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February 10, 2014

## ADDENDUM NUMBER 2

**H27-6096-MJ**

**Outdoor Football Practice Felds Construction  
University of South Carolina**

1. This addendum is to address questions brought up since addendum 1 was posted. This addendum also details another alternate associated with installation of the filming towers. This is the final addendum
2. Enclosed is the updated SE-330 Bid Form describing alternate 2. Also the date the fields have to be ready to accept sod has been changed from July 1, 2014 to July 21, 2014.
3. Enclosed is updated specification section 02975.
4. Enclosed is updated specification section 265668.
5. Enclosed are updated plans SR101, SR601, SR602, A1.1, A2.1
6. The **BID DATE HAS BEEN CHANGED** to 2:00PM on Tuesday 2/18/2014. Same location.

A) The following is the description of specification and plan changes:

1. Changes to Specifications:

- a. Section 02830 - Chain Link Fence and Gates
  - 2.1 Steel Frame Work - Revise Line Post 2" to read "*Line Post 2 1/2" (actual outside diameter 2.875)*".
- b. Section 02975 - Specification section reissued.
- c. Section 265668 - Specification section reissued.
- d. Section 310519.16 - 1.4.A.2.a - Reduce the square footage requirement to 500,000 sq. ft. from 5 million. Add statement "Installer of the geo-membrane material must follow all manufacturers guidelines with regard to appropriate installation of the selected material."
- e. Section 334100-2.1.A.1 and 2 - differs from the plans. Standard Class III B wall pipe with standard mastic joints shall be used.

2. Changes to Drawings:

- a. Sheet SR101 - Reissued to reflect filming tower alternate #2
- b. Sheet SR601 - Reissued to include specification for elastic Curb
- c. Sheet SR602 - Reissued to reflect the wind screen provided and installed by the Owner.
- d. Sheet A 1.1 - Reissued to show filming tower base bid and alternate #2 scope of work.

- e. Sheet A2.1 - Reissued to show filming tower base bid and alternate #2 scope of work.

B) Contractor questions and answers:

3. "Specification section 02975 2.1 references two options for Windscreen, A. Open Mesh and B. Opaque. Which option is to be included in Alt.1?"

*Answer: The owner will supply and install the windscreen. Specification Section 02975 has been reissued with Addendum #2.*

4. "Are the Football Goal Post supplied by the owner as identified on drawing SR101?"

*Answer: The owner will furnish the goal post. The contractor will be responsible for the footing, access box and goal post installation. The goal post footing shown on the drawings is the basis of bid design.*

5. "Section 8/SR601 shows an elastic curb around the sand pit. Where is this product specified? I do not see it in the concrete curbing section."

*Answer: See addendum #2 – Sheet SR601*

6. "The plans say field goal post by owner, installed by contractor. Specs section 02975 read that contractor furnishes and installs. Which is correct?"

*Answer: The owner will furnish the goal post. The contractor will be responsible for the footing, access box and goal post installation. The goal post footing shown on the drawings is the basis of bid design.*

7. "Where is detail 13/SR601 utilized?"

*Answer: The notes included with detail 13/SR601 state where the geomembrane connection is required.*

8. "Does the roof come with the observation tower supplier? The specs make no reference to roofing in section 13 36 13-13."

*Answer: The filming towers are to be supplied as a complete package.*

9. "Section 02975 reference field corner markers in the submittal section (1.3.C.2), nothing in the material section and then again in the execution section (3.1.C.1). Are they required, if so, please provide a material specification."

*Answer: Field corner markers are not required on the project. Specification Section 02975 has been reissued with Addendum #2*

10. "Do you have any idea and certified installers of the Methane Gas Management System?"

*Answer: The specifications do not require a specific certification for installing the methane gas management system.*

11. "Section 02910, 2.1,A,6 states that existing natural or fill subgrade soils on-site do not meet requirements for suitable soil or structural fill. Please verify that all excavated soils are to be removed and disposed of offsite and not used as fill

material and that offsite borrow will be required for fill material including backfill of trenches."

*Answer: The design is based upon using existing soils on site to fill the field area and as trench backfill except where specified otherwise. The assumption is that soils on site are suitable for fill and as structural fill below the subgrade defined as the earthen zone just below the 6" sand or gravel layer of the Vapor Management System. If unsatisfactory soils are encountered as defined in section 312000.2.1, then engineered fill will have to be imported and placed and the contractor will be compensated for this additional fill material and placement. Therefore Section 02910.2.1.A.6 is hereby removed and does not apply to this project.*

12. "Alternate 1 is for perimeter fence around the field. Plans do not indicate fence along side of fields at future indoor facility. Please verify that this is correct."

*Answer: Clarification – there is no fencing required along the south side of the fields where the future indoor football facility will be located.*

13. "Please advise depth of topsoil required at grassed areas."

*Answer: Clarification - Per detail 1 on sheet SR601 of 7, starting from the VMS geomembrane, there is 6" of drainage gravel as defined in the specifications and 10" of amended rootzone mix as defined in the specifications. That is what is to be provided by this contractor. Detail 1 SR601 has been revised to clarify the section above the subgrade which includes the VMS and Natural Grass Field. Refer to detail 1 on sheet 2 of 3 of the VMS details for clarification as well.*

14. "For the gas collection trench will all 500' of pipe have to be in before it is inspected or can inspections be completed in sections? This question arises from fact that it will be very expensive to shore 500' of trench at one time."

*Answer: Clarification – inspections can be performed in sections.*

15. "Another question just came from an electrical sub ...The electrical panels are shown to be in the future indoor practice facility. How does this work with electrical requirements for this project? (see sheet E103)."

*Answer: Clarification – Contractors shall assume that the electrical room in the indoor facility will be constructed in time to receive the electrical panels for this project.*

END of ADDENDUM NUMBER 2 – See enclosures and plans as outlined above

**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:** OUTDOOR FOOTBALL PRACTICE FIELDS CONSTRUCTION

**PROJECT NUMBER:** H27-6096-MJ

**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):* Demolish utilities, drainage and irrigation systems. Grade field area. Construct new sand based outdoor football practice fields. Construct foundations and stub utilities to the three filming towers. Construct field irrigation system. Construct Vapor Management System. Install field drainage and natural turf system.

\_\_\_\_\_, 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): Furnish and install perimeter fence and gates around field. Furnish and install ball net system.

☐ 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): Supply and install film towers 1, 2 and 3 referenced on sheets A1.1 and A2.1. Foundations for towers are included in the Base Bid.

☐ 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): \_\_\_\_\_

☐ ADD TO or ☐ DEDUCT FROM BASE BID: \_\_\_\_\_

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

**§ 6.3 UNIT PRICE WORK**

Bidder offers for the Agency's consideration and use the following **UNIT PRICES**. The **UNIT PRICES** offered by Bidder indicate the amount to be added to or deducted from the Contract Sum for each item-unit combination. **UNIT PRICES** include all costs to the Agency, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Agency reserves the right to include or not to include any of the following **UNIT PRICES** in the Contract and to negotiate the **UNIT PRICES** with Bidder.

<u>NO.</u>	<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>ADD</u>	<u>DEDUCT</u>
1.	500 psi Flowable Fill	Cubic Yard		
2.	Engineered Fill	Cubic Yard		
3.	Film tower 1 (sheet A1.1)	Each		
4.	Film tower 2 and 3 (sheet A2.1)	Each		
5.				
6.				

**SE-330 – LUMP SUM BID****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:

<b>SUBCONTRACTOR SPECIALTY By License Classification and/or Subclassification (Completed by Owner)</b>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S NAME (Must be completed by Bidder) BASE BID</b>	<b>SUBCONTRACTOR'S PRIME CONTRACTOR'S SC LICENSE NUMBER</b>
Electrical (EL)		
<b>ALTERNATE 1</b>		
No Subcontractor Listing Required		
<b>ALTERNATE 2</b>		
No Subcontractor Listing Required		
<b>ALTERNATE 3</b>		

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.

**SE-330 – LUMP SUM BID  
BID FORM****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.

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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 180\* 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 \$ 250.00\* 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:** \_\_\_\_\_

\* Standard liquidated damages are as defined in section 9 of this bid form. However, there is an additional liquidated damages clause due to the sensitive nature of installing the sod on the playing fields with enough grow-in time to meet the requirements of the owner. Owner anticipates installing sod no later than Monday July 21, 2014. Liquidated damages in the amount of \$500.00 per calendar day will be assessed for any delay to Owner's ability to install sod on July 21, 2014.

**SE-330 – LUMP SUM BID  
BID FORM**

**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:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

**BY:** \_\_\_\_\_ **DATE:** \_\_\_\_\_  
(Signature)

**TITLE:** \_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

## SECTION 02975 OUTDOOR SPORTS EQUIPMENT

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED

- A. Provide equipment and materials, and do work necessary to construct or provide the following, as indicated on the Drawings and as specified. Work shall include but shall not be limited to:
  - 1. Football Equipment
    - a. Goal Post System
  - 2. Ball Netting – Alternate #1
    - a. Ball Netting

#### 1.2 RELATED WORK

- A. 02910 – Natural Grass Playing Field System
- B. 02830 – Chain Link Fences and Gates (Inline Ball Net System)

#### 1.3 SUBMITTALS

- A. Shop Drawings:
  - 1. Show application to project
- B. Contractor to provide show drawings for ball net and goalpost footings.
- C. Product Data: Submit manufacturer's product data and samples as noted for the following:
  - 1. Ball Net Fabric and appurtenances
    - a. 3 samples of netting one square ft each

#### 1.4 QUALITY ASSURANCE

- A. Installer of outdoor sports equipment for the playing field shall be the same Contractor. All installed equipment shall be under the observation of the Owner's groundskeeper.
- B. Inline Ball Net System Installer – Contractor to restretch/tighten netting if necessary 60 days after substantial completion.

#### 1.5 WARRANTY

- A. General Warranty: Special warranties specified in this Section shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.
- B. Special Warranties:
  - 1. Equipment: Written warranties, executed by the manufacturer of each piece of equipment specified agreeing to repair or replace equipment or components that fail in materials or workmanship with specified warranty period.
  - 2. Netting: Installed netting shall prevent passage of kicked, struck or thrown balls or implements per designed sport use. If netting fails to do so, installer shall adjust netting to appropriate tension.
    - a. Warranty Period: Per the manufacturer.

## PART 2 - PRODUCTS

### 2.1 BALL NET SYSTEM

#### A. Inline Fabricated Ball Net System

##### 1. General

###### a. Framing System

- 1) Refer to Specification Section 02813 - Chain Link Fence and Gates and Contract Drawings for lower fencing, upright posts and footings
- 2) Contractor to submit sealed engineering drawings verifying footing and upright post diameters / sizes.

###### b. Height

- 1) Total height of netting system as shown on drawings complete with pulleys, pull strings, connectors, cleats, etc per recommendations of the manufacturer.

###### c. Netting System

###### 1) Provide

- a) Four inch square mesh
- b) Twisted, knotted nylon netting.
- c) Minimum Strength – 350 lbs
- d) Edge treatment: Hemmed with a 5/16 inch three strand twisted polyethylene rope spliced to the edge.
- e) Weather treatment – UV and weather Treated black netting and cord
- f) Cables, pulleys, accessories, etc., per drawing and manufacturers recommendations

- 2) Netting shall be sized so that when installed it shall be fastened tight, with no slack at top of chain link fence rail. Contractor shall retighten after 60 days.

##### 2. Netting and hardware Suppliers

- a. Keeper Goals, (800) 594-5126, [keepergoals.com](http://keepergoals.com)
- b. Burbank Sports Nets, (866) 349-0057
- c. West Coast Netting, Inc., [www.westcoastnetting.com](http://www.westcoastnetting.com) (888) 631-6387
- d. US Netting ([www.usnetting.com](http://www.usnetting.com))
- e. Carron Net, (800) 558-7768, [www.carronnet.com](http://www.carronnet.com)
- f. Approved equal

### 2.2 FOOTBALL EQUIPMENT

#### A. Football Goal Post System – For reference only. Owner will furnish the goal post.

##### 1. Goal Posts and Appurtenances for the specific sport level by the following or approved equal:

###### a. Upright Height

- 1) 30 Feet (40 ft from playing surface to top of upright)

###### b. Crossbar Width

- 1) 18'- 6"

###### c. Gooseneck Depth

- 1) 6 feet

###### d. Material

- 1) Aluminum

##### 2. Products and Suppliers

- a. Sportsfield Specialties, Inc ([www.sportsfieldspecialties.com](http://www.sportsfieldspecialties.com))

- 1) Goal System, Model No. GP 4203 PL
- 2) Foundation Box and Cover, Model No. GP 4570
- 3) Goal Post Pads, Model No. GP 4590 R Full, 18 oz.
- b. Triman Tele-Goal (800) 822-6886
- c. Gilman Gear
  - 1) LNG23 (18'- 6"w), 6' Offset, Gilman Gear
- d. UCS Sports and Recreation Equipment
  - 1) 6' Offset
  - 2) (800) 526-4856
- e. Or Approved Equal
3. Paint [Verify color with Owner]
  - a. Powder Coated Saturn Yellow
  - b. Powder Coated White

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Install in accordance with manufacturers recommendations and approved shop drawings.
- B. Ball Netting System
  1. Inline Fence Fabricated Ball Net System
    - a. Inline fencing system and uprights to be in place and approved prior to beginning this installation.
    - b. Install netting, pulleys, quick-clip net connects, nets and other appurtenances per manufacturer's recommendations
    - c. Use nylon ties to fasten netting to top of lower fence. Space per recommendation of manufacturer or no less than 18 inches on center.
    - d. Contractor to return after 60 days to retighten netting as required.
- C. Football Equipment
  1. Football Goal Post System
    - a. Install owner furnished goal post per manufacturer's instructions for location, height of crossbar and level.

END OF SECTION 02975

## SECTION 265668 SPORTS LIGHTING SYSTEM

### PART 1 - GENERAL

#### 1.1 WORK INCLUDED

- A. The following specification describes a Musco "Green" Sports Lighting System. 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. Qualite Sports Lighting, Inc. and General Electric. 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. The system shall be a six pole lighting layout designed for the 2 side-by-side fields.
- 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 two side by side fields with a maximum of six light poles. The fields shall be able to be controlled individually and operate under practice function with an initial light level of 105 fc with 75 fc average maintained level at .70 Recoverable Light Loss Factor as recommended by NCAA Best Practices.
- F. Controls shall set to enable three distinct functions at the following light levels – Practice 75 fc, Maintenance 15 fc and Security 2 fc.

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

- A. Design Approval: The owner / engineer will review shop drawings from the manufacturer to ensure compliance to the specification.
- B. 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 determined Recoverable Light Loss Factor of .7 shall be applied to the initial light level design to achieve the maintained light levels of 75 fc. A photometric plan for both initial and maintained light levels shall be submitted.
- C. Revised Electrical Distribution: Provide revised electrical distribution plans shall include changes to service entrance, panel, conduit, and wire sizing, as required.

### 1.4 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.

#### 1.5 INSPECTION AND TESTING PROCEDURES

- A. The lighting manufacturer shall guarantee the specified illumination levels and uniformity ratios for 10 years of operation. The measured illumination levels must be equal to or greater than the specified constant/maintained 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 30ft x 30 ft for football.
- 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.

#### 1.6 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.

## 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. Pole stress allowances and wind loading shall be based on AASHTO 2009 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 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. 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/encased steel poles will not be accepted. Reinforced concrete foundations are required with steel poles connecting at least 6 inches above grade.
- 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 10 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 meet the predicted mean in accordance with IESNA RP-6-01, 2009 revision and measured at the first 100 hours of operation – 10% is not allowed when testing.

Lighting Function	Average Constant/Maintained Light Levels	Full Power Initial Light Level	Grid Points	Grid Spacing
Practice	75 fc	105 fc	72	30' x 30'
Maintenance	15 fc		72	30' X 30'
Security	2 fc		72	30' x 30'

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 2:0-1 for the fields at 75 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 90°C.

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".

18. Metal Halide Luminaries

- a. Practice Function and Maintenance Function 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. Security Function Lighting Fixtures: Metal halide lamp, 1000W lamp with a minimum 12,000 hour lamp life 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.
- c. 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. Emergency or Momentary Power Interruption Illumination (MPI): During a power interruption, following the restoration of power after an interruption, and during each initial start up of the sports lighting system, this project shall have auxiliary lighting fixtures and control in order to provide illumination immediately after the system is energized. Quantity and location shall be as defined below.

- a. The sports lighting manufacturer shall provide controls to turn on the MPI luminaire at every system startup, and turn off the MPI luminaire once the metal halide luminaries are providing substantial illumination.
- b. Electrical Requirements: The contractor shall be responsible for providing adequate 277 volt, AC power to the MPI luminaires per manufacturer's requirements.
- c. The sports lighting manufacturer shall submit a wiring diagram of the MPI system and electrical power requirements.
- d. The sports lighting manufacturer shall submit a project specific lighting contour diagram of the MPI system.

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

B. Manufacturers

1. Musco Light Structure Green – Remote ballast system with glare control (basis of design)
2. Qualite Lighting Green Star - Remote ballast system with glare control.
3. General Electric – Remote Ballast System with ULC optics.
4. Hubbell Sportsliter - Remote Ballast System with SG-V optics

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 from soiling and staining.
  - c. For products subject to discoloration or deterioration from 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.

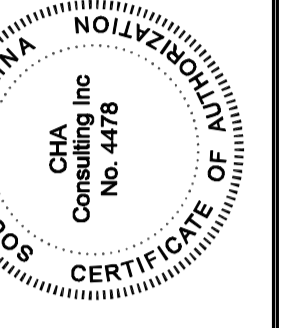
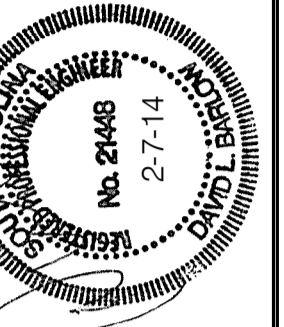
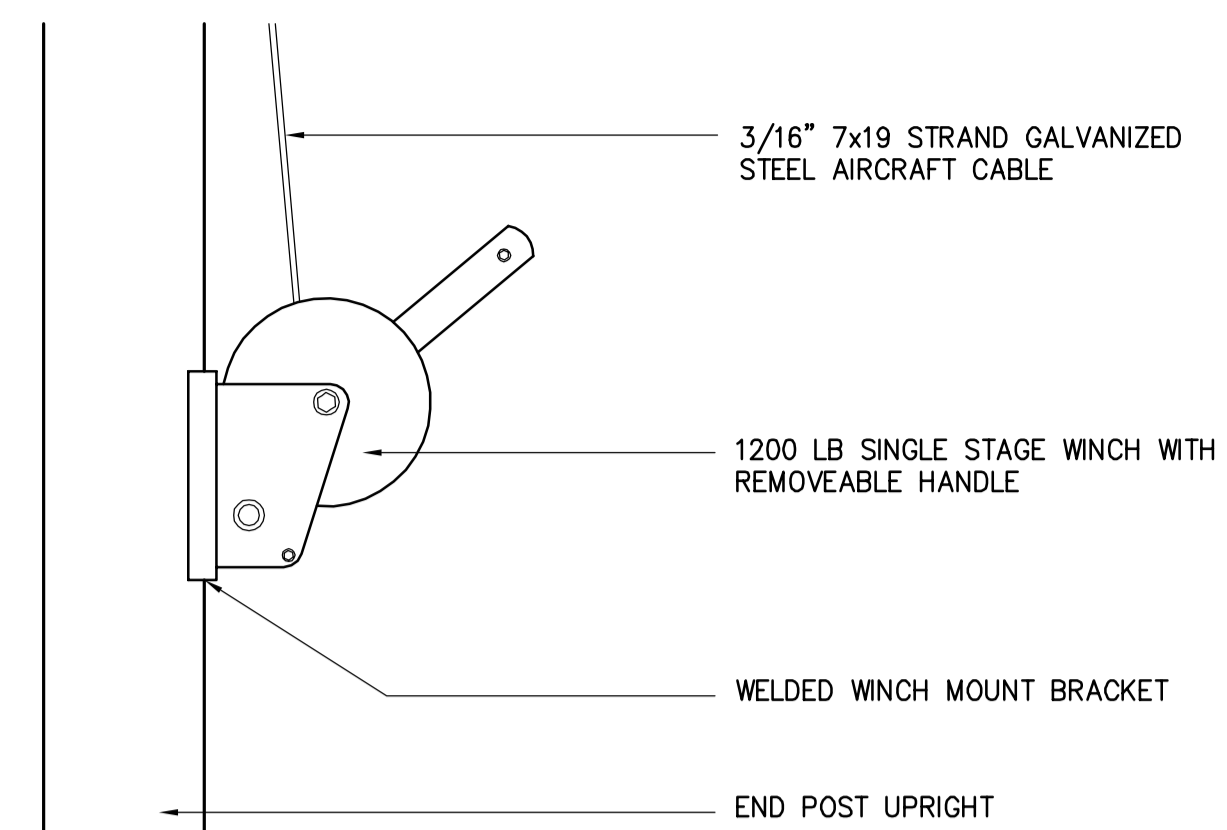
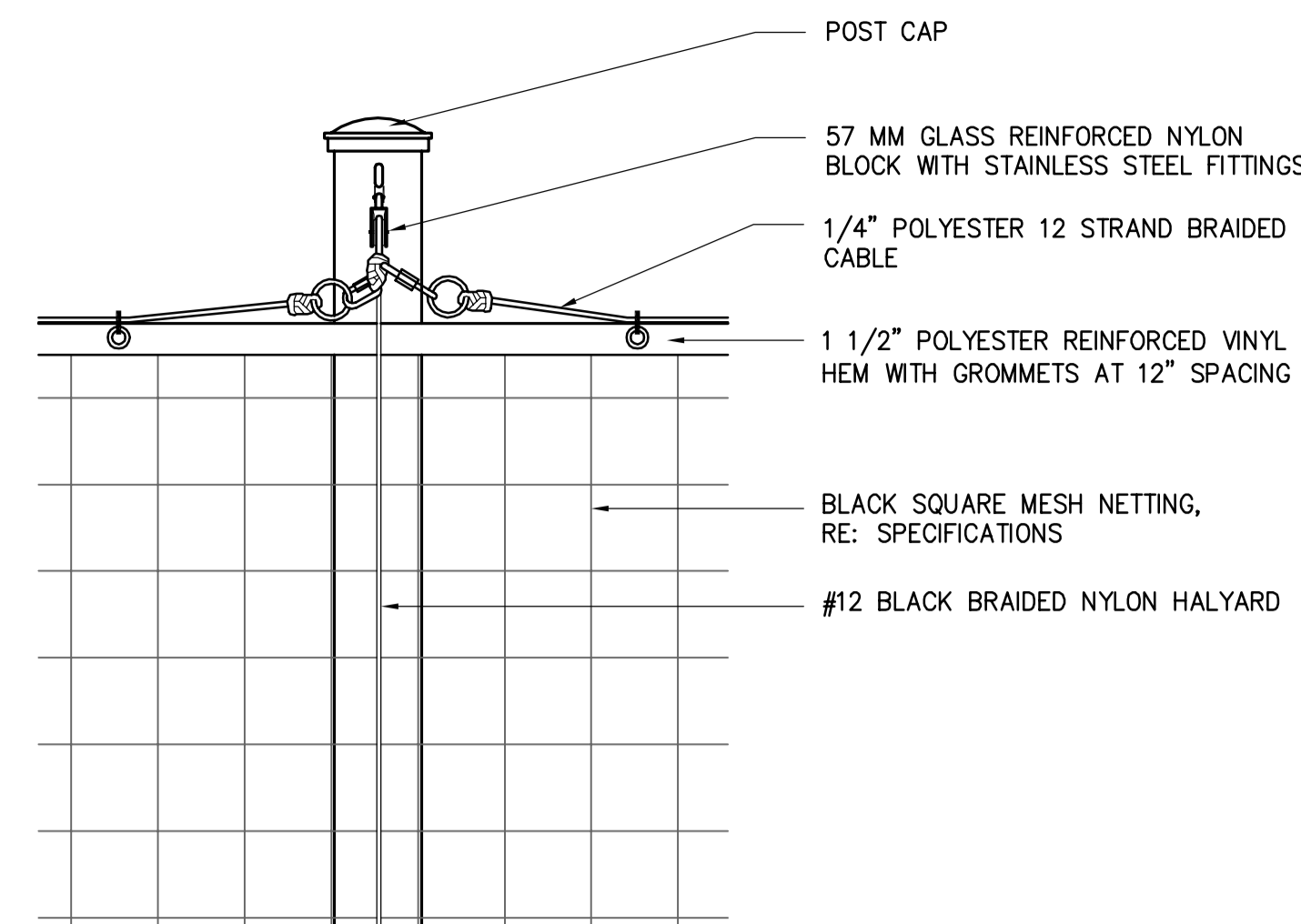
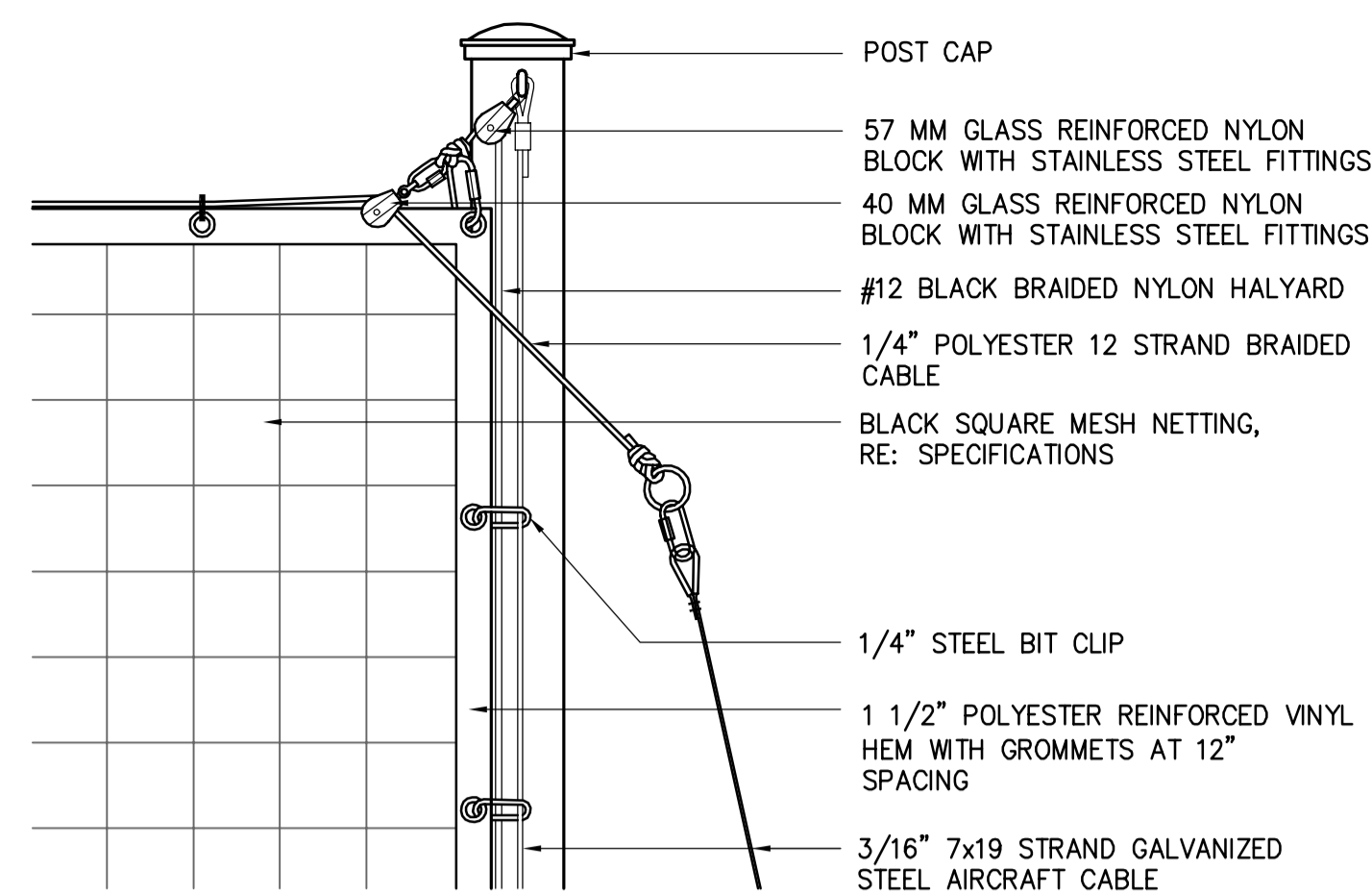
3.5 ACCEPTANCE

- 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.

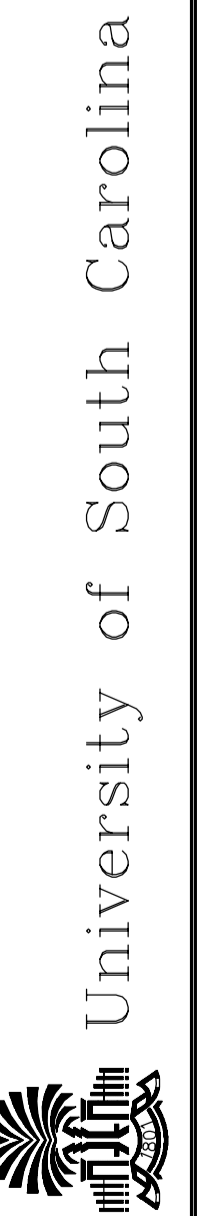
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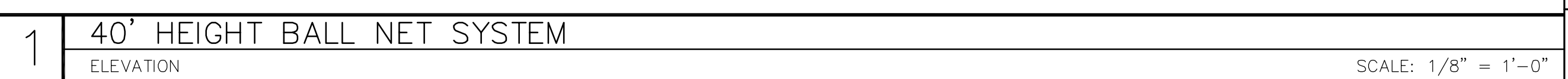
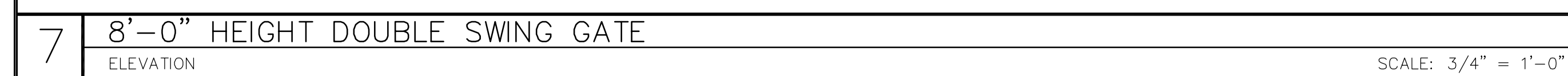
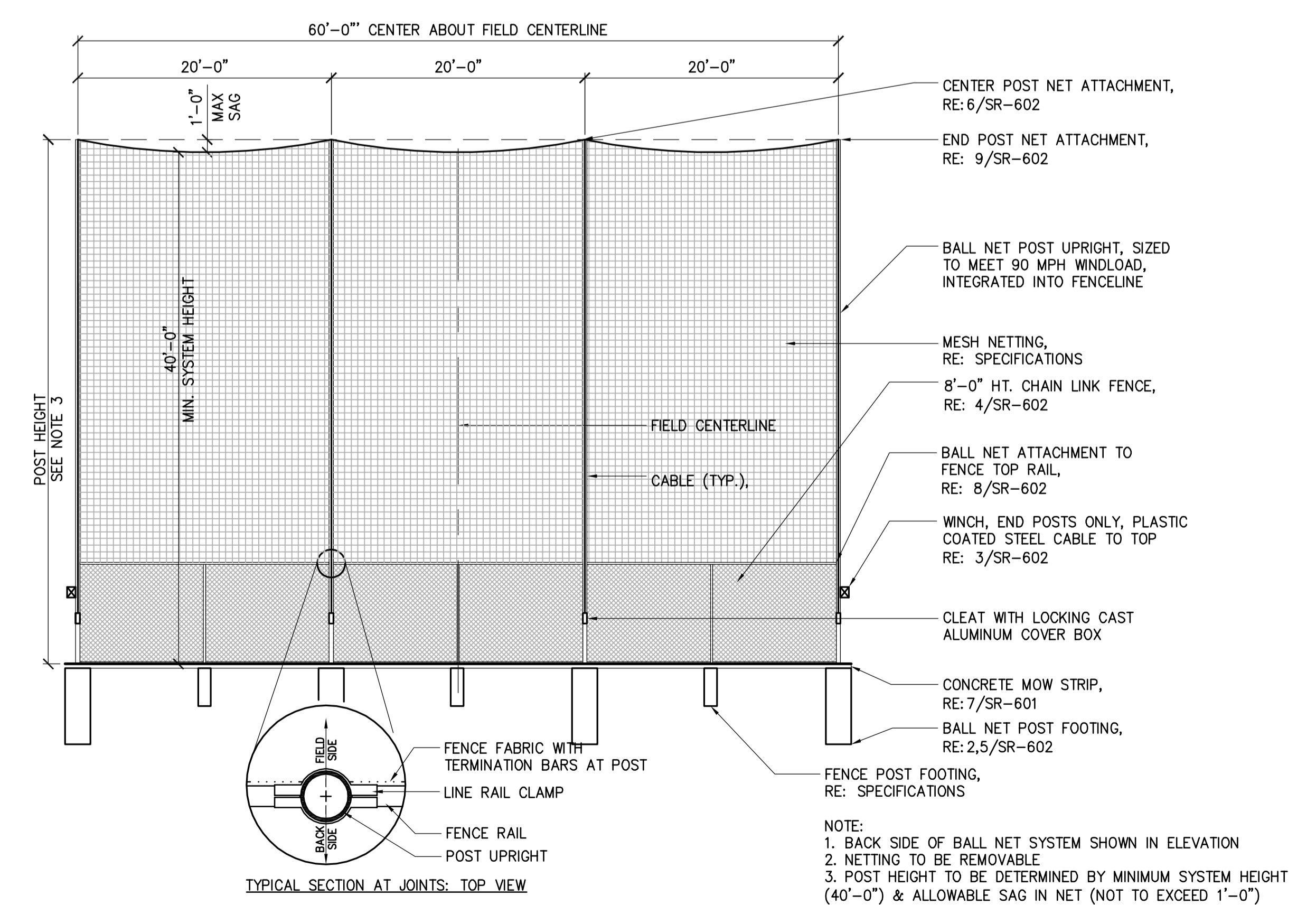
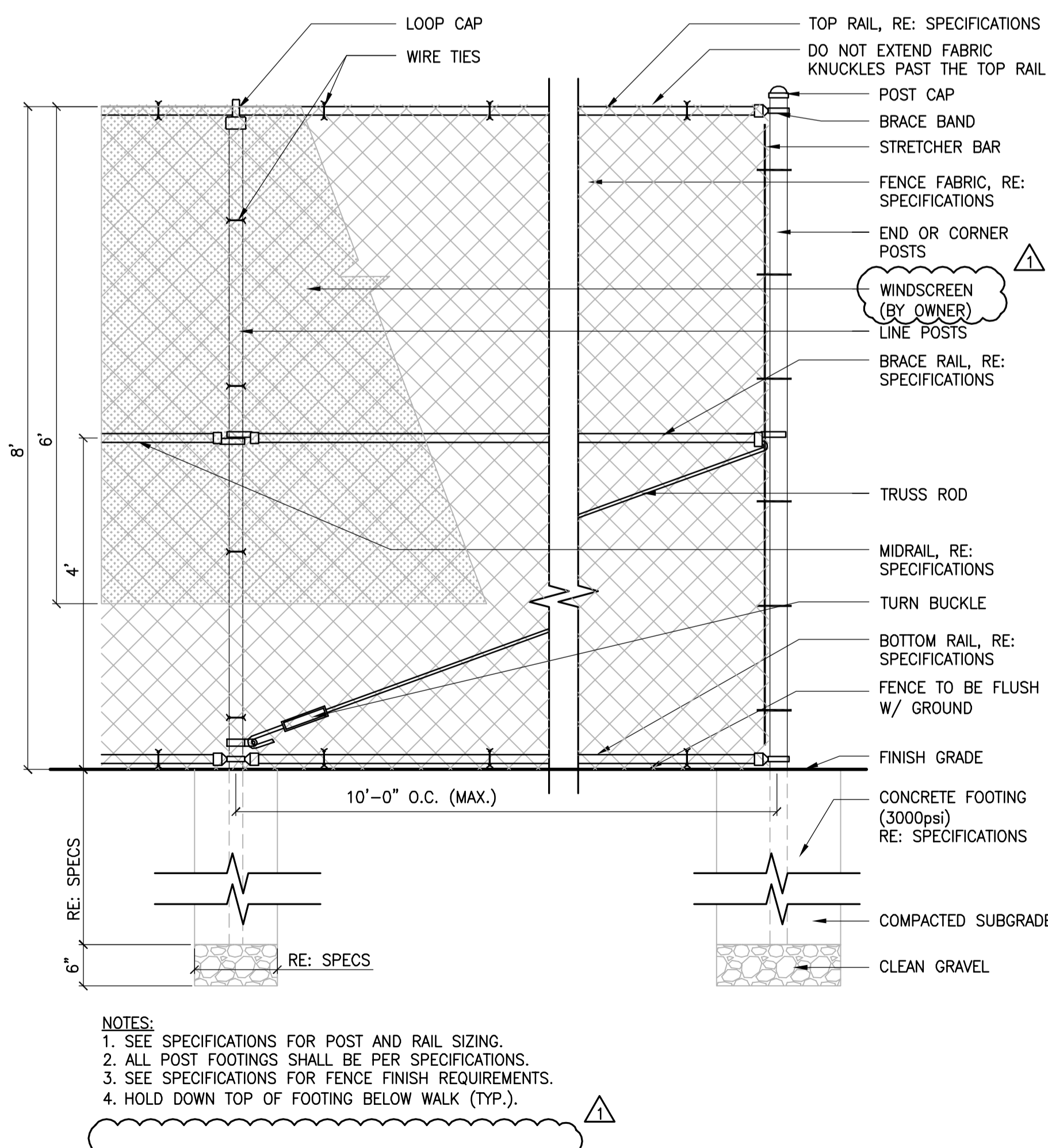
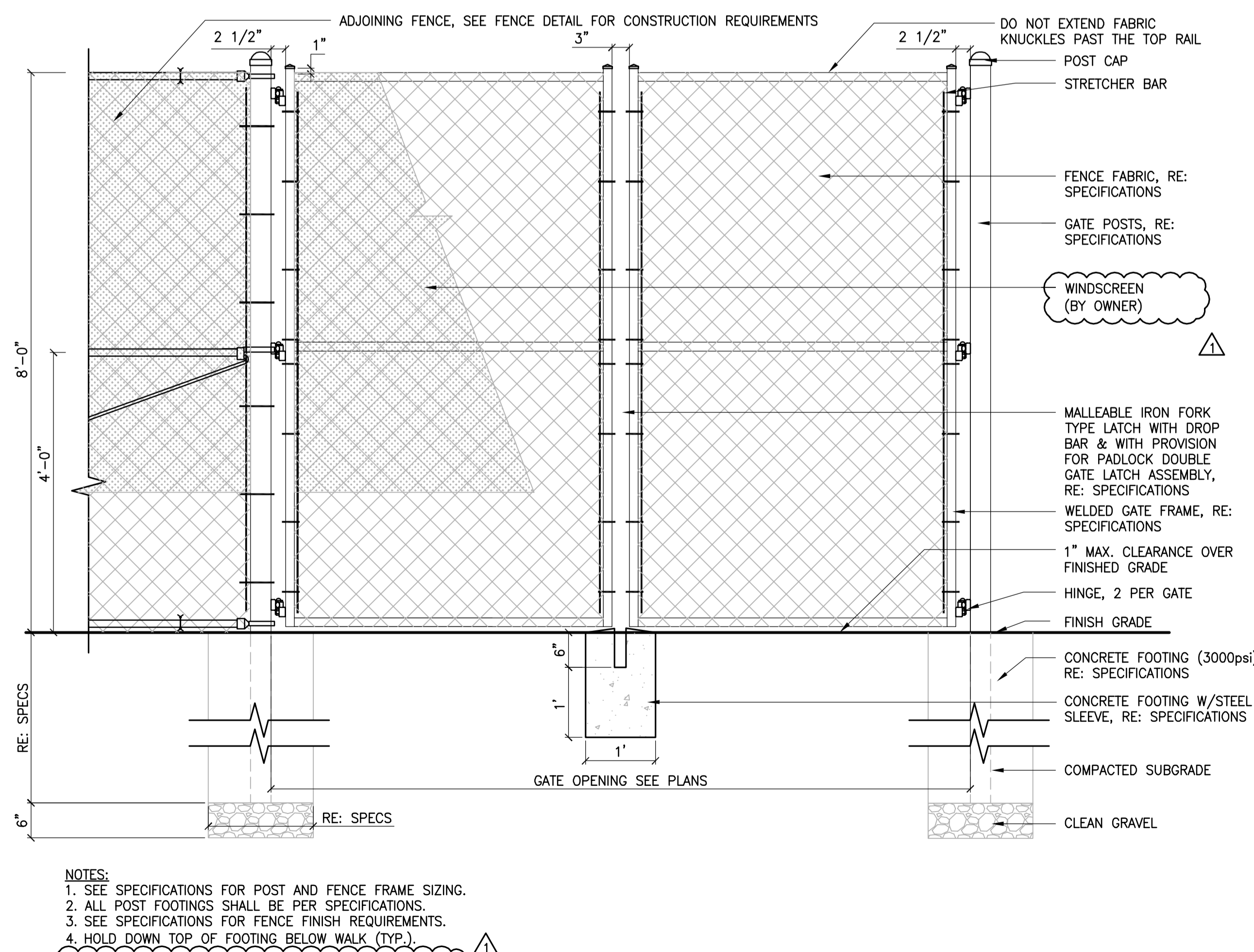
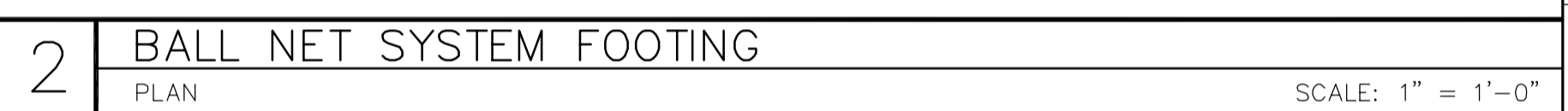
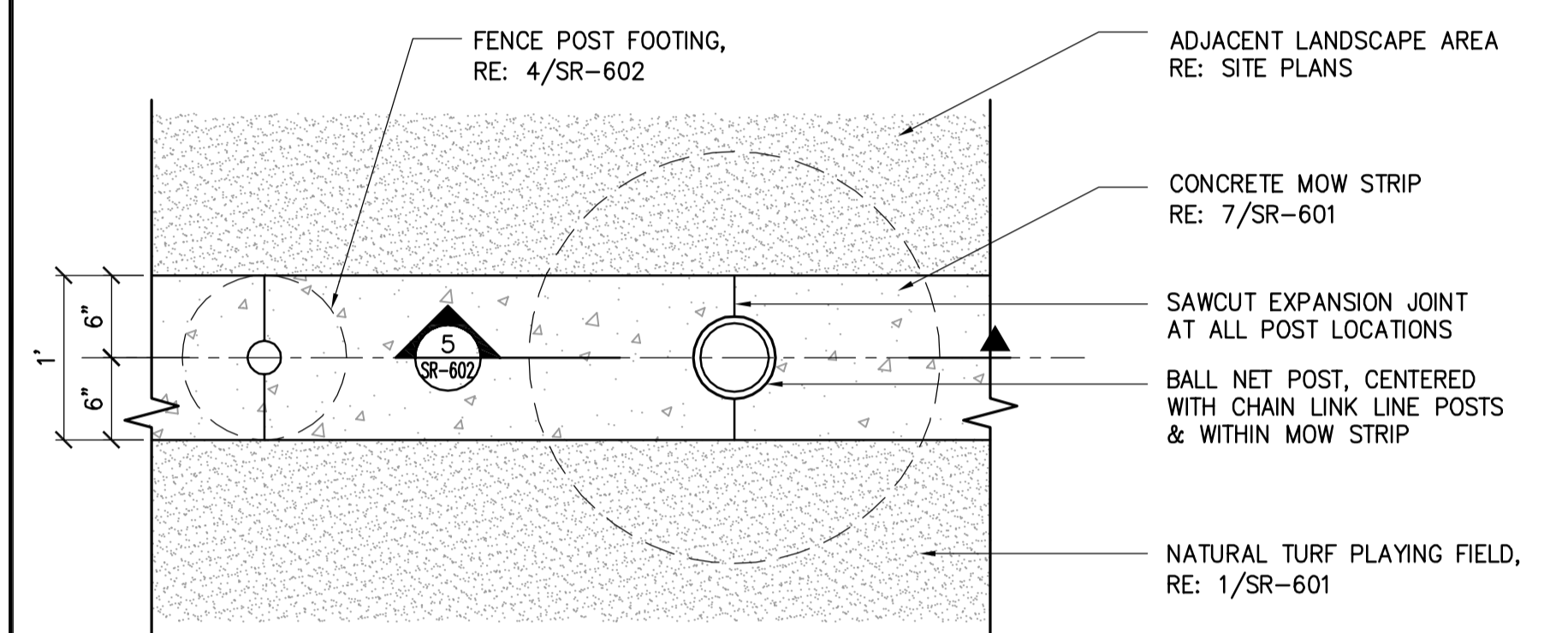
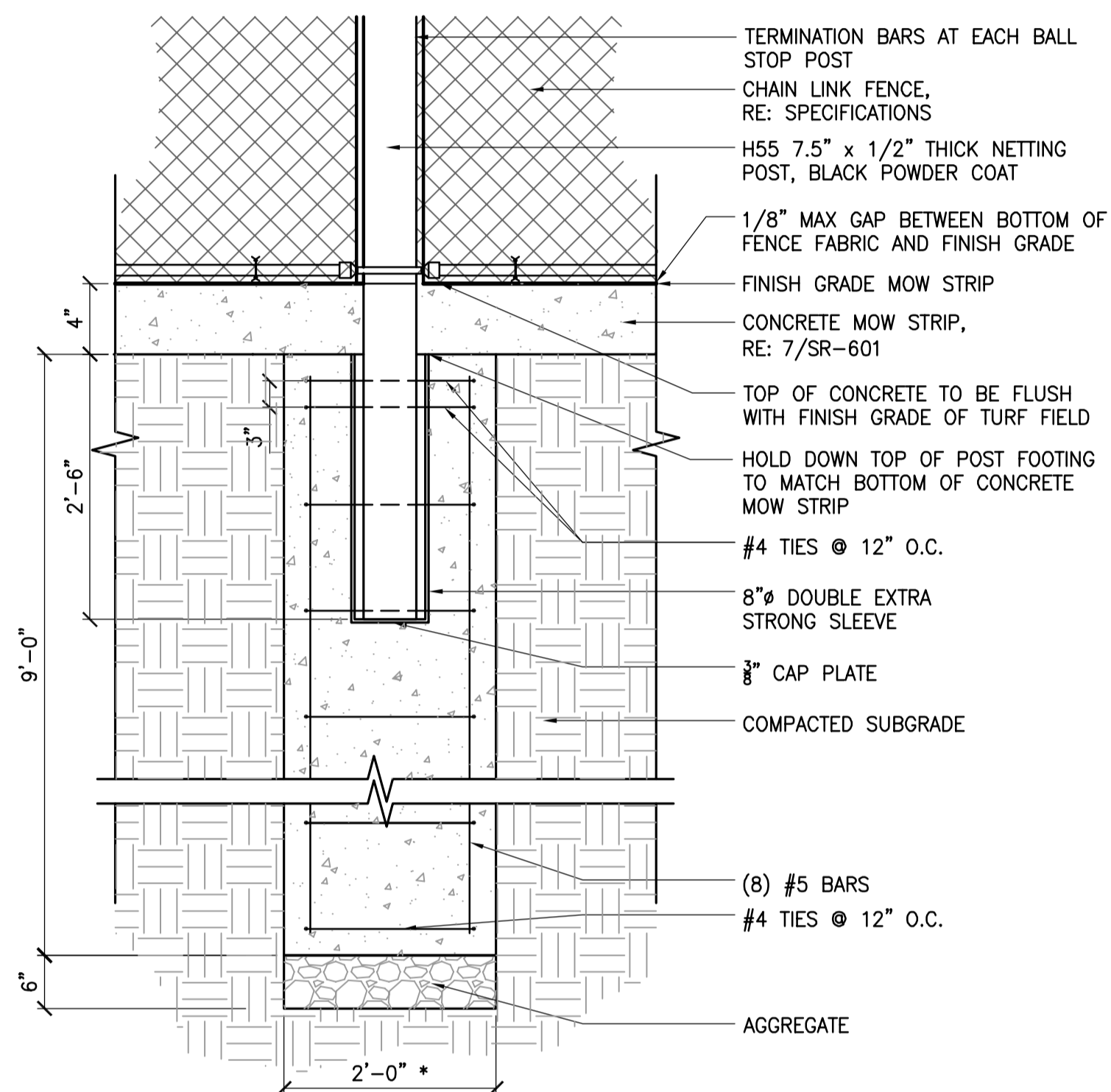
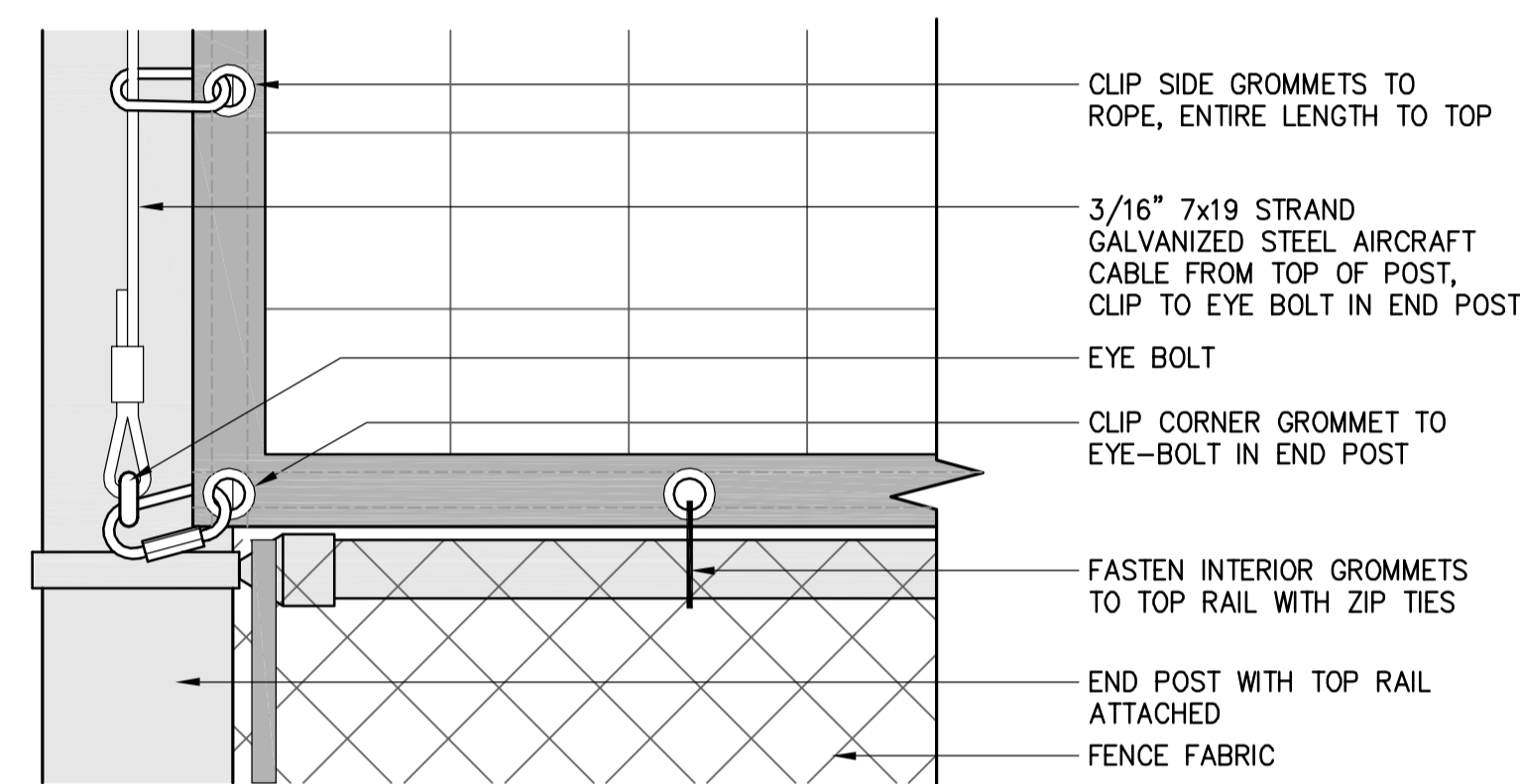
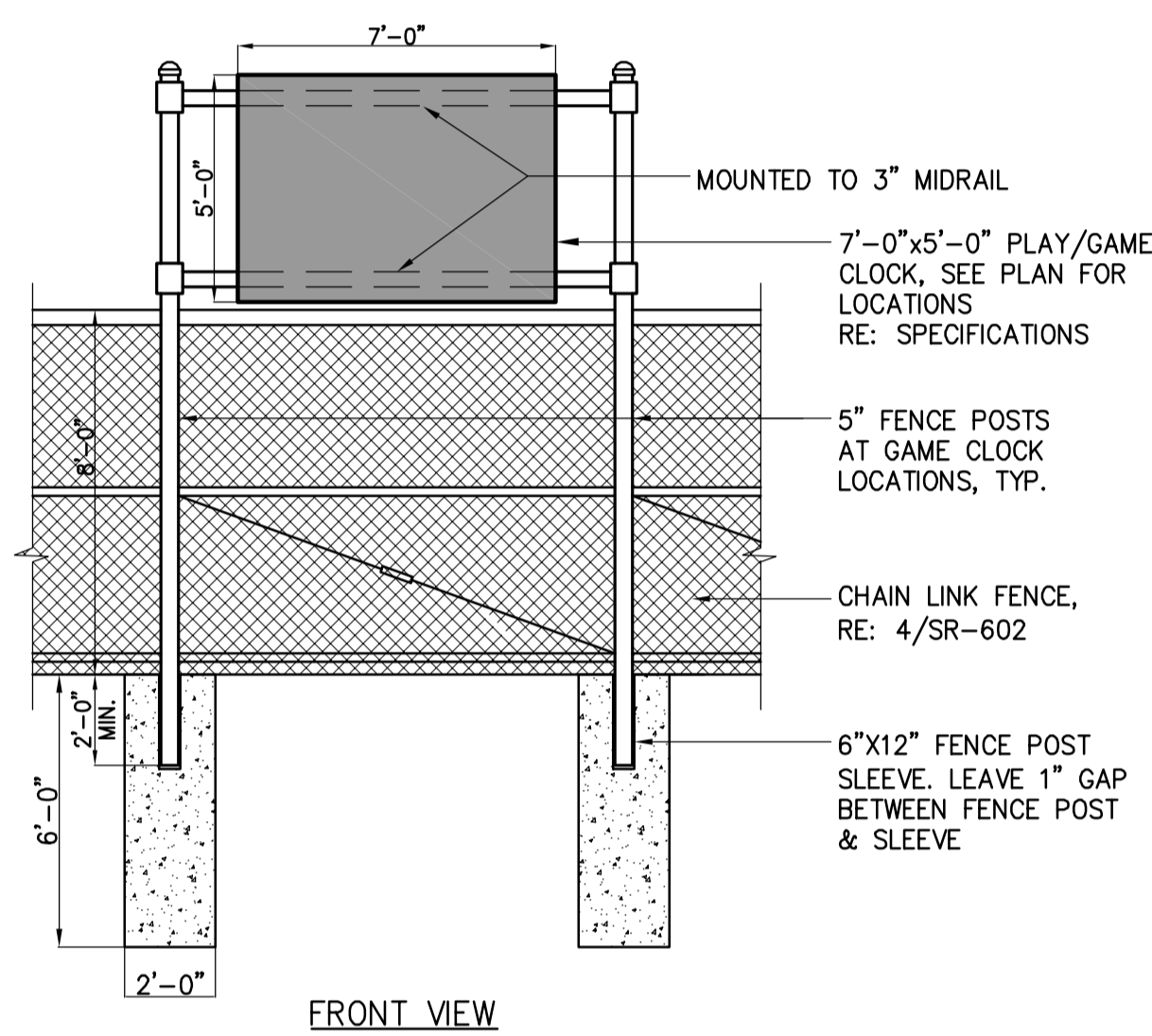
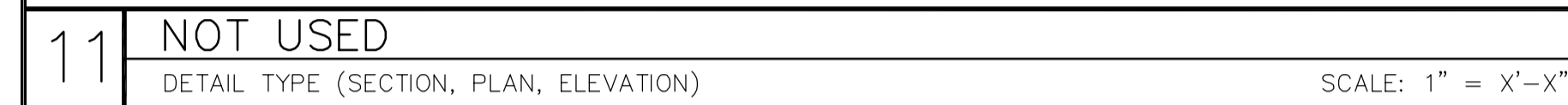


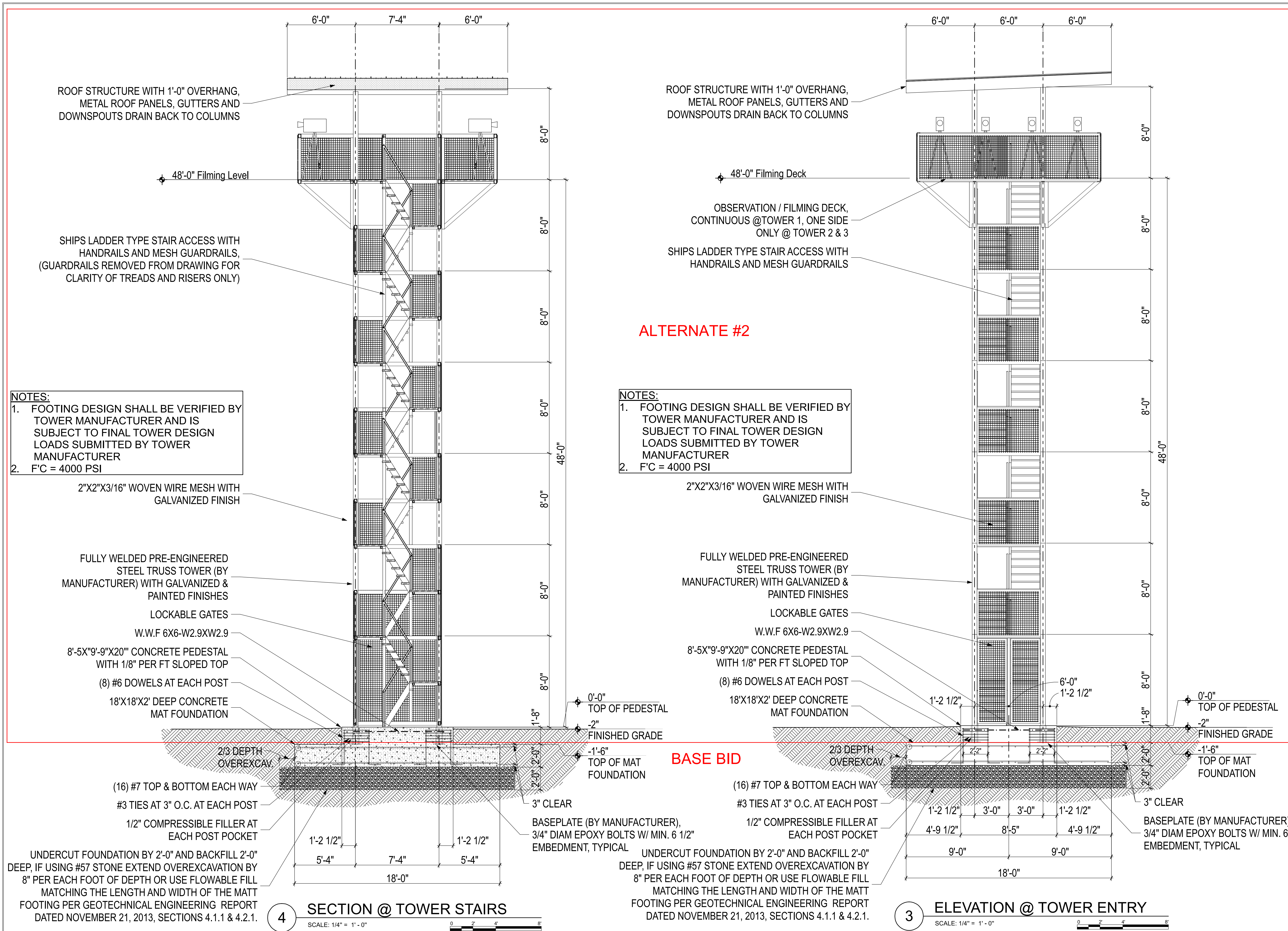


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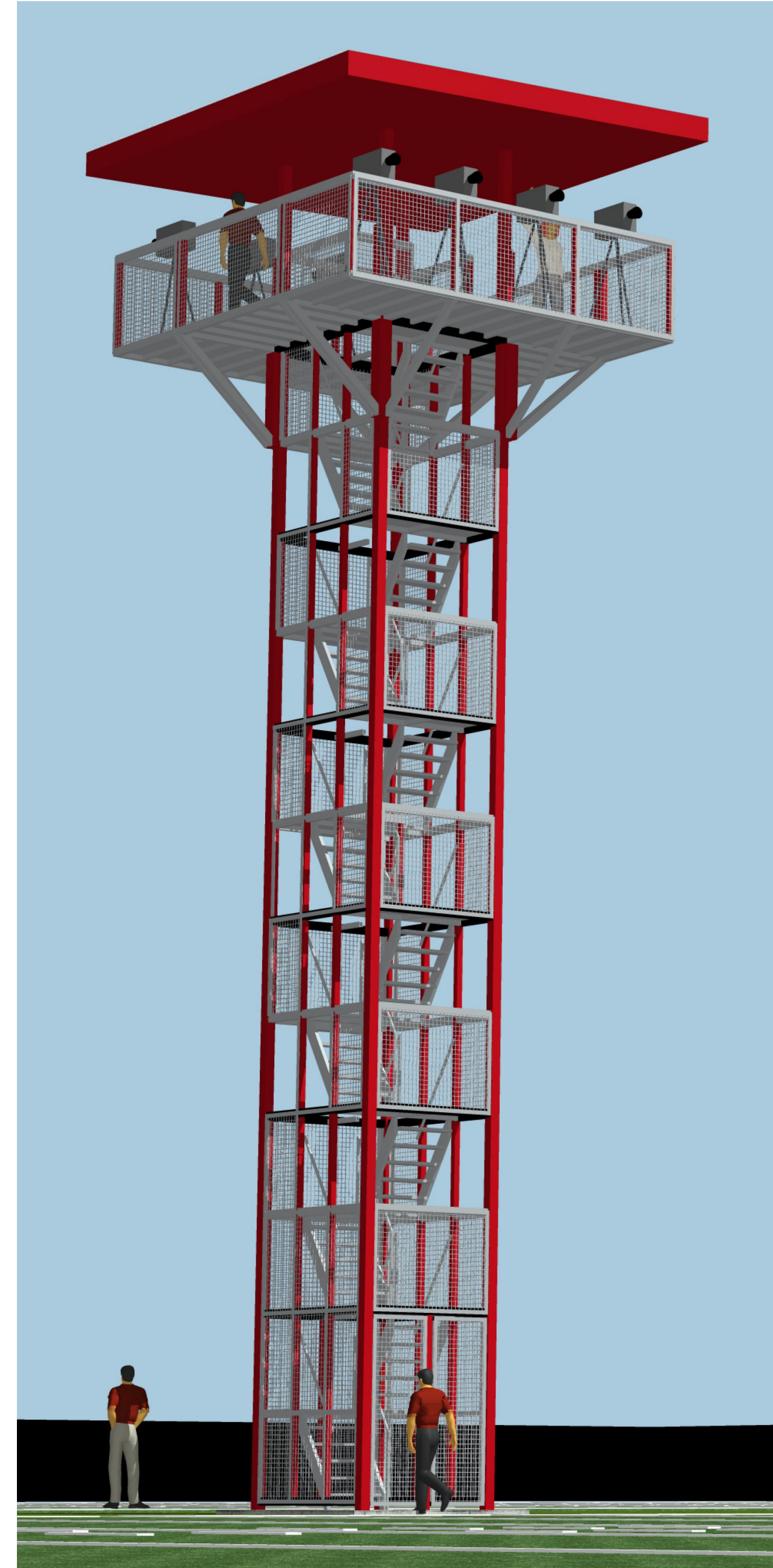


LD DETAILS  
TERNATE #1  
02 OF 7  
T IN SET:  
N/A





NOTE:  
BASE BID SHALL BE INCLUSIVE OF MAT FOUNDATION SYSTEM AT ELEVATION -1'-6" AND BELOW. PROVIDE TOPSOIL BACKFILL OVER MAT FOUNDATIONS AND PREPARE TO RECEIVE OWNER PROVIDED SOD.  
ALTERNATE #2 SHALL BE INCLUSIVE OF PEDESTAL AND TOWER AT ELEVATION-1'-6" AND ABOVE. DOWELS AT POST LOCATIONS SHALL ONLY BE PROVIDED WITH ALTERNATE #2.



RENDERED VIEW FOR COLOR REFERENCE ONLY

