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AMENDMENT ONE (1) IFB026DSPRT21(C)— Kirwin Terrance Ballpark Hurricane Repairs

Questions/Answers:

1. On sheet A1.01 it shows that the ballfield soil mixture shall be 40% screened silt and 60% sand. To meet these exact specifications the soil would have to be sieved and mixed accordingly. The only supplier we found capable of that process is in Puerto Rico. May we assume that locally obtained topsoil without stone would be acceptable?

No. The infield soil mix must be a silt/sand mixture designed for use on infield surfaces, not standard screened topsoil. If the contractor is unable to obtain the exact ratio called for in the specifications, alternate mixes may be proposed.

2. Sheet A2.03 indicates that the new scoreboard is to be supported by the existing 5" pipes. The scoreboard specifications require a minimum of 8" diameter posts or I-beams. Please provide clarification.

Remove existing 5" diameter pipes and replace with 8" diameter pipes per scoreboard manufacturer's installation instructions.

3. The schedule of prices does not include a line item for the field lighting on the existing poles. Please provide a specification for the lighting required and indicate where it should be shown on the schedule of prices.

The field lighting is to be provided by Musco Sports Lighting, LLC or approved equal to meet the performance criteria in section 1.6 LIGHTING PERFORMANCE of the attached outdoor lighting specification.

4. The original schedule of prices included lighting at the bleachers. The rebid schedule does not have that line item. Please indicate if this feature has been deleted and, if not, provide a specification and where it should be included in the schedule of prices.

Bleacher lighting is included in the scope as shown on the drawings. The included schedule of prices is a template only, provided for the bidders convenience. Please add additional line items, as necessary, to the bottom of the form or attach additional sheets.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

BIDDERS MUST ACKNOWLEDGE RECEIPT OF THIS AMENDMENT WITH THEIR BID PROPOSAL.

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the furnishing, installation, and connection of exterior fixtures, poles, and supports. The terms “lighting fixtures”, “fixture” and “luminaire” are used interchangeably.

1.2 RELATED WORK

A. Section 033000, CAST-IN-PLACE CONCRETE.

B. Section 090600, SCHEDULE FOR FINISHES:
Finishes for exterior light poles and luminaires.

C. Section 260511, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS:
General electrical requirements and items that are common to more than one section of Division 26.

D. Section 260519, LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES (600 VOLTS AND BELOW):
Low voltage power and lighting wiring.

E. Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS:
Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

F. Section 260533, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS:
Conduits, fittings, and boxes for raceway systems.

G. Section 260541, UNDERGROUND ELECTRICAL CONSTRUCTION:
Underground handholes and conduits.

H. Section 260923, LIGHTING CONTROLS:
Controls for exterior lighting.

1.3 QUALITY ASSURANCE

A. Quality Assurance shall be in accordance with Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES) in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 SUBMITTALS

A. Submit in accordance with Paragraph, SUBMITTALS in Section 260511, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, and the following requirements:

1. Shop Drawings:

   a. Submit the following information for each type of lighting fixture designated on the LIGHTING FIXTURE SCHEDULE, arranged in order of lighting fixture designation.

   b. Material and construction details, include information on housing and optics system.

   c. Physical dimensions and description.

   d. Wiring schematic and connection diagram.

   e. Installation details.

f. Energy efficiency data.

g. Photometric data based on laboratory tests complying with IES Lighting Measurements testing and calculation guides.

h. Lamp data including lumen output (initial and mean), color rendition index (CRI), rated life (hours), and color temperature (degrees Kelvin).

i. Ballast data including ballast type, starting method, ambient temperature, ballast factor, sound rating, system watts, and total harmonic distortion (THD).

j. For LED lighting fixtures, submit US DOE LED Lighting Facts label, and IES L70 rated life.

k. Submit site plan showing all exterior lighting fixtures with fixture tags consistent with Lighting Fixture Schedule as shown on drawings. Site plan shall show computer generated point–by-point illumination calculations. Include lamp lumen and light loss factors used in calculations.

2. Manuals:

a. Submit, simultaneously with the shop drawings, complete maintenance and operating manuals, including technical data sheets, wiring diagrams, and information for ordering replacement parts.

b. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals two weeks prior to the final inspection.

3. Certifications:
Two weeks prior to final inspection, submit the following.

a. Certification by the Contractor that the exterior lighting systems have been properly installed and tested.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.

B. American Concrete Institute (ACI):
318-14 ..... Building Code Requirements for Structural Concrete

C. American National Standards Institute (ANSI):
H35.1/H35 1M-17..... American National Standard Alloy and Temper Designation Systems for Aluminum

D. American Society for Testing and Materials (ASTM):
A123/A123M-17 ..... Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
A153/A153M-16..... Zinc Coating (Hot-Dip) on Iron and Steel Hardware
B108/B108M-15 ..... Aluminum-Alloy Permanent Mold Castings
C1089-13 ..... Spun Cast Prestressed Concrete Poles

E. Illuminating Engineering Society of North America (IESNA):
HB-9-00 ..... Lighting Handbook
RP-8-14..... Roadway Lighting

LM-72-97(R2010)..... Directional Positioning of Photometric Data
LM-79-08..... Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products
LM-80-15..... Approved Method for Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays and Modules
TM-15-11..... Luminaire Classification System for Outdoor Luminaires

F. National Electrical Manufacturers Association (NEMA):
C81.61-17 ..... Electrical Lamp Bases – Specifications for Bases (Caps) for Electric Lamps
C136.3-14 ..... For Roadway and Area Lighting Equipment – Luminaire Attachments
ICS 2-00(R2005) ..... Controllers, Contactors and Overload Relays Rated 600 Volts
ICS 6-93(R2016) ..... Enclosures

G. National Fire Protection Association (NFPA):
70-17 ..... National Electrical Code (NEC)
101-18 ..... Life Safety Code

H. Underwriters Laboratories, Inc. (UL):
496-17 ..... Lampholders
773-16 ..... Plug-In, Locking Type Photocontrols for Use with Area Lighting
773A-16 ..... Nonindustrial Photoelectric Switches for Lighting Control
1598-08 ..... Luminaires
8750-15.....Light Emitting Diode (LED) Equipment for Use in Lighting Products

1.6 LIGHTING PERFORMANCE

A. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points
Infield	50 footcandles	2.5:1	25
Outfield	30 footcandles	2.5:1	166

B. Mounting Heights: All suppliers must mount to existing poles using the heights shown in table below.

# of Poles	Pole Designation	Pole Height
4	A1-A2; C1-C2	60’
2	B1-B2	70’

1.7 DELIVERY, STORAGE, AND HANDLING

Provide manufacturer’s standard provisions for protecting pole finishes during transport, storage, and installation. Do not store poles on ground. Store poles so they are at least 305 mm (12 inches) above ground level and growing vegetation. Do not remove factory-applied pole wrappings until just before installing pole.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. General:

1. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.
2. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

2.2 ELECTRICAL

A. Max Energy Consumption: The kW consumption for the field lighting system shall be 50kW or less.

2.3 POLES

A. General:

1. Poles shall be as shown on the drawings, and as specified. Finish shall be as specified on the drawings.

2. The pole and arm assembly shall be designed for wind loading of 175 mph minimum, as required by wind loading conditions at project site, with an additional 30% gust factor and supporting luminaire(s) and accessories such as shields, banner arms, and banners that have the effective projected areas indicated. The effective projected area of the pole shall be applied at the height of the pole base, as shown on the drawings.

3. Poles shall be //embedded// //anchor-bolt// type designed for use with underground supply conductors. Poles shall have hand hole having a minimum clear opening of 65 x 125 mm (2.5 x 5 inches). Hand hole covers shall be secured by stainless steel captive screws.

4. Provide a steel-grounding stud opposite hand hole openings, designed to prevent electrolysis when used with copper wire.

5. Provide a base cover that matches the pole in material and color to conceal the mounting hardware pole-base welds and anchor bolts.

6. Hardware and Accessories:
   All necessary hardware and specified accessories shall be the product of the pole manufacturer.

7. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, provide finishes as indicated in Section 090600, SCHEDULE FOR FINISHES.

B. Types:

1. Concrete: Provide round or multi-sided concrete poles conforming to ASTM C1089 with integral cast bases. Poles shall have hollow core suitable as a raceway.

2.3 FOUNDATIONS FOR POLES

A. Foundations shall be cast-in-place concrete, having 3000 psi minimum 28-day compressive strength.

B. Foundations shall support the effective projected area of the specified pole, arm(s), luminaire(s), and accessories, such as shields, banner arms, and banners, under wind conditions previously specified in this section.

C. Place concrete in spirally-wrapped treated paper forms for round foundations.

D. Rub-finish and round all above-grade concrete edges to approximately 6 mm (0.25-inch) radius.

E. Anchor bolt assemblies and reinforcing of concrete foundations shall be as shown on the drawings. Anchor bolts shall be in a welded cage or properly positioned by the tie wire to stirrups.

F. Prior to concrete pour, install electrode per Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

2.4 LUMINAIRES

A. Luminaires shall be weatherproof, heavy duty, outdoor types designed for efficient light utilization, adequate dissipation of lamp and ballast heat, and safe cleaning and re-lamping.

B. Illumination distribution patterns, BUG ratings and cutoff types as defined by the IESNA shall be as shown on the drawings.

C. Incorporate ballasts in the luminaire housing, except where otherwise shown on the drawings.

D. Lenses shall be frame-mounted, heat-resistant, borosilicate glass, with prismatic refractors, unless otherwise shown on the drawings. Attach the frame to the luminaire housing by hinges or chain. Use heat and aging-resistant, resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

E. Pre-wire internal components to terminal strips at the factory.

F. Bracket-mounted luminaires shall have leveling provisions and clamp-type adjustable slip-fitters with locking screws.

G. Materials shall be rustproof. Latches and fittings shall be non-ferrous metal.

H. Provide manufacturer's standard finish, as scheduled on the drawings. Where indicated on drawings, match finish process and color of pole or support materials. Where indicated on drawings, provide finishes as indicated in Section 090600, SCHEDULE FOR FINISHES.

J. Luminaires shall carry factory labels, showing complete, specific lamp and ballast information.

2.5 LAMPS

A. Install the proper lamps in every luminaire installed as shown on the drawings.

B. Lamps shall be general-service, LED outdoor lighting types.

C. LED sources shall meet the following requirements:

1. Operating temperature rating shall be up to 65 degrees C (150 degrees F).

2. Correlated Color Temperature (CCT):
5700K

3. Color Rendering Index (CRI):
≥ 85.

4. The manufacturer shall have performed reliability tests on the LEDs luminaires complying with Illuminating Engineering Society (IES) LM79 for photometric performance and LM80 for lumen maintenance and L70 life.

G. Mercury vapor lamps shall not be used.

2.9 LED DRIVERS

A. LED drivers shall meet the following requirements:

1. Drivers shall have a minimum efficiency of 85%.

2. Input Voltage:
120 to 480 (±10%) volt.

3. Power Supplies:
Class I or II output.

4. Surge Protection:
The system must survive 250 repetitive strikes of "C Low" (C Low: 6kV/1.2 x 50 µs, 10kA/8 x 20 µs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. "C Low" waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.

5. Power Factor (PF):
≥ 0.90.

6. Total Harmonic Distortion (THD):
≤ 20%.

7. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.

8. Drivers shall be reduction of hazardous substances (ROHS)-compliant.

2.9 CONTROL

A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

B. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

C. Dimming: System shall provide for 2-stage dimming (high-low). Dimming will be set via scheduling options (Website, app, phone, fax, email).

D. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute "early off" commands by phone. Scheduling tool shall be capable of setting curfew limits. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

E. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

F. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices
   a. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.
   b. Cumulative hours: shall be tracked to show the total hours used by the facility
   c. Report hours saved by using early off and push buttons by users.

G. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring system for a period of 10 years.

2.10 EXISTING LIGHTING SYSTEMS

A. For modifications or additions to existing lighting systems, the new components shall be compatible with the existing systems.

B. New poles and luminaires shall have approximately the same configurations, dimensions, lamping and reflector type as the existing poles and luminaires, except where otherwise shown on the drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install lighting in accordance with the NEC, as shown on the drawings, and in accordance with manufacturer's recommendations.

B. Pole Foundations:

1. Excavate only as necessary to provide sufficient working clearance for installation of forms and proper use of tamper to the full depth of the excavation. Prevent surface water from flowing into the excavation. Thoroughly compact backfill with compacting arranged to prevent pressure between conductor, jacket, or sheath, and the end of conduit.

2. Set anchor bolts according to anchor-bolt templates furnished by the pole manufacturer.

3. Install poles as necessary to provide a permanent vertical position with the bracket arm in proper position for luminaire location.

4. After the poles have been installed, shimmed, and plumbed, grout the spaces between the pole bases and the concrete base with non-shrink concrete grout material. Provide a plastic or copper tube, of not less than 9 mm (0.375-inch) inside diameter through the grout, tight to the top of the concrete base to prevent moisture weeping from the interior of the pole.

C. Install lamps in each luminaire.

D. Adjust luminaires that require field adjustment or aiming.

3.2 GROUNDING

Ground noncurrent-carrying parts of equipment, including metal poles, luminaires, mounting arms, brackets, and metallic enclosures, as specified in Section 260526, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS. Where copper grounding conductor is connected to a metal other than copper, provide specially-treated or lined connectors suitable and listed for this purpose.

3.3 ACCEPTANCE CHECKS AND TESTS

Verify operation after installing luminaires and energizing circuits.

3.4 WARRANTY AND GUARANTEE

A. 10-year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 10 years from the date of shipment. Warranty shall guarantee specified light levels.

B. Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 10 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Manufacturer is responsible for removal and replacement of failed luminaires, including all parts, labor, shipping, and equipment rental associated with maintenance. Owner agrees to check fuses in the event of a luminaire outage.

3.5 PRE-BID SUBMITTAL REQUIREMENTS

A. Design Approval: The owner / engineer will review pre-bid submittals per section 4.0.B from all the manufacturers to ensure compliance to the specification. If the design meets the design requirements of the specifications, a letter and/or addendum will be issued to the manufacturer indicating approval for the specific design submitted.

B. Approved Product: Musco's Light-Structure System with TLC for LEDTM is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section at least 10 days prior to bid. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.

END OF SECTION