



Department of Administrative Services Purchasing and Contracts

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CLARK COUNTY, NEVADA BID NO. 603671-15 SHADE STRUCTURE AT HORSEMAN'S PARK

April 29, 2015

ADDENDUM NO. 1

INVITATION TO BID

1. The bid opening date of May 8, 2015 at 2:15:00 p.m. **remains unchanged.**

SITE VISIT

2. A site visit has been scheduled for Friday, May 1, 2015 at 9:00 a.m. Meeting place will be at Horseman's Park located at 5800 East Flamingo Road, Las Vegas, Nevada 89122. Meet at existing bleachers.

SPECIFICATIONS

3. **Delete** original Specification Section 13 31 23 Pre-Engineered Shade Structures in its entirety and **replace** with the attached revised Section 13 31 23 Pre-Engineered Shade Structures.

DRAWING CLARIFICATIONS

4. QUESTION: Are keynotes marked as OPTION, on sheet E-2, intended to be the scope under BID ALTERNATE No. 1?

RESPONSE: The keynotes marked as OPTION, on sheet E-2 are the Scope of Bid Alternate No. 1 for Electrical Wiring and Light Fixtures. This includes the items described in Notes 5, 6, 8, and 9."

Except as modified herein all other bid specifications, terms and conditions shall remain the same.

ISSUED BY:

SANDY MOODY-UPTON
Purchasing Analyst II

Attachments: Specification Section No. 13 31 23 Pre-Engineered Shade Structures

Cc: Chuck James, Real Property Management
Brian Connolly, Real Property Management
Sam Botros, Real Property Management
Deborah Curry, Real Property Management
Steve Maahs, Indigo Architecture, Inc.

SECTION 13 31 23

PRE-ENGINEERED SHADE STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Pre-engineered steel framed fabric shade structure as indicated on drawings.
- B. The shade structure contractor shall be responsible for the design, engineering, fabrication, supply and installation of the work specified herein.

1.2 REFERENCES

- A. Shade structures must comply with the latest revision of applicable codes and regulations including.
- B. American Society for Testing Materials (ASTM)
- C. American Welding Society: Structural Welding Code AWS D1.1: Symbols for Welding and Nondestructive Testing AWS 2.3.
- D. International Accreditation Services (IAS)
- E. American Institute of Steel Construction (AISC): Specifications for the design, fabrication and erection of structural steel.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Shop Drawings: Show fabrication of structural steel components, shade fabric, and connections.
 - 1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 2. Include embedment Drawings.
 - 3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 - 4. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.

- E. Delegated-Design Submittal: For all components of the shade structure indicated to comply with design loads, include analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Delegated design submittals shall include, but are not limited to:
 - 1. Concrete mix
 - 2. Structural calculations for steel frame.

- F. Samples for Initial Selection:
 - 1. Provide fabric samples from manufacturer's full range of colors.
 - 2. Provide powder coat color selections from manufacturer's full range of colors.

- G. Samples for Verification:
 - 1. For each type of coating system and in each color and gloss of topcoat selected.
 - a. Submit Samples on rigid backing, 8 inches square.
 - b. Step coats on Samples to show each coat required for system.
 - c. Label each coat of each Sample.
 - d. Label each Sample for location and application area.
 - 2. For each type of fabric and in each color and pattern selected.
 - a. Submit Samples 8 inches square.
 - b. Label each sample.

- H. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings.
 - 2. VOC content.

- I. Samples for Initial Selection:
 - 1. Provide fabric samples from manufacturer's full range of colors.
 - 2. Provide powder coat color selections from manufacturer's full range of colors.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer, fabricator, shop-painting applicators, installer. Provide documentation of installation of five structures of similar scope and project size. Include in reference list sizes and design style of structures with install dates and project locations.

- B. Mill test reports for structural steel, including chemical and physical properties.

- C. Product Test Reports: For the following:
 - 1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - 2. Shop primers.
 - 3. Nonshrink grout.

- D. Survey of Existing Conditions.

- E. Source quality-control reports.

- F. Field quality-control and special inspection reports.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
- C. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication
- D. Store finish materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.6 QUALITY ASSURANCE

- A. Fabrication and erection are limited to firms with proven experience in design and construction of fabric shade structures and such firms shall meet the following minimum requirements.
- B. Shade contractor shall have at least 5 years experience in the design, engineering, manufacture, and installation of structures of similar scope and a successful construction record of in-service performance.
- C. Manufacturer shall be accredited by the IAS (International Accreditation Service) for Structural Steel Fabrication.
- D. The shade contractor shall provide evidence of the firms Quality Assurance / Quality Control program.
- E. Shade contractor shall be a licensed contractor with at least 5 years experience in the State of Nevada.
- F. All manufacturers must be a Clark County Approved Fabricator.
- G. Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1.7 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for shade structures shown on the Drawings in relation to the property survey and existing structures, and verify locations by field measurements prior to construction.

- B. Cold-Weather Concrete Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- C. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

1.8 WARRANTY

- A. Contractors Warranty: Provide a 12-month warranty on all labor and materials.
- B. Supplemental warranty from the manufacturer shall be provided for a period of 10 years (pro-rated) on fabric and 10 years on the structural integrity of the steel from date of substantial completion.
- C. The warranty shall not deprive the Owner of other rights the Owner may have under the provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Provide engineered steel framed fabric shade structure as engineered, manufactured and installed by shade manufacturer.

2.2 PERFORMANCE CRITERIA:

- A. Delegated Design: Shade structure fabricator is responsible for design, including comprehensive engineering analysis by a qualified professional engineer, of all components of the shade structure, including, but not limited to:
 - 1. Foundations.
 - 2. Structural steel.
 - 3. Connections.
 - 4. Tension cable.
- B. All shade structures are engineered and designed to meet a minimum of 115 mph wind load, Exposure C and a live load of 10 lbs/sf². All shade structures shall be engineered with a zero wind pass-through factor on the fabric. When ASD Steel Design Method is used based on IBC 2012 Section 1605.3.1 the Dead + 0.75 of Live + 0.75 of Wind Load cases must be combined. NO EXCEPTIONS.

- C. System Description: The following defines minimum acceptable requirements for the custom cantilever:
1. Overall Shade Description: 255 feet x 30 feet x 23 feet entry height (42 feet total height).
 2. Columns:
 - a. Quantity: Eight.
 - b. Description: Minimum 20 inch x 12 inch x 3/8 inch HSS steel.
 3. Arms:
 - a. Quantity: Eight cantilever arms.
 - b. Description: Minimum 10 inches x 6 inches x 3/8 inch HSS.
 4. Purlins:
 - a. Quantity: Seven.
 - b. Description: Minimum 6.625 inches x .28 inches tubing.
 5. Kickers: Minimum 5.563 inch x .258 inch HSS.
 6. Foundations: Footings shall have a minimum 48 inch diameter and 12 foot depth drill pier footings.

2.3 MATERIALS

- A. Concrete:
1. General: Comply with ACI 301 unless modified by requirements in the Contract Documents.
 2. Concrete Materials
 - a. Portland Cement: ASTM C 150, Type V, alkali content not to exceed 0.6 percent.
 - b. Blended Hydraulic Cement: ASTM C 595 Type IP, portland-pozzolan cement.
 - c. Fly Ash: ASTM C 618, Class F.
 - d. Aggregate:
 - 1) Normal Weight: ASTM C 33, free from deleterious material and meeting the limits in Table 3 of ASTM C 33 for the weathering region applicable to the project site. Coarse aggregate should be size number 57 or 67 unless otherwise specified in the Contract Documents.
 - 2) Nominal Maximum Aggregate Size: 1 inch.
- B. Water: Potable and complying with ASTM C 94.
- C. Concrete Admixtures: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials.
1. Admixtures containing calcium chloride are not permitted.
 2. Air-Entraining Admixture: ASTM C 260.
 3. Water Reducing Admixtures: ASTM C 494 Type A water reducing admixtures and Type G and F high-range water reducing admixtures.
 4. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
- D. Steel:
1. All steel members of the shade structure shall be designed in strict accordance with the requirements of the "American Institute of Steel Construction" (AISC) Specifications and the "American Iron and Steel Institute" (AISI) Specifications for Cold Formed Members and manufactured in a IAS (International Accreditation Service) accredited facility for Structural Steel Fabrication.

2. All connections shall have a maximum internal sleeving tolerance of .0625 inches using high tensile strength steel sections with a minimum sleeve length of 6 inches. All non-hollow structural steel members shall comply to ASTM A-36. All hollow structural steel members shall be cold formed, high strength steel and comply with ASTM A-500, Grade C.
 3. All steel plates shall comply to ASTM A-572, Grade 50. All galvanized steel tubing shall be triple coated for rust protection using an in-line electro-plating coat process. All galvanized steel tubing shall be internally coated with zinc and organic coatings to prevent corrosion.
- E. Bolts:
1. All structural field connections of the shade structure shall be designed and made with high strength bolted connections using ASTM A-325 bolts.
 2. All stainless steel bolts shall comply with ASTM F-593, Alloy Group 1 or 2. All bolt fittings shall include rubber washer for watertight seal at joints. All nuts shall comply with ASTM F-594, Alloy Group 1 or 2.
- F. Welding:
1. All shop-welded connections of the shade structure shall be designed and performed in strict accordance with the requirements of the "American Welding Society" (AWS) Specifications. Structural welds shall be made in compliance with the requirements of the "Prequalified" welded joints where applicable and by certified welders. No onsite or field welding shall be permitted.
 2. All full penetration welds shall be continuously inspected by an independent inspection agency and shall be tested to the requirement of IBC 2012 and local agency additions and amendments.
- G. Powder coating:
1. Galvanized steel tubing preparation prior to powder coating shall be executed in accordance to solvent cleaning SSPC-SP1. Solvent such as water, mineral spirits, xylol, toluol, which are to be used to remove foreign matter from the surface. A mechanical method prior to solvent cleaning prior to surface preparation shall be executed according to Power Tool Cleaning SSPC-SP3 and utilizing wire brushes abrasive wheels and needle gun, etc.
 2. Carbon structural steel tubing preparation prior to powder coating shall be executed in accordance to commercial blast cleaning SSPC-SP6 or NACE #3. A commercial blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, mill scale, rust, coating, oxides, corrosion, products and other foreign material.
 3. Powder coating shall be sufficiently applied, with a minimum three mils thickness and cured at the recommended temperature to provide proper adhesion and stability to meet salt spray and adhesion tests as defined by the American Society of Testing Materials.
 4. Powder used in the powder coat process shall have the following characteristics:
 - a. Specific Gravity: 1.68 +/- 0.05
 - b. Theoretical coverage: 114 +/- 4ft²/lb/mil
 - c. Mass loss during cure: <1%
 - c. Maximum storage temperature: 75oF
 - d. POWDURA® Super Durable TGIC-Free Polyester provides better exterior durability, UV resistance and gloss retention than standard TGIC powders. Further, it accepts and holds onto electrical charge better and longer than standard TGIC powders, improving transfer efficiency by 10% or more. The technology's non-toxic, TGIC-free properties also contribute to making it a greener solution for metal finishers. Rust Protection Powder Under Coat Primer will be required on all structures. Powdura® Epoxy Powder Coating Z.R Primer shall be applied in accordance with the manufacturers' specifications. Primer should be fused only and then top coated with the selected powder coat to ensure proper inter-coat adhesion.

- H. Tension Cable: Steel cable is determined based on calculated engineering load.
1. For light and medium loads, ¼” (nominal) galvanized 7x19 strand cable to be used.
 2. For heavy loads, 3/8” (nominal) galvanized 7 x 19 cable to be used.
- I. Fabric Roof Systems
1. UV Shade Fabric
 - a. UV shade fabric is made of a UV stabilized eXtreme 32 cloth as manufactured by MultiKnit Ltd, and made of a UV stabilized high-density polyethylene mesh. Mesh shall be raschel knitted with monofilament and tape yarn filler to ensure that material will not unravel if cut. Panels to be 10 feet wide.
 - b. Fire Testing: Fabric shall conform and pass the ASTM E84 testing standard and comply with NFPA-701 per Clark County Department of Building and Fire Prevention.
 - c. The fabric knot is to be made using monofilament and tape filler, which has a weight of 195g per square meter.
 2. Fabric Properties:
 - a. Life Expectancy: A minimum of 8 years continuous exposure to the sun.
 - b. Fading: Minimum fading after 5 years (3 years for red).
 - c. Fabric Mass: 310-330 g/sm.
 - d. Fabric Width: 9.8425 feet (3m).
 - e. Roll Length: 164.04 feet (50m).
 - f. Minimum Specified Burst Ratio : kPa /g of fabric (SABS 1703).... 1.20.
 - g. Mean Burst Ratio : kPa /g of fabric1.25.
 - h. Mean Burst Strength : as 2001.2.4-1990-method B3400 kPa.
 - i. Burst Force 25.4 Steel Ball : as 2001.2.19-19881970N.
 - j. Mean Break Strength – Weft : as 2001.2.3.1-20011720N.
 - k. Mean Break Strength – Warp : as 2001.2.3.1-2001720N.
 - l. Wind Tunnel Tests Conducted by CSIR (SA) ...Max. Capability of LSWT...>200 km /hr.
 - m. Minimum Temperature: -13°F (-25° C)
 - n. Maximum Temperature: +176°F (80° C)
 3. Stitching & Thread:
 - a. All sewing threads are to be double stitched.
 - b. Thread shall be GORE Tenara Sewing Thread manufactured from 100% expanded PTFE (Teflon); mildew resistant exterior approved thread. Thread shall meet or exceed the following:
 - 1) Flexible temperature range
 - 2) Very low shrinkage factor
 - 3) Extremely high strength, durable in outdoor climates
 - 4) Resists flex and abrasion of fabric
 - 5) Unaffected by cleaning agents; acid rain, mildew, salt water and rot resistant, unaffected by most industrial pollutants
 - 6) Treated for prolonged exposure to the sun

2.4 SHIPPING AND HANDLING

- A. All steel surfaces touched by tie down straps are to be padded before final clinching.
- B. All dunnage must be padded before painted products are set in place. Smaller and loose pieces must be padded and totally separate from paint padding.
- C. Unloading: Lift forks to be covered with properly fitted padding. All dunnage must be padded vertically and horizontally to prevent damage to painted surfaces. When unloading, protect painted items.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General:
1. Clean sand and other deleterious material from structural items before moving or lifting. Before installation, all items are to be washed with soap and water and dried with clean cloths. All grease, dust, oils, and other latent materials are to be removed during this washing. Exercise care when lifting items so as not to come into contact with other surfaces.
 2. When pouring concrete pour backs at columns, protect paint by using plastic and tape to prevent concrete from splashing on finish surfaces.
 3. All concrete must be cut with a wet diamond blade to ensure that it leaves a clean finish. If at any stage the existing remaining surface lifts, creating a tripping hazard, grind or saw cut surface so as to leave a neat and uniform joint.
- B. Notify and coordinate the schedule with Owner, Architect and sub-contractors prior to starting installation. The Contractor is responsible for the coordination of work with other trades.
- C. Concrete
1. Unless noted otherwise for footing and piers by General Contractor's Engineer, concrete specification for footings, piers, slabs, curbs and walkways shall meet a minimum 3,500 psi at 28-day strength.
 2. Concrete work is executed in strict accordance with the latest American Concrete Institute Building Code (ACI 318-99).
 3. Slump 4" maximum.
 4. Whenever daily ambient temperatures are below 80 degrees Fahrenheit, the contractor may have mix accelerators and hot water added at the batch plant.
 - a. temperature range between 75-80 degrees, 1% accelerator High Early (non-calcium)
 - b. temperature range between 70-75 degrees, 2% accelerator High Early (non-calcium)
 - c. temperature range below 70 degrees, 3% accelerator High Early (non-calcium)
 5. The contractor shall not pour any concrete when daily ambient temperature is below 55 degrees Fahrenheit.

TABLE 1

Temperature Range	% Accelerator	Type Accelerator
75-80 degrees	1%	High Early (non calcium)
70-75 degrees	2%	High Early (non calcium)
Below 70 degrees	3%	High Early (non calcium)

- D. Foundations:
1. All Anchor Bolts set in new concrete shall be ASTM A-325.
 2. All Anchor Bolts shall be Hot Dipped Galvanized.
 3. Install footings in accordance with manufacturer's engineered specifications and drawings.
- E. Install the structure in accordance with manufactures instructions for assembly, installation, and erection per approved drawings.

- F. Erection: The fabric canopy shall be completely erected and tensioned by the fabricator or an approved installer.
 - 1. Secure or lash fabric to steel structure in accordance with details on Drawings and approved Shop Drawings.
 - 2. Fabric shall be secure, smooth, clean, without wrinkles, sagging, puckers, punctures, gaps or overlaps.
 - 3. Seams shall be straight, smooth and flat.
 - 4. All panels are to be equal in tension and quality.

3.2 CLEANING

- A. Touchup: Touchup steel framework to match original finish.
- B. Cleaning: Upon completion of this portion of the Work, promptly clean all exposed portions and remove all traces of dirt, grease and foreign material.

END OF SECTION