Final Completion

The date when the Owner finds the entire work as described in the contract documents acceptable and fully performed, as written on the final certificate of payment.

3.0 General Conditions

3.1 Quality Assurance

The Sign Contractor shall be responsible for the quality of materials and workmanship required for execution of this contract including the materials and workmanship of any firms or individuals who act as subcontractors. It is intended that the work described in these documents be of sound, quality construction. The Sign Contractor shall be solely responsible for the inclusion of adequate amounts to cover installation of all items indicated, described and/or implied.

3.2 Commencement

The work described in these documents shall only begin when an Owner-authorized, written contract has been issued to the Sign Contractor with instructions to proceed, provided other requirements have been met.

3.3 Contract Administration

Reviewing the quality and progress of the work and submittals received from the Sign Contractor, the Owner has no responsibility to assist the Sign Contractor in the supervision or performance of work. No action by the Owner shall in any way relieve the Sign Contractor from the responsibility for the performance of the work in accordance with the contract documents or give rise to any negligence or other action against the Owner or anyone acting for their behalf.

Sign Contractor shall allow Owner or an authorized representative access to his plan, excluding such areas or processes judged by the Sign Contractor to be proprietary in nature for the purpose of inspecting production techniques, materials, or other items related to the manufacturing of which the Owner is committed, or which may be contemplated.

Upon notification from the Sign Contractor that the work is complete, the Owner and Designer will inspect the final installation for compliance with all approved documents.

3.4 Bidding Process

A. All Bidders are required to complete any bid worksheets & contract documents included as part of this package.

B. Incomplete bid & contract documents may be cause for rejection of the bid.

C. The Owner shall have the right to reject any or all bids, parts of such bid, and reserves the right to waive any informalities in the bid.

D. In addition to bid price, the Owner reserves the right to consider all elements entering into the question of determining the responsibility of the Bidder. Any bid which is incomplete, conditional, obscure, contains additions not called for, or irregularities of any kind, may be cause for rejection of the bid.

E. Bidders must present evidence to the Owner, when required by them to do so, to show they are fully competent and have the necessary source of supply, facilities and pecuniary resources to fulfill the conditions of the contract and specifications.

F. RFI Process: All Requests for Information (RFI) must be submitted in writing via email to the appropriate distribution list set forth by the contract documents or Owner. Under no circumstances will RFIs submitted via direct phone call be answered. Responses to RFIs will be via email to all Bidders.

3.5 Artwork

The Sign Contractor will produce all artwork for all graphics, symbols, and lettering, and will submit for review prior to fabrication. Artwork for specific items and logos, as noted on the drawing documents, shall be provided electronically by the Designer or Owner. All other artwork, as well as the final artwork for final fabrication is to be provided by the Sign Contractor.

3.6 Other

Field dimensions shall be taken by the Sign Contractor prior to preparation of shop drawings and fabrication where possible. All supplementary parts necessary to complete each item shall be furnished by the Sign Contractor, even though such parts are not definitely shown or specified. All anchors and other fasteners for securing work shall be included.

4.0 Sign Contractor Responsibilities

4.1 Design Responsibility

The graphic design requirements shown by the details on the Documents are for design intent only and intended to establish basic dimensions of units or modules, profiles and sight lines of members, and appearance. Within these limitations, the Sign Contractor is responsible for

fabrication of the entire system, and to make whatever modifications of and additions to the details as may be required. The visual design concept shall be maintained as shown, including members sizes, profiles, and alignment of components as accurately as possible.

The Sign Contractor shall supplement the general design shown with detailed shop drawings for the Designer's approval. The shop drawings shall include major aspects of the system proposed, such as sections, shapes and connections of components and joints, how temperature movement is handled, venting, and anchorage to structure.

4.2 Statement of Application

The Sign Contractor, by commencing the work of the project, assumes overall responsibility, as part of his warranty of the work, to assure that all assembled components and parts shown that are required within the work of this project comply with the contract documents. The Sign Contractor shall fully warrant:

- A. That all components specified, or required, to satisfactorily complete the installation, are compatible with each other and with the conditions of installation and expected use.
- B. The overall effective integration and correctness of individual parts and the whole system.
- C. Compatibility with adjoining substrate, materials, and other work by other trades.
- D. There shall be no premature material failure due to improper design of fabrication of the system. All materials are to fully meet their normal life expectancy.

4.3 Statement of Execution

The Sign Contractor shall be responsible for all work done under his contract, including:

- A. Faulty or improper work of sub-contractor(s) and others under him by contract or otherwise.
- B. Diligent execution of work and giving personal attention and supervision to the same until complete.
- C. All delays caused by neglect on the part of the Sign Contractor or those under him by contract or otherwise.
- D. Compliance with all laws, ordinances and regulations bearing on the conduct of the work as drawn and specified.

E. Obtaining, at the Sign Contractor's own cost, sign/construction permits, inspection certificates which may be required of the project by local authorities, or any other governing body. The Sign Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of the work.

4.4 Submittals

By the approval and submission of shop drawings and samples, the Sign Contractor thereby represents that he has determined and verified all field measurements, including heights, field construction criteria, materials, catalog numbers and similar data or will do so, and that he has checked and coordinated each shop drawing and sample with the requirements of the work and the contract documents. Refer to Section 5.0 for list of required submittals.

4.5 Special Instructions

The Sign Contractor shall halt the graphics work when notified of a proposed change, or unsatisfactory results are anticipated. Sign Contractor shall notify the Owner or authorized representative immediately and proceed only after receiving additional instructions from the Owner or authorized representative.

4.6 Protection and Handling of Products

Sign Contractor shall store all graphic items under cover and off ground; handle in such manner as to protect surfaces and to prevent damage during storage, transport, installation, and throughout remaining construction; protect exposed finishes by covering with adhesive paper or other suitable covering where adhesive is not appropriate for finish material; and apply covering prior to shipment from the fabricator or finishing shop. The covering shall not adversely affect the finish. The Sign Contractor shall remove protective coverings when there is no longer any potential for damage to the graphics work from other work yet to be performed.

4.7 Shipping and Transportation

Sign Contractor will be responsible for proper shipping and transportation of all signs to the job site and will specify whether it will be a common carrier or their own trucks. Sign Contractor will be liable for all damage incurred during shipping and loss of time in the installation schedule.

4.8 Storage of Equipment

Space for storage of material prior to installation will be designated by the Owner. The Sign Contractor must give advance notice of deliveries and space requirements so the proper provision may be made. If deliveries are to be made to the premises at times other than normal working hours, the Sign Contractor will be required to reimburse Owner for any overtime costs incurred by Owner.

4.9 Warranty

A. Upon final completion, the Sign Contractor will warrant all work and materials to be fully complete and in accordance with the contract documents and the agreement between Owner and Sign Contractor, and requirements appertaining thereto; that all work and materials are free from any and all defects and imperfections, and fully meet the manufacturer's published performance criteria for use and purposes for which each and every part is specified.

B. The Sign Contractor also agrees that, should any defect develop or appear, which the Owner finds was not caused by improper use, the Sign Contractor shall promptly, upon demand, fully correct, substitute and make good any such defective material without cost to the Owner and will save the Owner harmless against any claim, demand, loss or damage by reason of any breach of this warranty.

C. The period of this warranty shall commence on the date on which the Owner determines the Sign Contractor has met all Final Completion requirements. The period of said warranty shall last twelve (12) months unless otherwise specified.

D. Failures include, but are not limited to, the following:

1. Deterioration of finishes beyond normal weathering.
2. Structural failures.
3. Noise or vibration caused by thermal movements.
4. Failure of system to meet performance requirements.
5. Failure of operating components to function normally.

4.10 Sign Contractor Responsibilities

The period of this warranty shall commence on the date on which the Owner determines the Sign Contractor has met all Final Completion requirements. The period of said warranty shall last twelve (12) months unless otherwise specified.

5.0 Submittals

All submittals and shop drawings are to be delivered to the Designer for distribution.

5.1 Schedule

A detailed graphic schedule by phases of production and installation is to be submitted by the Sign Contractor within five (5) business days of signing of contract with the Owner.

5.2 Samples

A. The Sign Contractor shall submit (3) 4"x 4" samples of each color and finish of exposed materials, accessories and exposed fasteners on final material substrate to be used in the project.

5.3 Shop Drawings

The Sign Contractor shall submit (1) one copy of electronic shop drawings in 11" x 17" format for the manufacturing, fabrication and erection of signs and graphic work at large scale, which shall show joints, anchorage, accessory items, and finishes.

A. Acceptance of shop drawings does not in any way change the documents. Documents may only be changed in writing.

B. The Sign Contractor is responsible for reviewing shop drawings for conformance with the design intent documents and notifying, in writing, the Owner of any variation from the documents.

C. Changes to the shop drawings are to be made by the Sign Contractor as directed by the Designer.

5.4 Manufacturer's Data

Sign Contractor shall submit (1) copy of the manufacturer's printed specifications, anchorage details and installation, and maintenance instructions for all products to be used in the fabrication of signs and graphics work.

6.0 Substitutions

6.1 Any substitution requested will be considered under these cases:

A. When specified product is not available.

B. When a certain product or process is specified, a warranty of performance is required, and, in the judgment of the Sign Contractor, the specified product or process will not produce the desired results.

C. When such substitutions are in the best interest of the Owner.

6.2 Requests for substitutions of products, materials, or processes other than those specified will be accompanied by the evidence that the proposed substitution:

A. Is equal in quality and serviceability to the specified item;

B. Will not entail changes in details and construction related to work;

- C. Will be acceptable in consideration of the required design and artistic effect;
- D. Will provide cost advantage to the Owner.

The Sign Contractor shall furnish with his request such drawings, specification samples, performance data and other information as may be required of him to assist the Designer in determining whether the proposed substitution is acceptable. The burden of proof shall be upon the Sign Contractor.

6.3 Regardless of the evidence submitted or any review or independent investigation by the Owner or authorized representative, a request for a substitution of products, materials, or processes is a warranty by the Sign Contractor to the Owner that the requested substitution:

- A. Is equal or better in quality and serviceability to the specified item;
- B. Will not entail changes in details and construction related to work;
- C. Will be acceptable in consideration of the required design and artistic effect;
- D. Will provide cost advantage to the Owner.

6.4 Proposed substitutions will be made after the signing of the contract and not during the bid phase. Sign Contractor shall submit requests for substitutions to the Designer in writing with the first round of shop drawings, giving sufficient information and samples for evaluation with the differences in costs, if any. Substitutions must be approved in writing by the Designer before they may be used.

7.0 Products of Fabrication

Shop fabrication and tolerances shall conform to the standards of the industry. Sign Contractor shall perform high-quality, professional workmanship, attach materials with sufficient strength, number and spacing not to fail, and fabricate all work to be truly straight, plumb, level, and square and to sizes, shapes and profiles indicated on the approved shop drawings.

7.1 Materials and Workmanship

- A. The Sign Contractor shall use, whenever possible, standard sizes and readily available materials to reduce cost of fabrication. All materials shall be of the highest quality and shall meet all industry standards. To establish a standard quality, design, and function desired, portions of the Design Intent Documents and specifications may be based on products or manufacturers herein. When specific products are mentioned, it should be noted that the manufacturers of similar products may be considered for approval as "equal" by the Designer upon receipt of adequate supporting data.

B. All materials utilized for the work of this contract shall meet all applicable codes, including Fire and Life Safety codes, of authorities having jurisdiction over the projects. The Sign Contractor shall immediately report any discrepancies to the Designer for resolution. The Sign Contractor shall not substitute products without obtaining prior written approval from the Owner and Designer.

C. All sign faces shall be smooth and even, free from imperfections and disfiguring caused by such things as welding, material being too thin, fasteners and welds not being ground smooth, oil canning, staining, discoloration or uneven coloration, puckering, or any other problems not specifically mentioned herein.

D. Climate conditions of the project site must be considered, and the sign units designed and engineered to prevent problems caused by weather, expansion, contraction, condensation, and any other possible problems resulting from exposure to the elements.

E. Weep holes, heat vents, etc. shall be considered for incorporation by the Sign Contractor on each sign type as required and/or necessary. Weep holes, vents, access panels and other functional, but non-aesthetic, components must be placed to be inconspicuous as possible. All such items must be shown on the shop drawings for approval prior to fabrication.

F. All finished work shall be smooth and free from abrasion, tool marks, visible welds, exposed fasteners, or similar defects. All corners, reveals and joints shall be milled to matching adjoining pieces and shall be fabricated so that they are straight and/or configured to match the Design Intent Documents.

G. Defective workmanship of any type shall not be tolerated and will result in rejection of the supplied product.

7.2 Systems Performance Requirements

A. General: Sign Contractor shall engineer, fabricate and install signs to meet Performance Requirements included in these Specifications and the following criteria:

1. Code Compliance: Work, including structural loading, shall comply with all applicable Federal, State and Local Codes and applicable regulations of authorities having jurisdiction.
2. Design Criteria: The Drawings and Specifications indicate sizes, colors, layouts, profiles, critical details, and dimensional requirements of signs.

B. Windloading: All footings, sign types and supporting devices, anchorage, etc. must be designed by a professional Structural Engineer licensed in the State of Oklahoma to

withstand the minimum wind speed specified by the adopted International Building Code or local ordinances on the total sign area applied in all directions and comply with all applicable codes.

C. Thermal Movement Temperature Change (range): 120 degrees Fahrenheit ambient, 180 degrees Fahrenheit material surfaces.

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

7.3 Typography & Graphics

A. The Sign Contractor shall report any discrepancies or conflicting sign specifications, such as message too long for specified format, to the Designer for resolution.

B. The applicable typefaces for this project shall be indicated in the design documents. All fonts specified must be purchased by the Sign Contractor for use in this program.

C. Electronic art for graphics, logos and symbols shall be supplied by the Owner or Designer for the Sign Contractor's use in producing electronically cut images, patterns, or friskets. This is the only acceptable source of art for the logos and symbols. Sign Contractor shall not use artwork included as part of these Documents for final photography or digitizing.

D. All final output or implementation of typography and graphics are to be sharp (without serrated or irregular edges) and exactly true to the letter style and/or design form.

E. Sign Contractor shall allow for hand kerning of messages, at no additional cost, in which letters and numbers, although adequately spaced, appear to the Designer to be less readable, or unsatisfactorily spaced.

7.4 Color

A. Color Specifications: Sign Contractor shall provide products matching those listed below in both color and quality. For colors requiring a match, products shall be used which best match the paint swatch specified. Samples shall be submitted in accordance with the requirements of Section 5.0 and of these Specifications for approval prior to fabrication.

B. Color specifications for the work of the project are listed in the Design Documents.

C. Consult the Design Documents to ascertain all sign components to receive color.

D. Coatings are to accurately match the color specified. The number of coatings must be adequate to achieve the color specified. Three (3) samples of each color using the actual coating type must be submitted for approval prior to production, in accordance with Section 5.0 of these Specifications.

7.5 Finish

A. All coating applications are to be smooth and consistently uniform. The cured coating surface is to have a uniform finish that matches the specified color and finish.

B. Exact identification of all coatings and a description of the method of application shall be identified in the Shop Drawings.

C. Color breaks that occur on the sign face are to be sharp, even, with no serration or color bleed. All splatters, drips, spills and over sprays shall be removed.

D. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

E. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

F. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

7.6 Screen Printed Media

A. All screen-printed graphics shall be produced with ABS paint compatible with the substrate, using mesh of 390 or finer to produce clean, sharp edges.

B. All media are to be opaque, with full even coverage, and free from dust bubbles, blemishes and other foreign matter.

C. There shall be no streaking created by drawing squeegee over screen.

7.7 Digitally Printed Graphics

A. Applied graphics should securely adhere to sign surfaces, and be applied smoothly: free of peeling, bubbling or other application defects. Graphics are expected to resist peeling and hold to applied surfaces considering the exterior conditions (resistant to temperature fluctuations and moisture).

B. Opaque continuous tone photo-quality print - minimum 720 DPI per sq. inch. Graphics may be printed directly to substrate and be applied smoothly: free of peeling, bubbling or other application defects. Graphics are expected to hold to applied surfaces. Graphics should utilize inks resistant to UV-A, UV-B, Xenon, and weather. Any graphics used outside should be exterior rated: resistant to vandalism, fading and other weather-related defects.

C. Where applicable, digital graphics shall be printed on reflective white and must be retro-reflective where indicated per MUTCD standards unless specified otherwise in the Design Intent Drawings.

7.8 Vinyl Film

A. Contractor shall provide opaque or reflective (exterior only) high performance vinyl film as indicated on the Drawings, 2 mil maximum thickness, with pressure sensitive adhesive, suitable for outdoor application to vinyl, painted surfaces, and metal applications.

B. All machine cut vinyl typography and graphics are to be on high-grade self-adhesive 2 mil maximum high performance, cast vinyl films with a minimum of (7) years durability or approved equal (or otherwise noted). The application of the vinyl characters is to be smooth, without bubbles, ridges or other imperfections.

C. All vinyl typography (including letters, arrows, numbers, symbols, logos, etc.) shall be digitally reproduced, and machine cut.

D. Surface coatings should be allowed to dry a minimum of 3 to 4 days before applying vinyl letters or graphics to avoid bubbles forming in the vinyl from out-gassing of the curing coating.

E. Letters for sign panels are to have positionable pressure-activated gray pigmented adhesive to provide minimal color show through.

7.9 Aluminum & Steel

Separation of Metals: There shall be no bare aluminum in contact with any other metals, wood or concrete. Contact surfaces shall be separated by a coating of zinc chromate and aluminum paint, or a heavy body bituminous paint or by a gasket.

A. Aluminum Castings: ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.

B. Aluminum Sheet and Plate: ASTM B 209 (ASTM B 209M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 5005-H32.

C. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.

D. Steel Members Fabricated from Plate or Bar Stock: ASTM A 529/A 529M or ASTM A 572/A 572M, 42,000-psi (290-MPa) minimum yield strength.

E. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.

7.10 Laser-cut Characters

Provide characters with square-cut smooth edges.

7.11 Acrylic Sheet

Acrylic Sheet: ASTM D 4802, Category A-1 (cell-cast sheet), Type UVA (UV absorbing).

7.12 Paints/Coatings/Finishes

A. Surface Preparation: Sign Contractor shall remove mill scale and rust if present from uncoated steel and prime for painted finish.

B. Only the highest quality 2-part catalyst-hardened acrylic polymer coatings are to be used. Color fastnesses of utmost importance as well as quality and other assurances against abnormal deterioration such as peeling, cracking, crazing, etc.

C. Coatings shall be prepared as designated by the manufacturer's latest literature for surface preparation and application but in no case less than one (1) applicable primer coat and two (2) final full coats. All finished surfaces shall be uniform.

D. All coatings (paint, ink, etc.) should have UV inhibitors, and should not fade or discolor when exposed to ultraviolet light.

E. Colors shall match color designations as indicated on the drawings.

F. Sign Contractor shall protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

G. All paint finishes are to be satin unless otherwise noted in the Design Drawings.

7.13 Fasteners

Sign Contractor shall use concealed fasteners fabricated from metals that are not corrosive to the sign material and mounting surface. All dissimilar materials must be separated from contact with each other. Fasteners shall be compatible with adjacent materials and substrates.

A. Anchors and Inserts: Sign Contractor shall use nonferrous metal or hot-dipped galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Sign Contractor shall use expansion bolts or other fastening devices for drilled-in-place anchors designed to withstand all required loads. Sign Contractor shall furnish inserts, as required, to be set into concrete work.

B. Exposed Fasteners: Sign Contractor shall finish exposed fasteners to match adjacent surfaces and as directed by Designer to achieve an attractive, finished appearance.

8.0 Fabrication

Sign Contractor shall provide sign copy to comply with the requirements indicated for size, styles, spacing, content, positions, materials, finishes, and colors of letters, numbers and symbols, and other graphic devices and construct to accurate details and dimensions as shown, and as reviewed on shop drawings. Exposed fasteners on finished sign faces will not be allowed, unless specifically indicated. Sign Contractor shall conceal wiring, conduit, and other electrical items within sign enclosures.

8.1 Shop Assembly

Sign Contractor shall pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Sign Contractor shall disassemble units only as necessary for shipping and handling limitations. Sign Contractor shall clearly mark units for reassembly and coordinated installation.

8.2 Welding

All welding procedures shall conform to applicable AWS specifications. The type of alloy filler metal and electrodes to be that which is recommended by producer of metal to be welded, and as required for color match, strength and compatibility in the fabricated items.

8.3 Flatness of Panels

Panels shall show no visible distortion when viewed in installed position.

8.4 Cutting/Routing

Sign Contractor shall cut and route in a manner to produce smooth, true, and clean edges and corners of finished graphics and letterforms. Graphics and letterforms having positive or negative

corners, nicked, cut, or ragged edges are not acceptable. Sign Contractor shall align and maintain parallel baselines and margins as indicated on the drawings.

9.0 LED Displays

Part 1: General

1.01 Section Includes

- A. LED message centers
- B. Control software

1.02 References

- A. Standard for Electric Signs, UL and CUL Listed
- B. Standard for Control Centers for Changing Message Type Signs
- C. Federal Communications Commission Regulation Part 15
- D. National Electric Code
- E. Designed to current UBC or IBC standards
- F. FCC Class A Compliant

1.02 Submittal

- A. The electronic LED display manufacturer shall provide a complete technical submittal within 60 days of contract award and shall not proceed with LED Matrix manufacture until the submittal is approved.
- B. Submit:
 - 1. All LED display manufacturer qualifications, as specified herein.
 - 2. LED display shop drawing.
 - 3. LED display Riser diagram.
 - 4. AC Site Power Requirements, including legs and Amps per leg.
 - 5. LED display control software operator's manual.
 - 6. LED display installation and maintenance manual.

1.04 Qualifications

- A. LED Display Manufacturer shall:
 - 1. Have been in the business of manufacturing permanently mounted outdoor LED displays for a minimum period of 15 years prior to the contract bid date. An "LED" display contains pixels constructed solely of high-intensity discrete LEDs

2. Have in operation at bid date a minimum of 100 large outdoor permanently mounted LED displays as defined above. Each of these LED displays shall have operated successfully for a minimum period of one (1) year prior to the contract bid date.
3. Have been in business under the same corporate name for a period of no less than 40 years prior to the contract bid date.
4. Provide a toll-free help desk number that will be staffed from 7 a.m. to 7 p.m.
- B. Experience with manufacturing the following types of electronic sign products shall not satisfy the requirements of this LED display specification:
 1. Indoor displays of any size or type
 2. Back-lit displays
 3. Any type of matrix display that cannot be programmed to show a nearly infinite quantity of messages

1.05 Warranty

- A. Provide 5 years of parts coverage
- B. Provide toll-free service coordination
- C. Provide a toll-free help desk number that will be staffed from 7 a.m. to 7 p.m. Central Time

Part 2: Products

2.01 LED Display

- A. Cabinet Construction
 1. Cabinet dimensions **2' 11" H X 3' 11" W X 0' 7" D** The front-to-back cabinet depth shall not exceed 7 inches.
 2. The cabinet shall contain a full LED matrix measuring a minimum of 120 pixel rows high by 180 pixel columns wide.
 3. Cabinet display configuration is:
 - a. Two-Faces (2V), two-sided display
 4. The distance from the center of one line or column of pixels to the center of all adjacent lines or columns shall be 6.08 mm both horizontally and vertically.
 5. Maximum display power per face shall not exceed 630 watts when 100% of the pixels are operating at their maximum possible drive current.
 6. Cabinet weight per face shall not exceed 95 lbs
 7. Display shall operate from the following power sources: 120/240 VAC, 60 Hz single-phase, including neutral and earth ground.
 8. Display shall operate in a minimum ambient temperature range of -40° to +120°F (-40 to +50°C) and to a 95% humidity.
 9. Internal display component hardware (nuts, bolts, screws, standoffs, rivets, fasteners, etc.) shall be fabricated from stainless steel, aluminum, nylon, or other durable corrosion-resistant materials suitable for the sign application.

10. Electrical display components shall be 100% solid-state.
 11. The presence of ambient radio signals and magnetic or electromagnetic interference, including those from power lines, transformers, and motors, shall not impair performance of the display system.
- B. Housing Frame
1. Display materials shall use non-corrosive materials or have a protective coating so they shall be anti-corrosive and not degrade or oxidize.
 2. The display shall be front ventilated with adequate ventilation provided by the use of fans.
 3. Steel mounting points that can be used for mounting purposes shall be provided with the display and have the ability to be adjusted for alternative mounting methods.
 4. Shall include lifting supports that can be removed after installation.
- C. Exterior Finish
1. The LED display border pieces shall be coated with an automotive-grade acrylic urethane paint.
- D. Front Face Construction
1. To meet the display readability requirements, the front face must be constructed in such a manner that it provides high contrast, low sunlight reflection and durability in all weather and site conditions.
 2. Minimum features of front face shall:
 - a. Include horizontal louvers for contrast enhancement.
 - b. Include vertical ribbing for contrast enhancement
 - c. Use surface materials in the active LED area, such as metal, plastic, or other face materials, designed for low sunlight reflectivity.
- E. Serviceability
1. The display housing shall provide safe and convenient front service access for all modular assemblies, components, wiring, and other materials located within the housing.
 2. All internal components shall be removable and replaceable by a single technician with basic hand tools.
 3. Service access shall be easily obtained by removal of one or more modules in front of the associated internal component.
 4. Each module should allow simple removal with a single latch system.
 5. Displays shall be designed with service features that minimize potential bodily harm.

2.02 Display Components

- A. LED display modules shall be constructed for good readability, long life, and ease of service. Each display module shall be constructed as follows:

1. Each module within the product family shall be designed with the same physical footprint of 14.4" x 14.4".
 2. All modules and their components shall be fully encapsulated and sealed to meet IP-67 standards.
 3. An LED module shall consist of LEDs with all drive electronics mounted on a single Printed Circuit Board (PCB).
 4. LEDs shall be auto-inserted in order to maintain quality and uniformity of the LEDs within each LED module.
 5. All PCBs shall be wave-soldered to ensure uniformity, quality, and durability of all solder joints.
 6. All PCBs shall be cleaned in a manner so as not to contain more than 2 parts per million contaminants.
 7. Module signal and electrical connections shall be of the positive locking and removable type. Removal of a module from the display shall not require a de-soldering operation.
 8. Data to the modules shall be redundant in that the signal can reach the module from multiple directions in the event of a loss in signal path from either direction.
 9. All LED display modules in a single display shall be identical in construction and interchangeable throughout the display with the ability to be field calibrated.
 10. All module rows shall include continuous louvers over the LEDs for sunlight shading and enhanced contrast.
 11. Modules shall be individually attached to the cabinet frame.
 12. Removal of one or more modules shall not affect the display's structural integrity.
 13. The distance from the center of one line or column of pixels to the center of all adjacent lines or columns shall be 6.08 mm both horizontally and vertically.
 14. The failure of a single pixel, module or power supply shall not cause the failure of any other pixel, module or power supply in the display.
 15. All modules shall have no less than a 160° horizontal half-intensity viewing angle.
 16. The transition of viewing intensity shall be consistent throughout the viewing cone.
- B. Pixels shall conform to the following specifications:
1. Surface mount device LEDs shall be mounted to the surface of the circuit board.
 2. LEDs shall be non-diffused, ultra-bright, solid-state light emitting diodes.
 3. The red LEDs shall be constructed of AlInGaP technology and the green and blue LEDs shall be constructed of InGaN technology.
 4. Each color of LEDs used in all LED displays provided for this contract shall be from the same bin.
 5. LED half-life shall be an estimated minimum of 100,000 hours.
 6. Display shall have a minimum intensity of 8,000 cd/m² for RGB maximum light output.
- C. Power Supply
1. All power supplies shall be regulated, auto-ranging AC to DC power, with protection for the LED pixel, LED display and driver circuitry in the event of power spikes or surges.

2. Each power supply and their connectors shall be fully sealed to protect from corrosive environmental factors meeting IP-67 standards.
- D. Internal Wiring
1. Wiring for LED display modules and other internal components shall be installed in the housing in a neat and professional manner.
 2. Wiring shall not impede the removal of display modules, power supplies or other display components.
 3. Wires shall not make contact with or be bent around sharp metal edges.
 4. All wiring shall conform to the National Electric Code.
- E. The display shall be protected from electrical spikes and transients.
- F. The manufacturer shall provide an earth-ground lug on the display.

2.03 Display Performance

- A. Display Capability
1. The LED display shall present messages that are continuous, uniform, and unbroken in appearance.
 2. The LED display shall be capable of producing 281 trillion colors for RGB at all dimming levels.
 3. Each display pixel shall be composed of one surface mount LED containing one each – red, green, and blue LED within a single package.
 4. The LED display shall be capable of displaying all true type fonts.
 5. The display shall be able to display messages composed of any combination of alphanumeric text, punctuation symbols, graphic images, and pre-canned video files.
 6. Video and message files shall have up to a 30 frame per second playback capability.
- B. Controller
1. The display's controller shall be able to run independently from a controlling computing device allowing the display to operate even when the controlling device is unhooked or turned off.
 2. Communication protocol shall support other matrix products from the vendor such as other outdoor or indoor displays of varying sizes and/or colors.
 3. Each controller shall be connected to a light sensor allowing each LED display to automatically adjust brightness according to display direction and lighting conditions.
 4. The controller shall allow connection to a temperature sensor that provides accurate site temperatures.
 5. Active presentations, stored presentations, schedules, display configuration, time and date shall be stored in non-volatile memory. No external power or battery backup will be required to maintain this data.
- C. Control and Communications
1. The display controller should be DHCP-enabled and allow for static IP addressing.

2. Each single face display shall be controller and monitored by its own embedded LED controller. Each 2V display shall be controlled and monitored by one sign controller in the primary face, and the secondary face must show the same mirrored content.
3. The LED controller shall be able to receive instructions from and provide information by accessing the Venus Control Suite using the following communication modes:
 - a. Ethernet Cellular Modem

2.04 Control Software

- A. Control Software: Display content and scheduling shall be via Venus Control Suite (VCS) cloud-based solution. Software to be hosted on manufacturer's servers at no cost to the customer. Web browser access to the solution to support iOS Safari, Android Chrome, Internet Explorer v11+, Microsoft Edge, Google Chrome and Mozilla Firefox.
- B. Basic content creation to be performed via browser-based online editor.
- C. Expanded content creation tools available via PC-compatible Content Studio download.
- D. Supports import of images (PNG, BMP, GIF, JPG, PSD) and video files (AVI, MPG, MP4, MOV) in both browser-based and downloadable content utilities.

Part 3: Execution

3.01 Examination

Mounting structure to be installed by Sign Contractor to support desired displays in all locations. Verify that separate conduit is in place for power to display. Verify that all control equipment has access to 120 VAC.

3.02 Installation

- A. Support structure design depends on the mounting methods, display size, and weight. The structure design is critical and should be done only by a qualified individual. It is the Sign Contractor's responsibility to ensure that the structure and mounting hardware are adequate.
- B. It is the Sign Contractor's responsibility to ensure that the installation meet local standards. The mounting hardware shall be capable of supporting all components to be mounted.
- C. Possible power and signal entrances are designated by etched markings. Separate conduit must be used to route the power, signal in wires, and signal out wires.
- D. Displays must be grounded according to the provisions outlined in Article 250 of the National Electrical Code. The display must be connected to earth-ground. Proper grounding is necessary for reliable equipment operation and protects the equipment from damaging electrical disturbances and lightning.

10.0 Execution

The quality and acceptability of the Sign Contractor's work will be monitored throughout the fabrication and installation phases of the project. Work will be reviewed by the Designer.

10.1 Shop Reviews

Sign Contractor shall notify Owner at least 48 hours in advance of operations requiring reviews.

10.2 Site Reviews

Upon arrival of any shipment of sign units or materials, the Sign Contractor shall inspect the shipment to verify that no damage has occurred that will adversely affect the performance or appearance of the units or materials. The Owner shall not accept, as approved, any units or materials previously rejected by the Designer and not repaired or revised to the Designers satisfaction.

10.3 Sign Locations

The Sign Contractor shall field verify all proposed sign locations and conduct a walk-thru with the Owner to obtain a written approval of the proposed locations before installation of the sign units. All locations must be permitted through the appropriate permitting/approval process (by Sign Contractor).

10.4 Punch List

Immediately after installation of the signs, the Sign Contractor shall arrange for the Owner to review the work in place and give written notice of any deviations, errors, omissions or other unacceptable condition in a punch list to be prepared and distributed to the proper fabricators or consultants for correction.

10.5 Final Sign-Off

At final completion of all work, including punch list items for each group of signs, the Sign Contractor shall arrange for a final review by the Owner for the purpose of obtaining a written approval of the fabrication and installation of the units.

11.0 Installation

The installation of fixed materials shall be under the general direction of the Owner/Designer in accordance with applicable specifications and layout drawings.

11.1 Preparation

Sign Contractor shall coordinate setting drawings, diagrams, templates, instructions, and directions for the installation of items having integral anchors which are to be embedded in concrete. Sign Contractor shall coordinate delivery of such items to applicable trades for installation. Sign Contractor is also responsible for procuring any required sign or building permits, including obstruction permits that may be necessary while installing within city streets and public right-of -ways. Sign Contractor is responsible for coordinating with utility companies

regarding the location of underground utilities prior to installation. Sign Contractor is responsible for contracting with licensed electrical contractor to trench and install conduit and wiring to sign from nearest power source approved by Owner and provide all connections.

11.2 Delivery to Premise

Sign Contractor is responsible for securing staging and storage areas. Unless indicated to the contrary, items of loose material shall be delivered, uncrated, assembled, set in proper place, and installed ready for use, free from breakage, blemishes or other defects.

11.3 Anchors and Inserts

Sign Contractor shall furnish inserts and anchoring devices which must be set in concrete for installation of this work, provide setting drawings, templates, instructions, and directions for installation of anchorage devices and provide units with exposed surfaces matching the texture and finish of metal item anchored.

11.4 Cutting/Fitting/Placement

Sign Contractor shall perform all cutting, drilling, and fitting required for installation, set work accurately in location, alignment and elevation, plumb, level and true, measured from established lines and levels, and provide temporary bracing or anchors as required. Sign Contractor shall form tight joints with exposed connection accurately fitted with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grading are required for proper shop fitting and jointing of the work, Sign Contractor shall restore finishes to eliminate any evidence of corrective work. Sign Contractor shall not cut or abrade finishes which cannot be completely restored in field. Sign Contractor shall return items with such finishes to the shop for required alterations, followed by complete refinishing, or providing new units at Sign Contractor option.

11.5 Erection

All surfaces shall be covered with protective non-deleterious to finish for protection until final installation or erection. Sign Contractor shall complete all connections in proper alignment and tighten bolts securely. Leveling is to be done only by instruments; measuring equal distances from existing surfaces will not be acceptable as a basis of level and/or plumb. After erection, all surfaces marred during erection and exposed bolts, bolt heads, etc., shall be retouched with same paint as previous.

11.6 Protective Coverings

Sign Contractor shall restore protective coverings which have been damaged during shipment or installation of the work, remove protection when requested for inspection of finishes and replace, retain protective coverings intact and remove simultaneously from similar finished items

to preclude non-uniform oxidation and discoloration and remove protective coverings only when there is no possibility of damage from other work yet to be performed at the same location.

11.7 Cleaning of Premises/Signs

The Sign Contractor shall use special care in the disposition of excess materials and rubbish. Rubbish shall not be allowed to accumulate but shall be consistently collected and removed at the completion of this work, daily. After installation, Sign Contractor shall clean soiled sign surfaces according to manufacturer's written instructions, Sign Contractor shall protect signs from damage until acceptance of Owner and shall touch up all nicks, scratches, fasteners that require color.