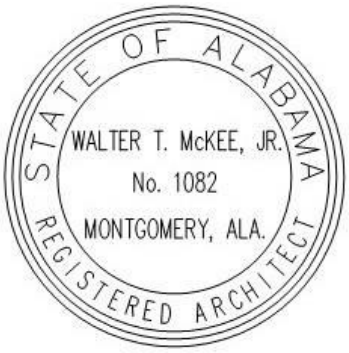
McKEE & ASSOCIATES
ARCHITECTS, INC.

Addendum No. 1
Date: June 27, 2024



Project:
New Softball Complex at
Daphne High School for the
Baldwin County Board of Education
Daphne, Alabama

MCKEE PROJECT NO. 23.199
ALABAMA DIVISION OF CONSTRUCTION MANAGEMENT NO.

The following changes and/or substitutions to the plans and specifications are hereby made a part of same and are incorporated in full force as part of the contract.

Bidders shall acknowledge receipt of this Addendum in writing on the Proposal Form.

A1.1 GENERAL MODIFICATIONS:

A. Refer to the **Table of Contents (Revised (06.27.24)**, herein.

A1.2 SPECIFICATION MODIFICATIONS:

A. Refer to **Section 12601, Scoreboards (Revised 06.27.24)**, herein.

B. Refer to attached **Section 16521 Exterior Athletic Lighting**, herein.

A1.3 DRAWING MODIFICATIONS:

A. See the attached Revised Drawings as follows:

1. NONE.

A1.4 CLARIFICATIONS & RESPONSES:

A. See the following responses to RFI questions received from Contractors.

Question: NONE.

Answer:

B. See the following clarifications as follows:

1. NONE.

END OF ADDENDUM

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New Softball Complex
at
Daphne High School
for the
Baldwin County Board of Education
Daphne, Alabama

Project No: 23.199

BIDDING REQUIREMENTS

- Advertisement For Bids
- Instructions to Bidders (DCM Form C-2 August 2021)
- Request For Information (McKee Form)
- Prior Approval/Substitution Request Form (McKee Form)
- Proposal Form (DCM Form C-3 August 2021)
- Form Of Bid Bond (DCM Form C-4, August 2021)
- Special Instructions to Bidders (McKee Form April 2024)

CONTRACT FORMS

- Preparation and Approval of Construction Contracts and Bonds (DCM Form B-7 July 2022)
- Construction Contract (DCM Form C-5, December 2021)
- Performance Bond (DCM Form C-6, August 2021)
- Payment Bond (ABC Form C-7, August 2021)
- General Conditions of the Contract (DCM Form C-8, Revised October 2022)
- Instructions for Contractor's Insurance Company (Article 37 of DCM Form C-8, Revised October 2022)
- Supplement to General Conditions of the Contract (McKee Form April 2024)
- State of Alabama Disclosure Statement Form, Required by Article 3B of Title 41, Code of Alabama 1975(Revised 09/2013) with Information and Instructions regarding Relationships Between Contractor/Grantees and Public Officials/Employees.
- Alabama Department of Revenue – Sales and Use Tax Division – Application for Sales and Use Tax Certificate of Exemption (ST:EX-01 June 2021)
- State of Alabama E-Verify Memorandum of Understanding Instructions (Revised August 2021) *with* ABC Bulletin (May 29, 2012) *and* Revised Alabama Immigration Law Guidance for School Boards (Revised May 2012).
- Alabama Department of Finance, Real Property Management – Division of Construction Management – Permit Fee & Permit Re-Inspection Fee Calculation Worksheet (December 2021)

GENERAL CONDITIONS

- Pre-Construction Conference Checklist (DCM Form B-8 June 2023)
- Detail Of Project Sign (DCM Form C-15, Revised December 2021)
- Application and Certificate for Payment (DCM Form C-10, Revised July 2022)
- Schedule Of Values, (DCM Form C-10SOV, Revised October 2021) Attachment to DCM Form C-10
- Inventory Of Stored Materials, (DCM Form C-10SM, Revised October 2021) Attachment to DCM Form C-10
- Progress Schedule and Report (DCM Form C-11, August 2021)
- Change Order Checklist, (DCM Form B-12, August 2021) For Use with DCM Form C-12
- Contract Change Order (DCM Form C-12 (fully locally funded K-12 Schools), August 2021)
- Change Order Justification (DCM Form B-11, August 2021) Attachment to DCM Form C-12
- General Contractor's Roofing Guarantee (DCM Form C-9, August 2021)
- Certificate of Substantial Completion (DCM Form C-13 & 13A, Revised November 2022)
- Form of Advertisement for Completion (DCM Form C-14, August 2021)
- Certification of Structural Observation (DCM Form B-14 Revised December 2021)
- Final Payment Checklist (DCM Form B-13, Revised October 2022)
- Contractor's Affidavit of Payment of Debts and Claims (DCM Form C-18, August 2021)
- Contractor's Affidavit of Release of Liens (DCM Form C-19, August 2021)
- Consent of Surety to Final Payment (DCM Form C-20, August 2021)
- Form of Advertisement for Completion (DCM Form C-14, August 2021)
- Act 2009-657 Requiring Certification of Fire Alarm Contractors (ABC Memorandum January 19, 2021)
- State Of Alabama Department of Insurance – Application For State Fire Marshal's Certified Fire Alarm Contractor Permit
- Certificate of Asbestos Free Building Materials (McKee Form)

TECHNICAL SPECIFICATIONS

END OF TABLE OF CONTENTS

SECTION 12601 – SCOREBOARDS

PART 1 - GENERAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single-face electronic scoreboard display for outdoor use, packaged with control console and other accessories.

1.02 REFERENCES

A. Standard for Electric Signs, UL 48, 15th Edition.
B. Standard for Electric Sign Components, UL 879, 9th Edition.
C. Federal Communications Commission Regulation Part 15.
D. National Electric Code.

1.03 SUBMITTALS

A. Scoreboard owner's handbook provides drawings and other information needed for installation, operation, and maintenance of the scoreboard display. Information related specifically to the control console and other accessories may be supplied in additional documents.

1.04 QUALITY ASSURANCE

A. Source limitation: Obtain all components including scoreboard display, control console, data cable, mounting hardware, and other accessories from a single manufacturer.
B. Manufacturer qualifications.
   1. Specialization in manufacturing electronic scoreboards.
   2. Minimum of ten years of experience.
C. Adherence to nationally recognized standards.
   1. ETL listed to UL Standards 48 and 879.
   2. NEC compliant.
   3. FCC compliant.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Product delivered to installation site unless otherwise specified.
B. Scoreboard cabinet and accessories to be stored in a clean, dry environment.
C. Special precautions for the scoreboard face.
   1. The face of the scoreboard display will be protected during shipment by a layer of cardboard or other sheet material. Avoid removing this protective sheet until the installation begins.
   2. Never lay a scoreboard cabinet face down or stack other objects on top of it.
   3. Avoid sliding objects (like another scoreboard) along the plane of the scoreboard face, even if the protective sheet is in place. This can result in LEDs being sheared.

1.06 PROJECT CONDITIONS

A. Scoreboard display and surrounding accessories should not be installed until the mounting posts are secure and the concrete footings have set.
B. The customer determines location of scoreboard display, control console, and other accessories.
C. The customer is responsible for verifying that the mounting structure is capable of supporting the weight and wind load of the scoreboard display, additional ID panels, and other accessories.
D. The customer is responsible for making certain the installation meets any requirements set forth in local, state, and national codes. These requirements may include limitations on the height of the structure, specifications of footings, standards for wind loads, approvals by a locally licensed professional engineer, etc.
E. Installation of outdoor scoreboards and accessories is dependent upon suitable weather conditions.
F. The scoreboard display location requires 120 VAC controlled by a dedicated breaker switch mounted within sight of the scoreboard.
G. The control console location requires one standard grounded 120 VAC electrical outlet.

1.07 WARRANTY

A. Five-year limited warranty includes factory labor and material costs for repairing or replacing defective parts. Refer to the warranty document included in the scoreboard owner's handbook for specific information.
B. Standard warranty coverage is based on the date of manufacture.

1.08 MAINTENANCE

A. Replacement parts and factory repair options are available from manufacturer.
B. Product support provided by experienced technicians is available via phone, web, and e-mail at no additional cost to customer.
C. Standard documentation is provided in printed or electronic form at no additional cost to customer.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Electro-Mech Scoreboard Co., 72 Industrial Blvd., Wrightsville, GA 31096.
   1. Phone 800-445-7846.
   2. Fax 478-864-0212.
   3. E-mail score@electro-mech.com
   4. Online at www.electro-mech.com

2.02 SCOREBOARD DISPLAY

A. General.

1. Functions and Features: Model LX1700 Outdoor Scoreboard is designed to present information pertinent to baseball or softball. Information presented includes:
    a. 2-Digit Total Runs (one set for Guest, one set for Home), 11 inches tall, to 99.
    b. 7 each 1-Digit Runs-By-Inning (one set for Guest, one set for Home), 11 inches tall, to 9.
    c. 1-Digit Ball Count, 11 inches tall, to 3.
    d. 1-Digit Strike Count, 11 inches tall, to 2.
    e. 1-Digit Out Count, 11 inches tall, to 2.
2. Additional Features:
    a. Fifty levels of LED brightness, selectable via the control console.
    b. All serviceable components accessible from the front of the cabinet.
    c. Eye bolts for lifting.
    d. Integrated mounting points.
3. Cabinet Size: 168.2 inches wide, 60.2 inches tall, 6 inches deep (4268 mm x 1527 mm x 153 mm).
    a. Optional ID panels may be integrated into the cabinet, adding to the width or height.
    b. Additional ID panels or other accessories may be provided as separate assemblies, adding to the overall size.
4. Cabinet Weight: 250 pounds (115 kg).
    a. Optional ID panels may be integrated into the cabinet, adding to the weight.
    b. Additional ID panels or other accessories may be provided as separate assemblies, adding to the overall weight.
5. Electrical Requirements.
    a. One circuit providing 120 VAC, 60 Hz, 1.8 amp service.
    b. When upgraded to include Electronic Team Names (ETNs, referenced below), one circuit providing 120 VAC, 60 Hz, 3.7 amp service.
    c. Electro-Mech recommends mounting a disconnect switch and convenience receptacle in line with incoming AC power on one of the support posts beneath the scoreboard display.
6. Optional Display Features: Electronic Team Names (ETNs).
    a. Two ETN sections (one for Guest, one for Home) integrated into the scoreboard cabinet, internally powered, and controlled through the standard scoreboard control console.
    b. Specifications for each ETN section:
        1) 7-inch tall x 40-inch wide active text area (7-inch character height).
        2) 9 x 48 pixels at 22 mm pitch.
        3) Shows up to 9 characters, including upper and lower case letters.
        4) Regular, bold, and condensed fonts.

2.03 ACCESSORIES

A. Standard accessories.
1. Control Console.
    a. Supports features of Electro-Mech LX1400, LX1600, and LX1700 series of baseball scoreboards (including Models LX1440, LX1480, LX1620, LX1630, LX1631, LX1632, LX1633, LX1637, LX1710, LX1711, LX1712,

LX1713, LX1717, LX1720, LX1730, LX1731, LX1732, LX1733, LX1737, LX1740, LX1741, LX1742, LX1743, LX1747, LX1750, LX1751, LX1752, LX1753, LX1780, LX1781, LX1782, and LX1783) without the need to enter codes or other information to configure the device.

b. Provides direct data output ports for up to two scoreboard displays, synchronized to the data (including the time) generated by the control console. Additional displays may be controlled in synchronization by daisy chaining from the data output terminal blocks of displays connected to the control console or via the optional ScoreLink wireless RF communication system.

c. Constructed of a heavy-duty ABS plastic housing holding a 0.1-inch thick keypad panel with stainless steel metal dome switches that provide tactile feedback and are rated for more than one million actuations.

d. Integrated LCD screen provides key game data along with interactive prompts for editing data and configuring the behavior of the scoreboard display and accessories.

e. Electrical Requirements: One circuit providing 0.5 amps, 120 VAC, 60 Hz via a standard (NEMA 5-15R) grounded power receptacle.

2. Patch Cable (for systems with hardwired data cable): 10-foot long shielded data cable with male stereo connectors at each end allows the control console to be connected to a junction box at the point of operation and later unplugged for storage.

3. Junction Box (for systems with hardwired data cable): Termination point for data cable, includes a stereo socket for quick connection to the control console.

4. Mounting hardware: Standard mounting hardware allows the scoreboard cabinets to be clamped at any height along the support posts without the need for drilling holes or fabricating brackets onsite. Standard hardware accommodates round pipes, I-beams, or other post styles with an exterior cross-section no greater than 4-1/2 inches. Optional hardware may be substituted where local codes require larger posts.

B. Optional accessories.

1. Data Cable: A shielded two-conductor cable with a drain line is the typical means of providing a path for data from the control console to a scoreboard display.

2. ScoreLink Wireless RF Modem System: This RF communications system may be substituted for the data cable at the time of installation or as a replacement for the data cable at any time after the installation. Some ScoreLink configurations require a standard electrical outlet for the transmitter at the point of operation.

3. ID Panels: This scoreboard may be ordered with one or more ID panels integrated into the cabinet. Additional ID panels, shipped as separate cabinets, may be added above, below, or beside the scoreboard display. These panels may be purchased blank, with simple text, or with multi-colored text and graphics applied to their faces.

4. Carrying Case for Control Console: Hard-sided suitcase-style case includes foam cutouts for the console and various accessories.

5. Team Name in Place of "HOME" cut from vinyl and applied permanently to the scoreboard display face.

2.04 FINISH

A. Standard scoreboard display faces and digit masks are coated with low gloss black polyester resin paint for maximum contrast and resistance to scratches.
    1. For the scoreboard display face, the customer may choose from a selection of at least twelve standard paint colors offered by the manufacturer.
    2. Standard paint colors are applied at the factory using baked on automotive grade low gloss paint.
    3. Non-standard colors and finishes may, for an additional charge, be applied to the scoreboard face at the customer's request.
B. Scoreboard framing and back are mill-finished aluminum.
C. Captions and other decorative elements on the face of the scoreboard are vinyl.

2.05 SOURCE QUALITY CONTROL

A. Tests and inspection.
    1. Manufacturer requires sub-contracted printed circuit board subassemblies to undergo functional testing at the point of manufacture.
    2. Manufacturer inspects incoming components prior to installation in scoreboard display and accessories.
    3. Manufacturer functionally tests major electrical subcomponents prior to installation in scoreboard display and accessories.
    4. Manufacturer inspects and tests scoreboard displays and accessories at full power prior to shipment.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify mounting posts are correctly sized and positioned to match the mounting points on the scoreboard cabinet and any optional ID panels.
B. Verify concrete footings have properly cured.
C. Verify the scoreboard cabinet is grounded to one or more 5/8-inch by 8-foot copper ground rods, driven into the soil and connected to the ground lugs or elsewhere on the scoreboard cabinet.
D. Verify 120 VAC power supplying the scoreboard display is properly grounded.
E. Verify 120 VAC outlet at the control console location is properly grounded.
F. If data cable is used, verify continuity from scoreboard display to control console location.
G. Verify data and AC power cables are not run in the same conduit or within six inches of each other in the same trench.
H. Verify data cable and AC power cable are secure and run in conduits where they might otherwise be exposed to abuse or where local, state, or national codes require.
I. Verify location of all scoreboard displays, junction boxes, and accessories with customer.

3.02 INSTALLATION

A. Refer to documentation supplied by the manufacturer that is specific to the project. The scoreboard owner's handbook provides general guidelines for typical installations,

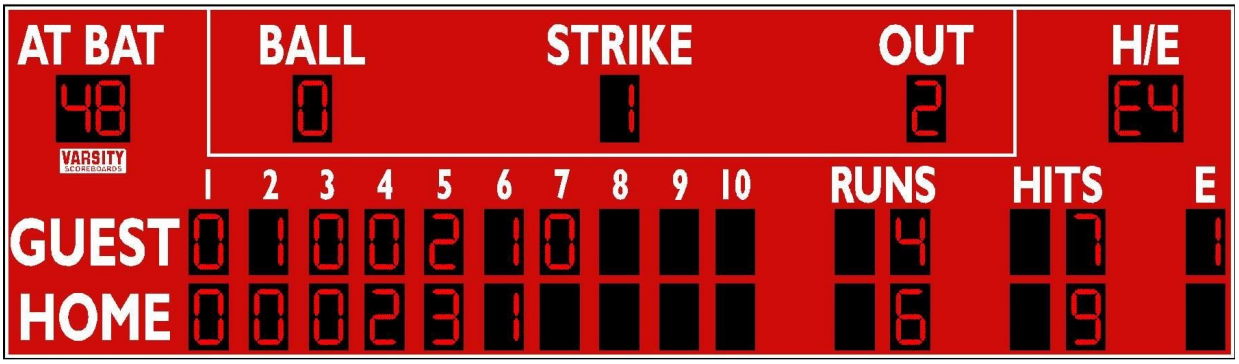
but customizations or other project-specific requirements can impact many of the details.

3.03 PROTECTION

A. The most common sources of damage to scoreboard displays and accessories are electrical surges running through power or data connections. The usual causes are lightning, power equipment problems (floating neutrals, bad transformers, etc.), and improper connections. To minimize these problems:
   1. Ensure electrical wiring is properly grounded.
   2. Ensure the scoreboard display is correctly grounded using one or more 5/8-inch by 8-foot copper ground rods driven into the soil near the display.
   3. Unplug control console from power outlet and from data cable when not in use.
   4. Turn off the breaker to disconnect scoreboard display from power when not in use.
   5. Label scoreboard data cable junction boxes and all connectors near junction boxes, scoreboard displays, and accessories so that public address systems and other devices employing similar connectors are not accidentally plugged into any part of the scoreboard system.

B. Avoid loss or damage of the control console, patch cable, and other accessories by storing when not in use.

END OF SECTION



MODEL 3328

www.varsityscoreboards.com

SECTION 16521 – EXTERIOR ATHLETIC LIGHTING (LIGHTING SYSTEM WITH LED LIGHT SOURCE)

PART 1 – GENERAL

SUMMARY

Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

The purpose of these specifications is to define the lighting system performance and design standards for Daphne High School Softball Field using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.

The sports lighting will be for the following venues: Softball Field – 200'/215'/200'

The primary goals of this sports lighting project are:

Guaranteed Light Levels: Selection of appropriate light levels impacts the safety of players and the enjoyment of spectators. Therefore, light levels are guaranteed to not drop below specified target values for a period of 25 years.
Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to players, spectators, and neighbors.
Cost of Ownership: To reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
Control and Monitoring – To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.

Control and monitoring system shall provide contactor control of all existing circuits. Key switches shall be provided to provide field-level control of existing circuit groups.

ONFIELD LIGHTING PERFORMANCE

Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting manufacturers will provide a guarantee that light levels will be sustained over the life of the warranty period. Lighting calculations shall be developed, and field measurements taken on the grid spacing with the minimum number of grid points specified below.

Manufacturers will provide lumen maintenance data of the LED luminaires used per TM-21-11 and will Incorporate the lumen maintenance projections into the lighting designs to ensure target light levels are achieved throughout the guaranteed period of the system. Per IES guidelines, lumen maintenance hours should be reported based on the

6x multiplier of testing hours.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Infield	50 foot-candles	2:1	25	20’ x 20’
Outfield	30 foot-candles	2.5:1	82	20’ x 20’
Bullpen	30 foot-candles	1.5:1	6	20’ x 20’

Color Temperature: The lighting system shall have a minimum color temperature of 5700K and a CRI of 75+.

Playability: Lighting design and luminaire selection should be optimized for playability by reducing glare onfield and providing sufficient uplight.

Aiming Angles: To reduce glare, luminaire aiming should ensure the top of the luminaire field angle (based on sample photometric reports) is a minimum of 10 degrees below horizontal.

Glare Control Technology – Luminaires selected should have glare control technology including, but not limited to: external visors, internal shields and louvres. No symmetrical beam patterns are acceptable.

Aerial lighting – Adequate illumination must be provided above the field to see the ball in flight. It is recommended that a lighting analysis be performed above the field of play to evaluate the visibility of the ball over its typical trajectory to ensure the participants will adequately see the ball. Calculation planes should be evaluated up to the maximum anticipated height for the level of play.

Mounting Heights: To ensure proper aiming angles, minimum mountings heights shall be as described below. Higher mounting heights may be necessary for luminaire with lesser glare control to meet field angle requirements of section 1.2.C.1.

# of Poles	Pole Designation	Pole Height
2	A1-A2	60’
2	B1-B2	70’

ENVIRONMENTAL LIGHT CONTROL

Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers, and external shields. No symmetrical beam patterns are accepted.

Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following levels taken at 3 feet above grade.

	Average	Maximum
150’ Specified Spill Line Horizontal Footcandles	.03 fc	.10 fc
150’ Specified Spill Line Max Vertical Footcandles	.09 fc	.3 fc
150’ Specified Spill Line Max Candela (taken at 5 ft above grade)		7000cd

Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be provided in 30-foot intervals along the boundary line at 3 ft above grade.

Sample Photometry: The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified testing laboratory with a minimum of five years experience or by a manufacturer’s laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.

Field Verification: Lighting manufacturer shall supply field verification of environmental light control using a meter calibrated within the last 12 months:

Spill verification: Illumination levels shall be taken in accordance with IESNA RP-6-22. The light sensing surface of the light meter should be held 36 inches above the playing surface with the sensing surface horizontal (for horizontal readings) or vertically pointed at the brightest light bank (for max vertical readings)

COST OF OWNERSHIP

Manufacturer shall submit a 25-year Cost of Ownership summary that includes energy consumption, anticipated maintenance costs, and control costs. All costs associated with faulty luminaire replacement - equipment rentals, removal and installation labor, and shipping - are to be included in the maintenance costs.

PART 2 – PRODUCT

SPORTS LIGHTING SYSTEM CONSTRUCTION

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.

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.

System Description: Lighting system shall consist of the following:

Galvanized steel poles and cross-arm assembly. Alternate: Concrete pole with a minimum of 8,000 psi and installed with concrete backfill will be an acceptable alternative provided building code, wind speed and foundation designs per specifications are adhered to.

Non-approved pole technology:

Square static cast concrete poles will not be accepted.
Direct bury steel poles which utilize the extended portion of the steel shaft for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long-term performance concerns.

Lighting systems shall use concrete foundations. See Section 2.4 for details.

For a foundation using a pre-stressed concrete base embedded in concrete backfill the concrete shall be air-entrained and have a minimum compressive design strength at 28 days of 3,000 PSI. 3,000 PSI concrete specified for early pole erection, actual required minimum allowable concrete strength is 1,000 PSI. All piers and concrete backfill must bear on and against firm undisturbed soil.
For anchor bolt foundations or foundations using a pre-stressed concrete base in a suspended pier or re-enforced pier design pole erection may occur after 7 days. Or after a concrete sample from the same batch achieves a certain strength.

Manufacturer will supply all drivers and supporting electrical equipment.

Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure. Integral drivers are not allowed.
Manufacturer shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2_2002.

Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

All luminaires, visors, and cross-arm assemblies shall withstand 150 mi/h winds and maintain luminaire aiming alignment.

Control cabinet to provide remote on-off control, monitoring, and entertainment features of the lighting system. See Section 2.3 for further details.

Manufacturer shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.
Integrated grounding via concrete encased electrode grounding system.
If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780.The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

Enhanced corrosion protection package: Due to the potentially corrosive environment for this project, manufacturers must provide documentation that their products meet the following enhanced requirements in addition to the standard durability protection specified above:

Exposed carbon steel horizontal surfaces on the crossarm assembly shall be galvanized to no less than a five (5) mil average thickness.
Exposed die cast aluminum components shall be Type II anodized per MIL-STD-8625 and coated with high performance polyester.
Exposed extruded aluminum components shall be Type II anodized per MIL-STD-8625 and coated with high performance polyester.

Safety: All system components shall be UL listed for the appropriate application.

ELECTRICAL

Electric Power Requirements for the Sports Lighting Equipment:

Electric power: 480 Volt, 3 Phase
Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

Energy Consumption: The kW consumption for the field lighting system shall be 19.98kW.

CONTROL

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

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.

Contactor control of lights: To minimize wear on drivers and other electrical components and prevent lights from turning on due to communication loss, circuits must be controlled via contactor switching, not dimming driver output to zero.

Dimming: System shall provide for 3-stage dimming (high-medium-low). Dimming will be set via scheduling options (Website, app, phone, email).

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, 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.

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).

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 and Android devices.

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.

Cumulative hours: shall be tracked to show the total hours used by the facility.
Report hours saved by using early off and push buttons by users.

Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring system for a period of 25 years.

Communication with luminaire drivers: Control system shall interface with drivers in electrical components enclosures by means of powerline communication.

STRUCTURAL PARAMETERS

Wind Loads: Wind loads shall be based on the 2021 International Building Code. Wind loads to be calculated using ASCE 7-16, an ultimate design wind speed of 160mph and exposure category C.

Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2013 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-6).

Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2021 IBC Table 1806.2.

Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

PART 3 – EXECUTION

SOIL QUALITY CONTROL

It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:

Providing engineered foundation embedment design by a registered engineer in the State of Alabama for soils other than specified soil conditions;
Additional materials required to achieve alternate foundation;
Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

DELIVERY TIMING

Delivery Timing Equipment On-Site: The equipment must be on-site 10-12 weeks from receipt of approved submittals and receipt of complete order information.

FIELD QUALITY CONTROL

Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA RP-6-22.

Field Light Level Accountability

Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 25 years. These levels will be specifically stated as "guaranteed" on the illumination summary provided by the manufacturer.
The contractor/manufacturer shall be responsible for conducting initial light level testing and an additional inspection of the system, in the presence of the owner, one year from the date of commissioning of the lighting.
The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities.
Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.

Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, uplight for aerial visibility, and offsite candela readings are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

WARRANTY AND GUARANTEE

25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers.

Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 25 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.

PART 4 – DESIGN APPROVAL

PRE-BID SUBMITTAL REQUIREMENTS (Non-Musco)

Design Approval: The owner / engineer will review pre-bid submittals per section 4.1.B from all the manufacturers to ensure compliance to the specification 10 days prior to bid. 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.

Approved Product: Musco's Light-Structure System™ with TLC for LED® 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.

All listed manufacturers not pre-approved shall submit the information at the end of this section at least 10 days prior to bid. An addendum will be issued prior to bid; listing approved lighting manufacturers and the design method to be used.

Bidders are required to bid only products that have been approved by this specification or addendum by the owner or owner's representative. Bids received that do not utilize an approved system/design, will be rejected.

END OF SECTION 16521

REQUIRED SUBMITTAL INFORMATION FOR ALL MANUFACTURERS (NOT PRE-APPROVED) 10 DAYS PRIOR TO BID

All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements. Complete the Yes/No column to indicate compliance (Y) or noncompliance (N) for each item. Submit checklist below with submittal.

Yes/ No	Tab	Item	Description
	A	Letter/ Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
	B	Equipment Layout	Drawing(s) showing field layouts with pole locations.
	C	On Field Lighting Design	Lighting design drawing(s) showing: a. Field Name, date, file number, prepared by b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x & y), Illuminance levels at grid spacing specified c. Pole height, number of fixtures per pole, horizontal and vertical aiming angles, as well as luminaire information including wattage, lumens and optics d. Height of light test meter above field surface. e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance (CV), coefficient of utilization (CU) uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor.
	D	Off Field Lighting Design	Lighting design drawing showing initial spill light levels along the boundary line (defined on bid drawings) in footcandles. Lighting design showing glare along the boundary line in candela. Light levels shall be taken at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank of lights.
	E	Photometric Report	Provide first page of photometric report for all luminaire types being proposed showing candela tabulations as defined by IESNA Publication LM-35-02. Photometric data shall be certified by laboratory with current National Voluntary Laboratory Accreditation Program or an independent testing facility with over 5 years experience.
	F	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these

			specifications at no expense to the owner. Light levels must be guaranteed to not fall below target levels for warranty period.
	G	Structural Calculations	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of Alabama.
	H	Control & Monitoring System	Manufacturer of the control and monitoring system shall provide written definition and schematics for automated control system. They will also provide ten (10) references of customers currently using proposed system in the state of Alabama.
	I	Electrical Distribution Plans	Manufacturer bidding an alternate product must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of Alabama.
	J	Warranty	Provide written warranty information including all terms and conditions. Provide ten (10) references of customers currently under specified warranty in the state of Alabama.
	K	Project References	Manufacturer to provide a list of ten (10) projects where the technology and specific fixture proposed for this project has been installed in the state of Alabama. Reference list will include project name, project city, installation date, and if requested, contact name and contact phone number.
	L	Product Information	Complete bill of material and current brochures/cut sheets for all products being provided.
	M	Delivery	Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information.
	N	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted.
	O	Cost of Ownership	Document cost of ownership as defined in the specification. Identify energy costs for operating the luminaires. Maintenance cost for the system must be included. All costs should be based on 25 Years

The information supplied herein shall be used for the purpose of complying with the specifications for Daphne High School Softball Field. By signing below, I agree that all requirements of the specifications have been met and that the manufacturer will be responsible for any future costs incurred to bring their equipment into compliance for all items not meeting specifications and not listed in the Non-Compliance section.

Manufacturer: _____ Signature: _____

Contact Name: _____ Date: _____/_____/_____

Contractor: _____ Signature: _____