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Posted to USC Website
May 24, 2013

RE: Athletic Village Sand Volleyball Court Construction
For the University of South Carolina
URS Project No. 46422848
State Project No. H27-Z081

ADDENDUM NO. 1 – May 24, 2013

TO: ALL HOLDERS OF RECORD OF CONTRACT DOCUMENTS

Acknowledge receipt of this addendum by inserting its number and date in the Bid Form. Failure to do so may subject bidder to disqualification. This addendum forms a part of the Contract Documents. It modifies them as follows:

SPECIFICATIONS

Replace the original specifications with the attached specifications:

1. Lump Sum Bid – Bid Form (SE-330)
2. Section 116843 Outdoor Scoreboard
3. Section 265668 Sports Lighting System

DRAWINGS

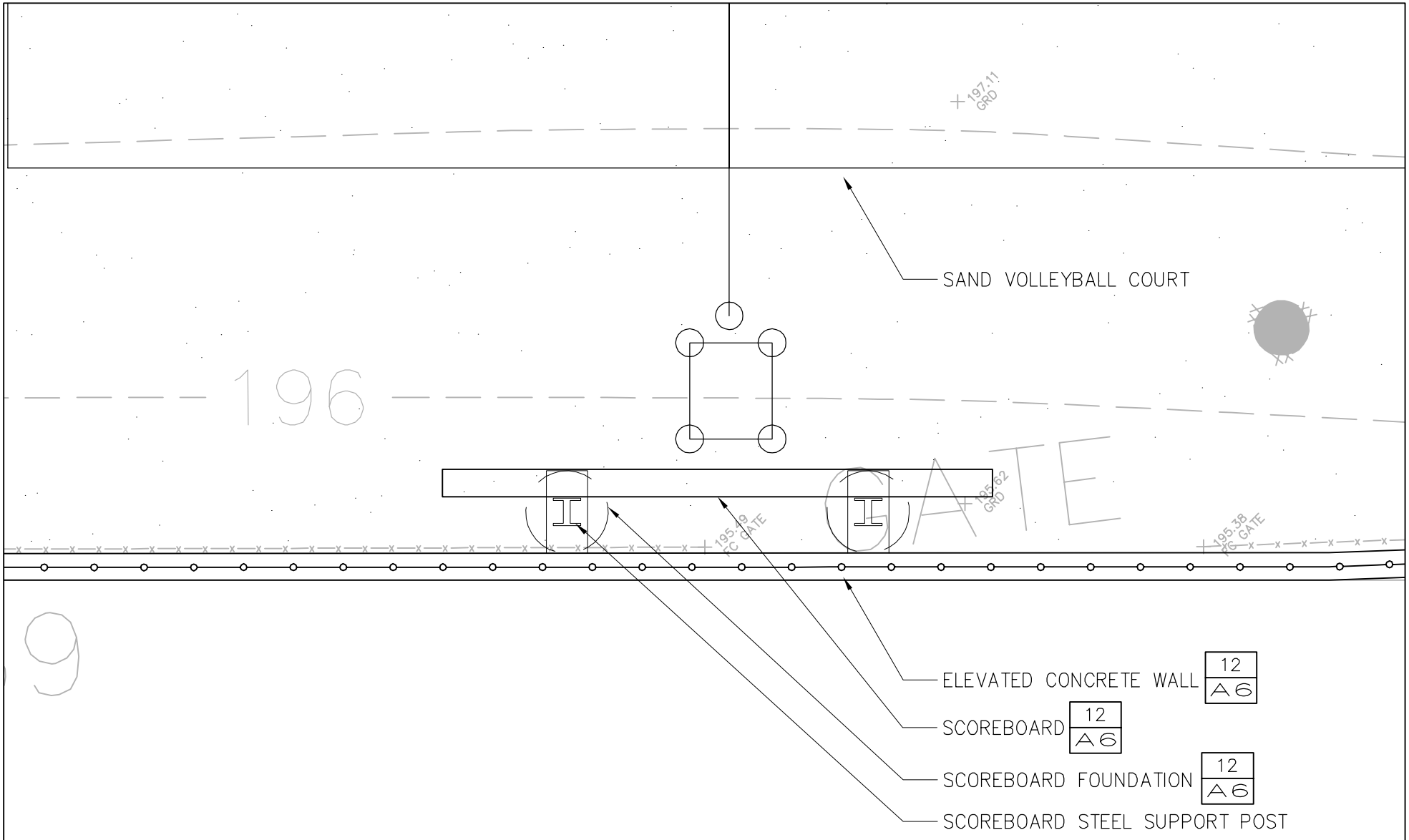
Replace the original drawings with attached drawings:

1. C3 – Site Plan
2. A3 – Site Layout Plan - Volleyball
3. A6 – Site Details – Volleyball
4. A7 – Site Details – Volleyball
5. A9 – Electrical Site Plan – Volleyball
6. A10 – Electrical One Line Diagram, Schedule and Details – Volleyball
7. E1 – Site Electrical Plan
8. E2 – Electrical Details & Schedules
9. E3 – Electrical Single Line Diagram

Add the following sketches:

1. SKC-1 - Revised Scoreboard Foundation Location (Plan View)
2. SKS-1 – Soccer Field Light Pole Foundation Notes and Details
3. SKS-2 – Soccer Field Light Pole Foundation Details

END OF ADDENDUM NO. 1



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ATHLETIC VILLAGE SAND VOLLEYBALL COURT CONSTRUCTION

REVISED SCOREBOARD FOUNDATION LOCATION (PLAN VIEW)

PROJECT NO. 25652

DATE: 5/24/13

SKC–1

GENERAL NOTES:

1. COORDINATE LOCATIONS OF ALL ELECTRICAL WORK PRIOR TO INSTALLATION OF STRUCTURAL WORK.

2. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE UNDERGROUND UTILITIES.

FOUNDATION AND SOIL PREPARATION NOTES:

1. THE FOUNDATION DESIGN IS BASED ON AN ALLOWABLE BEARING PRESSURE OF 2500 PSF AS RECOMMENDED IN THE GEOTECHNICAL REPORT PREPARED BY GS2 ENGINEERING & ENVIRONMENTAL CONSULTANTS, INC. COLUMBIA SOUTH CAROLINA, DATED OCTOBER 31, 2011.

CAST-IN-PLACE CONCRETE NOTES:

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF THE ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STATE OF SOUTH CAROLINA BUILDING CODE, IN CASE OF CONFLICT, THE STATE CODE SHALL GOVERN.

2. CONCRETE SHALL BE NORMAL WEIGHT CONCRETE WITH SAND AND GRAVEL AGGREGATE, TYPE I OR TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150, AND A MINIMUM COMPRESSIVE STRENGTH (f'c) IN 28 DAYS OF 4000 PSI.

3. ALL EXPOSED EDGES OF CONCRETE MEMBERS SHALL BE CHAMFERED 3/4" UNLESS SHOWN OTHERWISE ON THE DRAWINGS.

REINFORCING:

1. ALL CONCRETE REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60 EXCEPT NOTED, ALL REINFORCING BARS TO BE WELDED SHALL CONFORM TO ASTM A706. REINFORCING BARS MAY NOT BE WELDED WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

2. ALL CONTINUOUS REINFORCEMENT SHALL HAVE A MINIMUM LAP AS REQUIRED FOR "CLASS B" SPLICE UNLESS NOTED OTHERWISE.

3. CONCRETE PROTECTION FOR REINFORCEMENT SHALL BE 3" BOTTOM, 3" SIDES AND 2" TOP.

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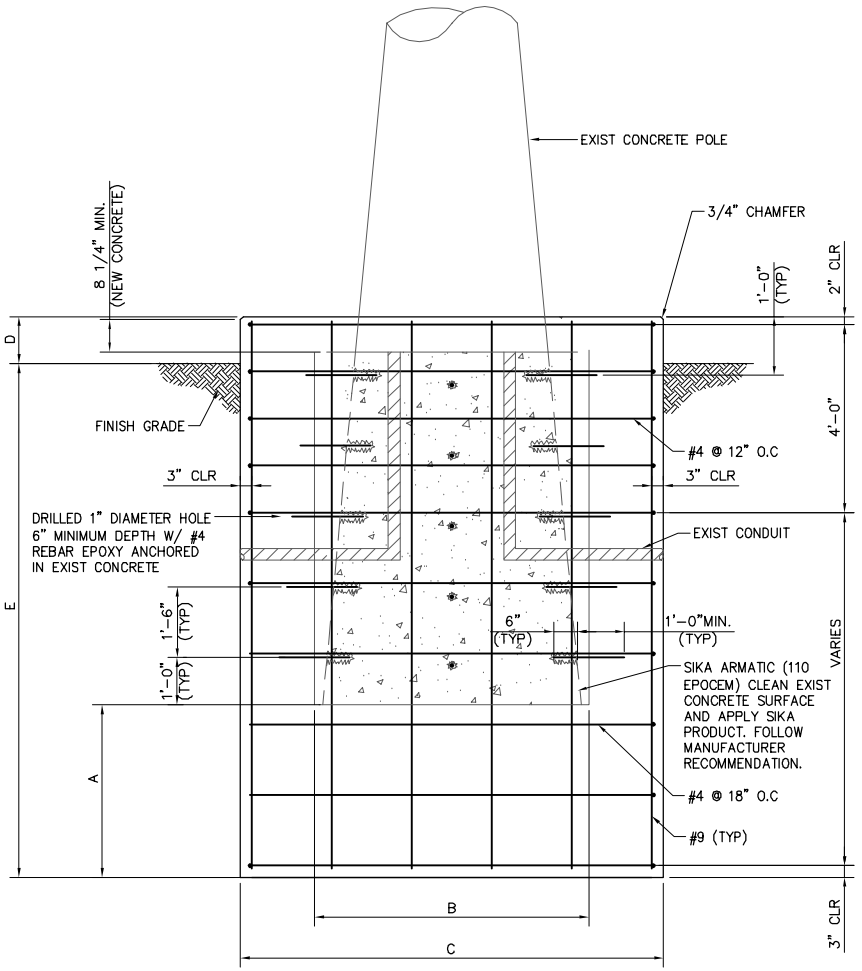
ATHLETIC VILLAGE SAND VOLLEYBALL COURT CONSTRUCTION

SOCCER FIELD LIGHT POLE FOUNDATION NOTES AND DETAILS

PROJECT NO. 25652

DATE: 5/24/13

SKS-1



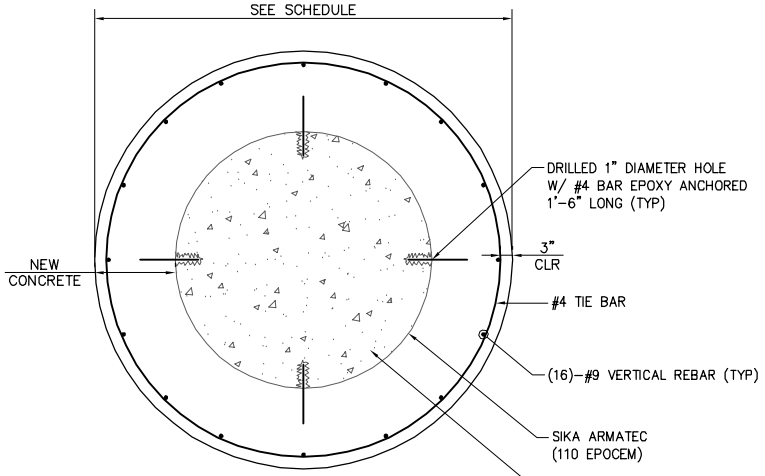
NOTE: FOR LABELS SEE TABLE.

FOUNDATION ELEVATION

SCALE: N.T.S.

NOTE:

1. REMOVE EXISTING CONCRETE FOUNDATION ATTACHED TO THE POLE PRIOR TO ENCASING IN NEW CONCRETE



REINFORCEMENT DETAIL

SCALE: N.T.S.

LABEL	POLE NUMBER					
	1	2	3	4	5	6
	DIMENSIONS					
A	4'-2"	3'-8"	3'-10"	4'-2"	2'-2"	2'-0"
B	5'-10"	5'-7"	7'-8"	5'-4"	5'-10"	5'-4"
C	9'-6"	9'-6"	11'-6"	9'-6"	9'-6"	9'-6"
D	2'-6"	2'-6"	2'-0"	2'-7"	1'-0"	0'-10"
E	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
	NUMBER OF LIGHTS					
	11	13	11	8	13	8

FOUNDATION DIMENSIONS FOR CONCRETE POLE

SCALE: N.T.S.

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ATHLETIC VILLAGE SAND VOLLEYBALL COURT CONSTRUCTION

SOCCER FIELD LIGHT POLE FOUNDATION DETAILS

PROJECT NO. 25652

DATE: 5/24/13

SKS-2

SE-330 – LUMP SUM BID
BID FORM

Bidders shall submit bids on only Bid Form SE-330.

BID SUBMITTED BY:_____
(Bidder's Name)

BID SUBMITTED TO: University of South Carolina
(Owner's Name)

FOR PROJECT: **PROJECT NAME** Athletic Village Sand Volleyball Court Construction

PROJECT NUMBER **H27-Z081**

OFFER

§ 1. In response to the Invitation for Construction Bids and in compliance with the Instructions to Bidders for the above-named Project, the undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with the Owner on the terms included in the Bidding Documents, and to perform all Work as specified or indicated in the Bidding Documents, for the prices and within the time frames indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

§ 2. Pursuant to Section 11-32-3030(1) of the SC Code of Laws, as amended, Bidder has submitted Bid Security as follows in the amount and form required by the Bidding Documents:

☐ Bid Bond with Power of Attorney ☐ Electronic Bid Bond ☐ Cashier's Check
(Bidder check one)

§ 3. Bidder acknowledges the receipt of the following Addenda to the Bidding Documents and has incorporated the effects of said Addenda into this Bid:

ADDENDUM No:_____

§ 4. Bidder accepts all terms and conditions of the Invitation for Bids, including, without limitation, those dealing with the disposition of Bid Security. Bidder agrees that this Bid, including all Bid Alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of 60 Days following the Bid Date, or for such longer period of time that Bidder may agree to in writing upon request of the Owner.

§ 5. Bidder herewith offers to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses and applicable taxes necessary to complete the following items of construction work:

§ 6.1 BASE BID WORK ***(as indicated in the Bidding Documents and generally described as follows)*****:** Construct 5 new sand volleyball courts and related amenities, re-grading of existing practice soccer fields, new electrical conduits to practice soccer field and volleyball courts for a cost of _____

_____, which sum is hereafter called the Base Bid.

(Bidder - insert Base Bid Amount on line above)

SE-330 – LUMP SUM BID
BID FORM

§ 6.2 BID ALTERNATES - as indicated in the Bidding Documents and generally described as follows:

ALTERNATE # 1 *(Brief Description)*: Supply synthetic turf

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID:** _____

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

ALTERNATE # 2 *(Brief Description)*: Install 6 existing sports lighting poles at soccer field.

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID:** _____

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

ALTERNATE # 3 *(Brief Description)*: Supply/install sod (area north of volleyball courts and on soccer field)

☐ **ADD TO** or ☐ **DEDUCT FROM BASE BID:** _____

(Bidder to Mark appropriate box to clearly indicate the price adjustment offered for each alternate)

SE-330 – LUMP SUM BID

Rev. 9/21/2011

BID FORM

§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED – ***(See Instructions on the following page BF-2A)***

Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Specialty work listed:

SUBCONTRACTOR SPECIALTY **By License Classification and/or Subclassification** (Completed by Owner)	**SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME** (Must be completed by Bidder) **BASE BID**	**SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER**
None required		
ALTERNATE 1		
None required		
ALTERNATE 2		
None required		
ALTERNATE 3		
None required		

If a Bid Alternate is accepted, Subcontractors listed for the Bid Alternate shall be used for the work of both the Alternate and the Base Bid work.

INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth a list of subcontractor specialties for which bidder is required to identify by name the subcontractor(s)Bidder will use to perform the work of each listed specialty. Bidder must identify only the subcontractor(s) who will perform the work and no others.

2. For purposes of subcontractor listing, a Subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site. Material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the bidder or proposed subcontractor(s) are not subcontractors and Bidder should not insert their names in the spaces provided on the bid form. Likewise, Bidder should not insert the names of sub-subcontractors in the spaces provided on the bid form but only the names of those entities with which bidder will contract directly.

3. Bidder must only insert the names of subcontractors who are qualified to perform the work of the listed specialties as specified in the Bidding Documents and South Carolina Licensing Laws**.**

4. If under the terms of the Bidding Documents, Bidder is qualified to perform the work of a specialty listed and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert its own name in the space provided for that specialty.

5. If Bidder intends to use multiple subcontractors to perform the work of a single specialty listing, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word **"and"**. If Bidder intends to use both his own employees to perform a part of the work of a single specialty listing and to use one or more subcontractors to perform the remaining work for that specialty listing, bidder must insert his own name and the name of each subcontractor, preferably separating the name of each with the word **"and"**.

6. Bidder may not list subcontractors in the alternative nor in a form that may be reasonably construed at the time of bid opening as a listing in the alternative. A listing that requires subsequent explanation to determine whether or not it is a listing in the alternative is non-responsive. If bidder intends to use multiple entities to perform the work for a single specialty listing, bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "**and**" between the name of each entity listed for that specialty. Owner will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Owner may reasonably interpret as a listing in the alternative.

7. If Bidder is awarded the contract, bidder must, except with the approval of the owner for good cause shown, use the listed entities to perform the work for which they are listed.

8. If bidder is awarded the contract, bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.

9. Bidder's failure to insert a name for each listed specialty subcontractor will render the Bid non-responsive.

SE-330 – LUMP SUM BID
BID FORM

§ 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE *(FOR INFORMATION ONLY):* Pursuant to instructions in the Invitation for Bids, if any, Bidder will provide to Owner upon the Owner's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code Ann § 11-35-3020(b)(i).

§ 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

a. CONTRACT TIME: Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Owner. Bidder agrees to substantially complete the Work within **90** calendar days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

b. LIQUIDATED DAMAGES: Bidder further agrees that from the compensation to be paid, the Owner shall retain as Liquidated Damages the sum of $250 for each calendar day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This sum is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

§ 10. AGREEMENTS

a. Bidder agrees that this bid is subject to the requirements of the law of the State of South Carolina.

b. Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.

c. Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

§ 11. ELECTRONIC BID BOND

By signing below, the Principal is affirming that the identified electronic bid bond has been executed and that the Principal and Surety are firmly bound unto the State of South Carolina under the terms and conditions of the AIA Document A310, Bid Bond, included in the Bidding Documents.

Electronic Bid Bond Number: _____

Signature and Title: _____

SE-330 – LUMP SUM BID
BID FORM

Rev. 9/21/2011

BIDDER'S TAXPAYER IDENTIFICATION

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER:_____

OR

SOCIAL SECURITY NUMBER:_____

CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATIONS

Classification(s)& Limits: _____

Subclassification(s) & Limits:_____

SC Contractor's License Number(s):_____

BY SIGNING THIS BID, THE PERSON SIGNING REAFFIRMS ALL REPRESENTATIONS AND CERTIFICATIONS MADE BY BOTH THE PERSON SIGNING AND THE BIDDER, INCLUDING WITHOUT LIMITATION, THOSE APPEARING IN ARTICLE 2 OF THE INSTRUCTIONS TO BIDDER. THE INVITATION FOR BIDS, AS DEFINED IN THE INSTRUCTIONS TO BIDDERS, IS EXPRESSLY INCORPORATE BY REFERENCE.

SIGNATURE

BIDDER'S LEGAL NAME: _____

ADRESS: _____

_____

BY:_____ **DATE:**_____
(Signature)

TITLE:_____

TELEPHONE:_____

EMAIL: _____

SECTION 116843 OUTDOOR SCOREBOARD - ADDEDUM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Provide and install one main Outdoor Volleyball scoreboard with wireless controller, receiver/transmitter, carrying case and horn. In addition to the main scoreboard, 5 individual court scoreboards shall be provided. The main scoreboard and individual court scoreboards shall be linked and capable of providing timing and scoring for 5 courts simultaneously.

1.2 REFERENCES

A. ETL listed to Standard for Electric Signs, UL-48.

B. ETL listed to Standard for Control Centers for Changing Message Type Signs, UL-1433.

C. Tested to CSA standards and CE labeled for outdoor use.

D. Standard for CAN/CSA C22.2

E. Federal Communications Commission Regulation Part 15

F. National Electric Code

1.3 SUBMITTALS

A. Product data: Submit manufacturer’s product illustrations, data and literature that fully describe the scoreboards and accessories proposed for installation.

B. Shop drawings: Submit mechanical and electrical drawings.

C. Maintenance data: Submit manufacturer’s installation, operation, and maintenance manuals.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Product delivered on site.

B. Scoreboard and equipment to be housed in a clean, dry environment

1.5 PROJECT CONDITIONS

A. Environmental limitations: Do not install scoreboard equipment until mounting structure is secure and concrete has ample time to cure.

B. Field measurements: Verify position and elevation of structure and its layout for scoreboard equipment. Verify dimensions by field measurements.

C. Verify mounting structure is capable of supporting the scoreboard's weight and windload in addition to the auxiliary equipment.

D. Installation may proceed within acceptable weather conditions.

1.6 QUALITY ASSURANCE

A. All scoreboards shall be manufactured for outdoor use.

B. Source Limitations: Obtain each type of scoring or related equipment through one source from a single manufacturer.

C. ETL listed to UL Standards 48 and 1433

D. NEC compliant

E. FCC compliant

F. ETLC listed to CAN/CSA 22.2

1.7 WARRANTY/SERVICE PLAN

A. Provide 5 years of warranty coverage.

B. Provide an exchange program to supply replacement parts for components that fail during the coverage period. To minimize downtime, the exchange parts will be shipped on the same day the order is received or on the following day. The manufacturer will also enclose an air bill for return of the defective components.

C. Provide access to a local Authorized Service Company.

D. Provide a help desk staffed by experience technicians and coordinators who are thoroughly familiar with the scoreboard and available for technical support. This staff must be available at no additional cost to the customer and provide an "on-call" service during weekends.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Daktronics, Inc., 331 32nd Avenue, P.O. Box 5128, Brookings, South Dakota 57006-5128, 1-800-325-8766, www.daktronics.com

B. All American Score Boards, 401 S. Main Street Panderville, WI 53954, www.allamericanscoreboards.com

C. Fair Play Scoreboards, 1900 Delaware Ave., Des Moines, IA 50317, 1-800-247-0265, sales@fair-play.com

D. Approved equal.

2.2 PRODUCT

A. Main outdoor Volleyball scoreboard shall provide times and scores for the sport of Volleyball. It shall have upper HOME and GUEST captions at 18” height, 7 LED segments each. All other digits are 15" height, 7 LED segments each. Digits are to illuminate red. Indicators illuminate red. Lower HOME and GUEST captions are 8" height, vinyl. All other captions are 6" height, vinyl. Team Name Message Center is to have 8x32 LED Matrices, LED pixels are on 34mm centers and LED's are to illuminate red. HOME and GUEST scores to 99. Digits can be dimmed for night

viewing. Sponsor displays (2 required) are to be 3'-6" high x 5' wide each. Display finish is finished aluminum. General display to be single face aluminum construction. Digit panels are to be finished 50% flat black. Accent striping to be 1/2" & 1" vinyl. Truss accent to be model DA-1001-20 by Daktronics or approved equal. Logo's and letter colors to be coordinated with owner. Analog clock to be custom, diameter 3'-0". Outdoor Sand Volleyball Scoreboard by Daktronics or approved equal.

B. Individual Court auxillary scoreboards, typical of five (5), shall provide times and scores for the sport of Volleyball. It shall have HOME and GUEST captions at 10" height. All other captions shall be 8" height. LED digits to display HOME and GUEST to 99, Digits can be dimmed for night viewing. Scoreboard by Daktronics or approved equal.

2.3 SCOREBOARD

A. General information

1. Dimensions: 15'-6" high, 20'-0" wide, 0'-6" deep
2. Weight: 1000 lbs
3. Power requirement: 208V AC, 6 amps, 1850 W
4. Color: To be selected and approved by owner

B. Construction

1. Aluminum alloy 5052 construction, per ASTM B221
2. 100% solid state electronics housed in all aluminum cabinet.
3. LED color – Red

C. Captions

1. Provide changeable caption plates/kits/overlays for volleyball scoreboard.

D. Required Equipment

1. Carrying case for control console
2. Scoreboard border striping
3. Protective screen for LED digits
4. Hardware for suspension installation
5. Horn
6. (2) 3'-6"' high x 5' wide non-backlit ad panels
7. Pole for changing captions, 25 feet maximum reach

2.4 SCORING CONSOLE

A. Console is the All Sport 5010 controller with radio transmitter and receiver.

B. Capable of controlling other scoreboards.

C. Console has a maximum power requirement of 240V, 6 amps.

D. Console recalls clock, score information if power is lost.

E. Console includes:

1. A rugged enclosure to house electronics

2. A sealed membrane water-resistant keyboard

3. An LED backlit 32-character liquid crystal prompting display to verify entries and recall information currently displayed

4. A 6' (1829 mm) power cord to plug into a standard grounded 240 V AC outlet

5. A 20' (6096 mm) control cable to connect to the control receptacle junction box

6. A practice timer mode

   a. Can sound the horn at the end of each segment
   b. Has 99 programmable segments
   c. Displays the segment number and segment length
   d. Has a programmable interval time

7. A dimmer control for scoreboard digits.

F. Required Equipment

1. Carrying case for console
2. 2.4 GHz spread spectrum radio for scoreboard control
3. Battery pack

2.5 PROTECTIVE EQUIPMENT

A. LED Digit Protective Screens

1. Provide protective screens for all LED digits on all scoreboards provided.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that mounting structure is ready to receive scoreboard. Verify that placement of conduit and junction boxes are as specified and indicated in plans and shop drawings. Verify concrete has cured adequately according to specifications.

3.2 INSTALLATION

A. All power and control cables to scoreboards and displays will be routed in conduit, power to the scoreboards/displays as well as raceways shown on electrical plans by the Electrical Contractor. Scoreboard control wiring including conduit will be the responsibility of the contractor assigned the scoreboard equipment.

B. Install scoreboards and exterior displays to beams in location detailed and in accordance with manufacturer's instructions. Verify unit is plumb and level.

3.3 INSTALLATION—CONTROL CENTER

A. Provide boxes, cover plates and jacks in locations per plans.

B. Test connect control unit to all jacks and check for proper operation of control unit, scoreboard and all features. Leave control unit in carrying case and other loose accessories with owner's designated representative.

C. Verify earth ground does not exceed 15 ohms.

END OF SECTION

SECTION 265668 SPORTS LIGHTING SYSTEM - ADDENDUM

PART 1 - GENERAL

1.1 WORK INCLUDED

A. The following specification describes a Musco “Green” Sports Lighting System. The Musco Green System described herein is the only acceptable lighting system. The system shall be a four pole lighting layout designed for volleyball courts.

B. The Contractor shall provide all labor, materials, tools, transportation, equipment, insurance, temporary protection, permits, and all necessary and miscellaneous items required to provide the sports field lighting system shown on the plans and described herein complete and in good operating condition whether or not these miscellaneous items are specifically described in these Specifications or shown on the Drawings.

C. Work of this Section to include, but not be limited to: The installation of a complete Sports Field lighting system in accordance with the criteria set forth in the drawings and as specified herein. Provide necessary equipment for unloading, assembling, and installing: field lighting fixture assemblies; pole bases for field lighting fixture assemblies; underground feeders to, and final connections at each field lighting fixture assembly; lighting control equipment; testing/adjusting each field lighting fixture.

D. Install all work in accordance with all applicable codes and prepare additional Design Drawings and Shop Drawings as necessary to obtain approval of public authorities having jurisdiction over this Project.

E. The system shall light the Volleyball Courts with a maximum of four light poles.

1.2 SUBMITTALS

A. Submittal Package: Submit the shop drawings, product data, samples, candlepower distribution curves, and quality control submittals specified below at the same time, as a complete package.

B. Shop Drawings: For poles, bases, and enclosures.

C. Product Data: Catalog sheets, specifications, and installation instructions for all fixtures and accessories to be used on the project.

1. For each pole, include data which shows that the effective projected area rating of the pole (at the required wind velocity) is greater than the total effective projected area of luminaries, brackets, and other equipment mounted on the pole.

2. Controller, include project specific schematic diagram, description of operation, and shop drawings for all enclosures.

D. Pole Foundations: Light pole manufacturer shall provide the foundation design for each different light pole application. The design shall be stamped and signed by a licensed professional engineer. Provide shop drawings to the Owner’s Representative prior to commencement of work.

E. Candlepower Distribution Curves: For each type fixture.

F. Quality Control Submittals:

1. Company Field Advisor Data:

a. Name, business address and telephone number of Company Field Advisor secured for the required services.

b. Certified statement from the Company listing the qualifications of the Company Field Advisor and approval from the lighting system manufacturer.

1.3 QUALITY ASSURANCE

A. Company Field Advisor: Provide the services of a Company Field Advisor for a minimum of 16 working hours for the following:

1. Determine and recommend final luminaire aiming points.
2. Render advice and witness completion of luminaire aiming at night.

B. All equipment shall be new and of high quality. All equipment furnished under these Specifications shall be listed by Underwriter's Laboratories and bear the UL label.

1. The lighting equipment shall have a UL listing for all electrical components from its connection to the feeder conductors, to its completion at the lamp socket including all connections. This listing shall be based upon UL testing and evaluation of the compatibility of the enclosures and the components for use in combination in this application in addition to the individual components being UL listed or recognized.

C. The lighting fixture/pole manufacturer shall furnish to the Contractor all equipment as outlined in the following Specifications and Drawings. The Contractor shall install the equipment and provide all wiring and conduit required to interconnect the various components.

D. All electrical equipment shall be located as indicated in the Specifications and on the Drawings. It is the responsibility of the Contractor to verify actual field conditions to determine exact locations and avoid interference with existing systems and with new installations. Final locations for the components specified herein will be verified by the Owner's Representative prior to installation.

E. Manufacturer's Guarantee: The manufacturer shall submit in writing a letter guaranteeing compliance to the specifications for light levels, light loss factor, and uniformities.

1.4 INSPECTION AND TESTING PROCEDURES

A. The lighting manufacturer shall guarantee the specified illumination levels and uniformity ratios for 10 years hours of operation. The measured illumination levels must be equal to or greater than the specified constant average illumination levels. Corrective action shall be taken, by the Manufacturer, to bring the installation into conformance with these criteria.

B. Test the system with entire facility illuminated. After any manufacturer recommended burn-in period and after a 30 minute warm-up.

C. Horizontal foot-candle readings shall be taken with the meter positioned horizontal 36 inches above grade. Test stations for footcandle readings shall cover 10ft x 10 ft for sand volleyball.

D. Testing equipment for measurement of foot-candle levels shall be a United Technology Model 61, a calibrated Gossen Panalux Electronic 2, or an approved equal. The testing equipment shall be identified with the latest calibration date.

E. For final approval of the project the manufacturer shall provide a final report from the test results that shall provide the following items:

1. Identification of number and location of the test stations.
2. Actual horizontal foot-candle readings taken at each test station.
3. Number of hours of operation.

F. Point by Point Analysis: Measurement of light shall be demonstrated on a computer generated model which consists of a grid of a specified number of points covering a stated area on an equally spaced grid as defined by I.E.S.

1.5 MANUFACTURER'S WARRANTY

A. 10-Year Warranty: Manufacturer shall supply a signed warranty covering the entire system for 10 years. Warranty shall guarantee light levels; lamp replacements; system energy consumption; monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations.

1.6 PRE-BID SUBMITTAL REQUIREMENTS

A. The Musco Light-Structure Green™ System was selected as the basis-of-design for this project. As such, Musco Lighting, Inc. is an approved manufacturer for this project. Other manufacturers whose products are of like quality and are thus approved for this project include Hubbell Lighting, Inc. and Qualite Sports Lighting, Inc. The selection of Musco as the basis-of-design is not intended to indicate that Musco is the preferred manufacturer, but was done to allow a design to be prepared and to set the standard of quality for the project. It is understood that other approved manufacturers may require different quantities of fixtures, in total and per pole, as well as other subtle differences that make a generic design that is applicable to all manufacturers impossible to achieve. Sports lighting equipment by the named manufacturers that meets the intent and quality standards of this specification will receive full consideration during Contractor submittal reviews. Special manufacturing to meet the standards of this specification may be required.

B. Design Approval: The owner / engineer will review shop drawings from the manufacturer to ensure compliance to the specification.

1.7 ADDITIONAL SYSTEM REQUIREMENTS FOR OTHER THAN BASIS-OF-DESIGN MANUFACTURER

A. Light Level Requirements: Provide computer models guaranteeing light levels on the field for 5000 hours. If a constant light level cannot be provided, a manufacturer a Recoverable Light Loss Factor of .7 shall be applied to the initial light level design to achieve the maintained light levels of 80 footcandles for the volleyball courts. A scan for both initial and maintained light levels shall be submitted.

B. Revised Electrical Distribution: Provide revised electrical distribution plans shall include changes to service entrance, panel, conduit, and wire sizing, as required.

PART 2 - PRODUCTS

2.1 SPORTS LIGHTING SYSTEM

A. Provide a complete Sports Lighting system meeting the following criteria:

1. Light Poles

a. Effective projected area (sq ft) rating of each pole greater than the total effective projected area of luminaries, brackets and other equipment mounted on pole. Poles shall be designed to withstand a minimum 90 MPH winds with 1.3 gust factors based on the International building code**.** Pole stress allowances shall be based on AASHTO design criteria.

b. Poles shall be high strength low alloy tapered tubular steel meeting ASTM-A595 standards. Poles and crossarms shall have hot-dipped galvanized coatings.

c. Minimum 4 x 6 inch handhole or larger as required to work with conductors specified. Handhole cover attached to pole with vandal resistant fasteners. Grounding lug at base of pole.

d. Provide for mounting and wiring of Public Address Speakers for poles P1 and P2 at a height of 25’ AFG. Public Address Speakers, as specified on project drawings, to be provided by the Contractor.

2. Foundations

a. The lighting system shall be designed so that the foundation will withstand winds of 90 mph based upon the International Building Code, utilizing the 50 year mean recurrent Isotach wind map data. Foundation design is to be provided by the light pole manufacturer with certification by a Professional Engineer, licensed in the State of the Installation. Direct burial steel poles will not be accepted

b. Soil Conditions: The design criteria for these specifications are based on soil design parameters as outlined in the geotechnical report.

c. Submit shop drawings to Project Engineer for review and approval prior to commencement of installation.

3. Lighting Performance

a. Performance Requirements: Playing surfaces shall be lit to an average constant light level and uniformity as specified in the chart below. Light levels shall be held constant for 25 years. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Measured average illumination level shall be in accordance with IESNA RP-6, and measured at the first 100 hours of operation.

Area of Lighting	Average Constant Light Levels	Grid Points	Grid Spacing
Volleyball high mode	80 fc	132	10’ x 10’

4. Uniformities

   a. The uniformity of the playing field shall be measured by comparing the maximum reading to the minimum reading. The ratio shall not exceed 1:1.5 for the courts at 80 fc.

5. Weight Reduction of the Crossarms

   a. The ballasts shall be mounted in an electrical components enclosure on the pole 10’ above grade and separate from the fixture mounting.

6. Structural Strength

   a. The crossarm, reflector and its attachment to the pole shall be provided by the manufacturer such that it will structurally withstand winds of 150 m.p.h. without misalignment of any luminaire and without any damage to the crossarms or its components. Luminaries shall be attached to the crossarm by a minimum of two bolts, which shall be stainless steel and coated with a clear thermoset polymer coating. There shall be no penetrations of the top or sides of the crossarm.

7. Mounting Heights

   a. In order to obtain proper aiming angles for reduced glare and playability, the pole mounting heights from the playing field surface shall be as indicated on light fixture schedule.

8. Aiming Recapturing Device

   a. Light fixtures shall have a positive latching device for each luminaire on the assembly. The device shall provide for automatic repositioning of the aiming after relamping. In addition, provide a stainless steel bolt and nut to secure the alignment.

9. Enclosed Wiring
   a. All wiring shall be contained inside the crossarms, enclosures and pole.

10. Operating Temperatures of Electrical Components Enclosure

    a. The ambient air temperature of the electrical components enclosure shall not exceed 90ºC.

11. Knuckle and Cone Assembly

    a. The knuckle and cone assembly for each fixture shall be of die cast aluminum construction and anodized to mil-A-8625E specifications and coated with polyurethane.

12. Fasteners, Bolts and Hinges

    a. All latches, hinges and non-current carrying fasteners shall be stainless steel and shall further be coated with a clear thermoset polymer coating.

13. Electrical Components Enclosure

    a. The electrical components enclosure shall be a NEMA 3R rated gasketed enclosure to house the ballasts, capacitors, fuses, thermal magnetic circuit breakers, distribution lugs, etc.

14. Factory Assembled Wire Harness

    a. Provide internal (pole) wire harness assembled in the factory as a part of the lighting equipment to insure quality and consistency. Wire harness will be covered under the manufacturer's equipment warranty. Minimum size #14 AWG.

    b. The wire harness shall be supported at the top of the pole by a stainless steel wire mesh grip matched to the size of the harness. There shall be not more than 13 conductors supported by a single wire mesh grip. If the harness is longer the 70 ft., an interim wire mesh grip support shall be located approximately half way down the pole.

15. Lightning Protection

    a. All structures shall be equipped with lightning protection meeting standards established by NFPA 780.

16. Disconnecting Device

    a. Each pole shall include, in an electrical enclosure, UL listed thermal magnetic circuit breaker or safety switches such that electrical power to all equipment on the pole served by the feeder circuit shall be disengaged by the operation of one switch. The breaker shall be located in a compartment separated from any capacitors or ballasts. Provide distribution terminal blocks which shall be factory wired from the breaker to the blocks. These blocks shall provide for termination of all ballast connection wiring. Provide fuse blocks and fuses for each ungrounded conductor feeding each ballast.

17. Lighting Controls & Contactor Cabinets

    a. 480 volt AC, with ampere rating and number of poles as indicated on Drawings. Normally open, electrically held, 120 volt coil, with "On-Off Auto" selector switch. Components installed in NEMA enclosure with hinged, lockable cover and engraved nameplate "SPORTS LIGHTING CONTROL PANEL".

    b. 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 manufacturer shall notify the owner of outages within 24 hours, or the next business day. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).

    c. 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.

d. 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.

e. 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.

f. Management Tools: Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

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

18. Metal Halide Luminaries

a. Sports Lighting Fixtures: Metal halide lamp, 1500W lamp based on a maximum of 155,000 Lumens, with assembly complete with reflector, glass lens, factory wiring through cross arms. Reflector assemblies constructed of Alzak finish, high purity, reflective aluminum. UL listing for wet locations.

b. Constant Wattage Auto Regulating metal halide lamp ballast which maintains lamp wattage within $\pm$ 10 percent upon $\pm$ 10 percent variation in line voltage and with starting current lower than operating current. UL rated and listed for 40 degrees C ambient temperature, start and operate to -20 degrees F. Suitable for operation on 60 Hz circuit, voltage rating to suit branch circuit voltage.

19. Spill & Glare Control

a. Provide external aluminum visor to minimize glare and spill light.

b. Maximum horizontal foot-candles at a distance of 200’ feet from the perimeter of the field shall not exceed 0.11 fc.

20. Auxiliary Mounting Provisions: The pole manufacturer shall coordinate and provide an integral means for mounting the Sound system speakers. Coordinate with Owner on concurrent product.

B. Manufacturers

1. Musco or approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Before performing any Work, lay out the proposed routing for the conduits, location of light poles, etc. and have it approved by the Owner’s Representative and Company Field Adviser.

3.2 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packaging and Transportation:

1. Require supplier to package finished products in boxes or crates for protection during shipment, handling and storage. Protect sensitive products against exposure to elements and moisture.

2. Protect sensitive equipment and finishes against impact, abrasion and other damage.

3. Remove and replace with new, products that are damaged prior to final acceptance by Owner.

B. Delivery and Receiving:

1. Arrange delivery of products in accordance with construction schedule. Allow time for inspection prior to installation.

2. Coordinate deliveries to avoid conflict with work and conditions at site, limitations on storage space and availability of personnel and handling equipment.

3. Deliver products in undamaged, dry conditions, in original unopened containers or packaging with identifying labels intact and legible.

4. Clearly mark partial deliveries of component parts of equipment to identify equipment and contents to permit easy accumulation of parts and to facilitate assembly.

5. Immediately on deliver, inspect shipment to assure:

a. Product complies with requirements of Contract Documents and reviewed submittals.

b. Quantities are correct.

c. Accessories and installation hardware are correct.

d. Containers and packages are intact and labeled

e. Products are protected and undamaged.

C. Product Handling:

1. Provide equipment and personnel to handle products by methods to prevent soiling and damage.

2. Provide additional protection during handling to prevent marring and otherwise damaging products, packaging and surrounding surfaces.

3. Handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designated lift points.

D. Storage:

1. Store products, immediately on delivery, in accordance with manufacturer's instructions, with seals and labels intact. Protect until installed.

2. Arrange storage to provide access for maintenance of stored items and for inspection.

3. Exterior storage:

a. Provide substantial platforms, blocking or skids to support fabricated products above ground; slope to provide drainage.

b. Protect products form soiling and staining.

c. For products subject to discoloration or deterioration form exposure to elements, cover with impervious sheet material.

d. Provide ventilation to avoid condensation.

e. Store loose granular materials on clean, solid surfaces such as rigid sheet materials or pavement. Prevent mixing with foreign matter.

f. Prevent mixing of refuse or chemically injurious materials or liquids with building materials.

4. Periodically inspect stored products to verify proper storage.

3.3 INSTALLATION

A. Light Poles

1. Install each light pole in accordance with the manufacturer’s recommendations, and the approved shop drawings.

2. Install light pole vertical. Prepare a level surface on/in compacted earth, undisturbed earth or concrete footing. Set bases on the prepared surface. Have all bases checked and approved by the Director's Representative for proper level and elevation prior to making any conduit connections.

B. Conduit System

1. Use rigid galvanized steel conduit and rigid nonmetallic conduit as specified or indicated. Where conduits enter concrete light pole bases, provide rigid galvanized steel conduit.

2. All electrical service from the panel box to the poles is to be located below grade.

3. Cleaning Conduits: Take precautions to prevent foreign matter from entering conduits during installation. After installation, clean conduits with tools designed for the purpose.

C. Grounding

1. Provide a equipment grounding conductor installed within each conduit. Connect equipment grounding conductor to ballast enclosure and ground lug on pole.

2. Provide a ground rod at each pole. Connect grounding electrode conductor to ground lug on pole.

3.4 CLEANUP

A. Remove excess materials and leave project site in a clean, neat, undamaged condition.

3.5 ACCEPTANCE

A. Basis of acceptance for sports field lighting shall be the complete installation of all items specified herein in accordance with the plans, specifications, approved shop drawings, and to the satisfaction of the Owner's Representative and Company Field Advisor.

END OF SECTION