
A D D E N D U M N O . 2

B I D # 2 0 2 3 - 1 8

The following changes to the Project Manual shall become a part of the Drawings, Specifications, Bidding Requirements and Contract Documents; superseding previously issued Drawings, Specifications, Bidding Requirements, Contract Documents and Addenda, to the extent modified by this Addendum.

QUESTIONS AND CLARIFICATIONS

1. Q: Submitted for your review are the following documents in regards to approving ProPlay as an equivalent resilient shot pad for this project.
A: Resilient pad material submittals will be reviewed after award. No material submittals, substitutions, or approval of 'or equal' shall be provided during the bid period.
To be considered equal, materials must meet the performance and safety requirements, product warranty, pre and post manufacturing testing requirements listed in the specification, and approved by the Architect and Town of Berlin. For this project under Specification Section 32 18 13:
 - 1.5 Submittals, A. Pre-Manufacturing Submittals
 - 1.8 Quality Control Testing, D. Pre-Manufacturing Testing, I. Post-Installation Testing, and J. Warranty Testing
 - 1.10 Warranty, C. Resilient Pad Warranty
 - 2.1 Materials, G. Resilient Pad
2. Q: 'Is the "B" Center logo part of the base bid or an alternate?
A: The center field logo is to be included under Alternate #6.
3. Q: Are the football numbers that are red with white outline part of the base bid or an alternate?
A: Football yard line numbers and directional arrows are to be white and included under Alternate #6.
4. Q: Are the sideline logos "BERLIN" x2 a part of the base bid or alternate?
A: Sideline lettering is not part of this project scope.
5. Q: How shall we submit for approval of a material substitution request?
A: State Requirements - Substitutions: Wherever in the specifications or Bid Proposal form brand names, manufacturer, trade name, or catalog numbers are specified, it is for the purpose of establishing standard of required function, dimension, appearance, and quality to be met by any proposed substitution.
No substitution will be considered prior to receipt of bids.
The Town reserves the right to approve as an equal or to reject as not being equal any article the Bidder proposes to furnish which contains major or minor variations from the specification's requirements. Any deviation from the Bid Documents and specifications shall be grounds for rejection of the material and/or equipment.

A D D E N D U M N O . 2

B I D # 2 0 2 3 - 1 8

CHANGES TO THE PROJECT MANUAL

Changes to the specifications are underlined in the included Table of Contents. Substitute the following, included specification sections in lieu of specification sections previously distributed:

| | |
|-------------|-------------------------------------|
| 00 00 00.02 | Table of Content |
| 00 00 00.03 | List of Drawings |
| 00 00 00.06 | Form of Proposal |
| 00 00 00.08 | Bidders Statement of Qualifications |
| 01 23 00 | Alternates |
| 32 18 13 | Synthetic Grass Surfacing |

CHANGES TO DRAWINGS

| | |
|-------|----------------------|
| L1.00 | Site Demolition Plan |
| L4.00 | Details |
| L4.01 | Details |
| L4.02 | Details |
| L4.03 | Details |

ATTACHMENTS

- PDF's of the above listed project manual and drawing changes
- Pre-Bid sign-in sheet

END OF ADDENDA #2

PROJECT MANUAL AND SPECIFICATIONS

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| L4.05 | SITE DETAILS – (<i>ALTERNATES</i>) |

END OF LIST OF DRAWINGS

FORM OF PROPOSAL
(to be completed and signed with pen)

BID #2023-18

SYNTHETIC TURF FIELD FOR BISCOGLIO FIELD AT BERLIN HIGH SCHOOL

To: **Town of Berlin**
 240 Kensington Road
 Berlin, CT, 06037

Attention: **Town Managers Office**
 Room 101

Pursuant to and in compliance with your "Invitation to Bid" relating thereto, the undersigned,

BIDDER

Company/Business Name: _____

Address: _____

Contact Person: _____ Title: _____

Office Telephone: _____ Cell Phone: _____

E-mail: _____

We submit for your consideration our bid for the above referenced bid. We have visited the site and have read the bidding documents and addendum including the Town of Berlin's General Conditions and Instructions to Bidders and the bid drawings and specifications and are submitting our bid in full compliance with all terms and conditions. We have enclosed our original bid bond/cashier's check in the amount of 5% of our total base bid. *We acknowledge receipt of all addendums to the bid documents and assume full responsibility to access those addendums from the Town website and/or DAS website, as applicable.*

We will provide the following within Ten (10) business days after receipt of a notice of award from the Purchasing Department:

- (i) The requested Certificate of Insurance from the following company:

_____ ; and

- (ii) Payment and Performance Bonds from the following company:

_____.

BASE BID

Within ten (10) business days after receipt of final contract from Town, we will forward to the Purchasing Department three original contracts, in the form provided by the Town, executed by an authorized officer.

Having visited the site and carefully examined the drawings, specifications and bidding documents including all addenda, and having included all allowance sums listed in Division 01 Specification section 'Summary', We agree to perform the work described within the time period set forth in the specifications for a amount of:

Base Bid: _____ dollars
write amount in words
(\$ _____)
write dollar amount

Turf Manufacturer/Installer included in bid: _____

Track Surfacing Manufacturer/Installer included in bid: _____

QUALIFICATIONS:

By submitting this proposal, the bidder certifies that he/she meets or exceeds the required qualifications. Bidders must have prior specific experience consisting of the successful construction of no less than five (5) synthetic turf fields that are 75,000 sf or greater in the past five (5) years. General Contractors synthetic turf field construction shall have consisted of demolition of existing conditions, concrete anchor curbing, field subsurface drainage, field stone base, laser grading of base stone, and coordination of synthetic turf manufactures and installers as subcontractors. Bidders must provide verification of experience with Form of Proposal and Bidders Qualification Statement. The Town of Berlin reserves the right to consider as not responsible any Bidder who is not able to provide documentation of experience with his/her own forces at least fifty-one (51%) percent of the dollar value of the work involved in this Contract. Bidders must provide verification of experience with Form of Proposal and Bidders Qualification Statement.

The bidder shall also be **prequalified for general site construction by the Connecticut Department of Administrative services (DAS)** at the time of submitting a bid proposal. The right is reserved to reject any bid submitted by a general contractor not prequalified at the time of bidding.

CONTRACT TIME

The undersigned Bidder hereby certifies that Substantial Completion and Final Completion will be achieved in accordance with the time designated in the General Conditions of the Contract for Construction and as follows:

Substantial Completion Date: _____ Friday September 22, 2023

Final Completion Date: _____ Friday October 20, 2023

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

ALTERNATES

The undersigned Bidder further proposed and agrees that should the following Alternates be accepted and included in the Contract, the amount of the Lump Sum Bid, as heretofore stated, shall be adjusted by the amount of said Alternates. All materials and workmanship shall be in strict accordance with the Drawings and specification and shall be in place prices. Refer to specification section 01 23 00 Alternates and the drawings for a detailed information and narratives for the scope of each Alternate.

1. ADD: 10 Year 2x-Annually Maintenance Contract \$ _____
2. ADD: Field Practice Lighting \$ _____
3. ADD: Multi-sport Scoreboard (solar powered) \$ _____
4. ADD: Allowance-Multi-sport Scoreboard (hardwired) and Field Boxes \$ 100,000.00
5. ADD: 10' Ball Safety Netting and Posts \$ _____
6. ADD: Centerfield 'B' Logo, Yard line Numbers, and Arrows \$ _____
7. ADD: Relocation of Track Events to "d-Zone" \$ _____

UNIT PRICES

Should the amount of improvements required be increased or decreased due to special considerations found at the site or because of a request of the **Town of Berlin**, the undersigned agrees that the following supplemental UNIT PRICES will be the basic price in place for computing the EXTRA or CREDIT.

Each UNIT PRICE shall include all equipment, tools, labor, permits, fees, etc., incidental to the installation and completion of the work involved.

The amounts shown are net changes to the Contract for additional work and include the Contractor's and any Subcontractor's amounts for overhead and profit. For deleted work, the net credit to the Contract shall be 10% less.

All work is to be accomplished in accordance with applicable Sections of the Specifications.

C.Y. = cubic yard

S.F. = square foot

S.Y. = square yard

V.F. = vertical foot

L.F. = linear foot

EA = Each

1. Mass Earth Excavation \$ _____
2. Granular Base Fill \$ _____
3. Processed Aggregate \$ _____
4. Concrete Anchor Curbing \$ _____
5. Field Base Collector Pipe Stone Collector Pipe Stone \$ _____
6. Field Base, Bottom Stone \$ _____
7. Field Base, Top Stone \$ _____
8. Flat Panel Drain \$ _____

ACKNOWLEDGMENT OF ADDENDA

The Bid includes Addenda listed below and they are hereby acknowledged:

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

SIGNATURE

Legal Name of Bidder

Authorized Signatory Name

Title

Signature

Date

REQUIRED BID FORMS

(Completed and Signed with Pen, include with bid)

1) **Bid Proposal Form, filled out and signed** _____

2) **Bid Security** _____

In the form of a: Bid Bond () Certified Check ()

In the Amount of: \$ _____ (5% of base bid)

3) **Bidders Qualifications Statement** _____

4) **Non-Collusion Affidavit** _____

5) **Affirmative Action Affidavit** _____

6) **Required Statements** _____

STATEMENT OF BIDDER'S QUALIFICATIONS
(To be submitted by the Bidder WITH THE BID)

To be considered for this proposal the bidder must be able to certify that he/she meets or exceeds the required qualifications.

The project is funded through the Connecticut Department of Energy and Environmental Protection and all contractors are to be listed as an approved contractor under the Department of Administrative Services Contractor Prequalification Program at the time of bidding. Program requirements are described at DAS.Prequalification@ct.gov or (860) 713-5280.

Bidders must have prior specific experience consisting of the successful construction of no less than five (5) synthetic turf fields that are 75,000 sf or greater in the past five (5) years. General Contractors synthetic turf field construction shall have consisted of demolition of existing conditions, concrete anchor curbing, field subsurface drainage, field stone base, laser grading of base stone, and coordination of synthetic turf manufactures and installers as subcontractors. Bidders must provide verification of experience with Form of Proposal and Bidders Qualification Statement. The Town of Berlin reserves the right to consider as not responsible any Bidder who is not able to provide documentation of experience with his/her own forces at least fifty-one (51%) percent of the dollar value of the work involved in this Contract.

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. The Bidder may submit any additional information he desires.

Name of Bidder and IRS Employers Identification Number

Permanent main office address

When organized

If a corporation, where incorporated.

How many years have you been engaged in the contracting business under your present firm or trade name?

General character of work performed by your company

Have you ever failed to complete any work awarded to you?

If so, where and why?

List any pending or current litigation that involves your company?

Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?

Include the following:

_____ List of major equipment available for this contract

_____ Background and experience resumes for the Project Manager and Project Superintendent
(*on-site daily for the duration of the project*) listing similar recent work

_____ Copy of current DAS prequalification

_____ Completed Bidders Qualifications and Reference Form

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Statement of Bidder's Qualifications. The undersigned further certifies that this statement is executed for the purpose of inducing the Town of Berlin to consider the bid and make an award in accordance therewith.

Legal Name of Bidder

Business Name

Authorized Signatory Name

Title

Signature

Subscribed and sworn to before me _____

this _____ day of _____, 2023.

Notary Public

my commission expires - date

BIDDER'S QUALIFICATIONS AND REFERENCES
(projects shall meet qualification requirements stated above)

PROJECT #1

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

PROJECT #2

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

PROJECT #3

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

PROJECT #4

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

PROJECT #5

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

PROJECT #

Project Name

Project Location/ Address

Project Description

Work self performed under contract

Year Completed

Field Size (square feet)

Turf Manufacturer Used

Base Contract Amount

Change Orders

Final Contract Amount

Owners Name

Title

Phone

Email

Owners Representative Name

Title (Architect/Engineer, Owners Project Manager, etc.)

Phone

Email

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section "Summary."

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1 ADD: 10 year 2x-annual maintenance Contract: Contractor shall provide the additional cost for the materials, labor, and other items necessary for providing twice-annual maintenance of the field per section 32 18 13 Synthetic Grass Surfacing, 1.11 Warranty and Maintenance Obligations, B. Alternate Bid.
- B. Alternate No. 2: ADD: Field Practice Lighting Concrete Pads: Contractor shall provide the additional cost for the materials, labor, and other items necessary for providing the concrete pads for the field lighting per the Specifications and as located on Drawings L2.01, L3.0, and L4.05.
- C. Alternate No. 3 ADD: Multi-sport Scoreboard (solar powered): Contractor shall provide the addition cost for the materials, labor, and other items necessary for a complete and operational solar powered scoreboard per Specification Section 11 68 43 and as located on the Project Drawings.
- D. Alternate No. 4 ADD: Multi-sport Scoreboard (hardwired) and field utility boxes: Contractor shall provide an allowance of \$100,000 for the addition cost for the materials, labor, and other items necessary for a complete and operational hardwired scoreboard, a new power service from the adjacent utility pole, and utility com boxes with the synthetic turf field per Specification Section 11 68 43 and as located on the Project Drawings.
- E. Alternate No. 5 ADD: 10' Ball Safety Netting and Posts: Contractor shall provide the addition cost for the materials, labor, and other items necessary for a complete 10' ball safety netting system per Specification Section 32 86 00 and as located on the Project Drawings. Post sleeves and foundations shall be carried in the base bid.
- F. Alternate No. 3 ADD: Centerfield 'B' Logo, Yard line Numbers, and Arrows: Contractor shall provide the addition cost for the materials, labor, and other items necessary for the center field 'B' logo, yard line numbers, and arrows per Specification Section 32 18 13 Synthetic Grass Surfacing and as located on the Project Drawings.
- G. Alternate No. 3 ADD: Relocation of Track Events to "d-Zone": Contractor shall provide the addition cost for the materials, labor, and other items necessary for the relocation of the track events to the 'd-zones' within the track per the project Specifications and as located on the Project Drawings.

END OF SECTION 01 23 00

SECTION 32 18 13 – SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors, and/or suppliers providing goods and services referenced in or related to this Section shall also be bound by the Related Documents identified in Division 01 Section “Summary.”
- B. Specification Section 32 18 13.10 Synthetic Grass Surfacing Warranty
- C. Specification Section 33 46 16 Field Subdrainage System

1.2 SUMMARY

- A. This Section includes synthetic turf grass system assemblies consisting of the following:
 - 1. Synthetic grass yarn.
 - 2. Primary and secondary backing materials.
 - 3. Performance infill and sand materials.
 - 4. Seam tape and glue materials.
 - 5. Resilient Shock Pad.
 - 6. Procurement and installation of the synthetic grass surfacing system.
 - 7. Pre and post installation testing of synthetic grass surfacing system.
 - 8. Warranty and maintenance requirements for the synthetic grass surfacing system.
 - 9. All incidental work items required to complete the work as shown on the Drawings and as called-for in the Specifications.
- B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work. Carefully examine all of the Contract Documents for requirements which affect the work of this Section. The exact scope of work of this section cannot be determined without a thorough review of all Specification Sections and other Contract Documents.
- C. In all cases when conflicts exist between information contained in this Section and in other parts of the Contract Documents, Contractor shall assume that the more stringent and highest-performing solution is required.
- D. Contractor is responsible for all health and safety.

1.3 REFERENCES

- A. A.Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.
- B. American Society for Testing and Materials (ASTM)
- C. European Standard (EN)
- D. National Federation of State High Schools (NFHS)
- E. Synthetic Turf Council Guidelines (STC)

- F. Connecticut Interscholastic Athletic Conference (CIAC)
- G. American Sports Builders Association (ASBA)

1.4 DEFINITIONS

- A. A. Most terms used within the documents are industry standard. Certain words or phrases shall be understood to have specific meanings as follows:
 - 1. Provide: Furnish and install completely connect and in operable condition.
 - 2. Furnish: Purchase and deliver to a specific location within the building or site.
 - 3. Install: With respect to equipment furnished by others, install means to receive, unpack, move into position, mount and connect, including removal of packaging materials.
- B. Synthetic Turf Testing Agency (Testing Agency): Agency to perform testing on the synthetic turf system. All testing shall be done by a 3rd party testing agency. Performance testing and on-site testing shall be performed by an Agency currently holding certification by FIFA, World Rugby, and FIH.

1.5 SUBMITTALS

- A. Pre-Manufacturing Submittals
 - 1. Non-compliance with the submittal requirements as specified herein may result in rejection of any product arriving on-site.
 - 2. The following letters, on the synthetic grass surfacing manufacturer/vendor's letterhead and signed by an officer of the company, shall be submitted with the bid.
 - a. A letter shall confirm their intent to conform to all requirements set forth in the Bid Documents for the Synthetic Grass Surfacing System and qualified installation crew. Including, but not limited to, the Bid Drawings, Specifications, Addendum, and RFI Clarifications.
 - b. Manufacturer's Review of Synthetic Grass Surfacing: A letter confirming that the Bid Documents for the Synthetic Grass Surfacing System have been completely reviewed by qualified representatives of the materials manufacturer and that they are in agreement that the materials and system to be used for the synthetic grass field surfacing are proper and adequate for the applications shown and in no way impact the system warranty.
 - 3. The following letters, on the Resilient Shock Pad manufacturer/vendor's letterhead and signed by an officer of the company, shall be submitted with the bid.
 - a. A letter shall confirm their intent to conform to all requirements set forth in the Bid Documents for Resilient Shock Pad and qualified installation crew. Including, but not limited to, the Bid Drawings, Specifications, Addendum, and RFI Clarifications.
 - b. Manufacturer's Review of Synthetic Grass Surfacing: A letter confirming that the Bid Documents for the Resilient Shock Pad have been completely reviewed by qualified representatives of the materials manufacturer and that they are in agreement that the materials and system to be used for the Resilient Shock Pad are proper and adequate for the applications shown and in no way impact the system warranty.

4. Sample manufacturer's warranty and maintenance requirements for the Resilient Shock Pad proposed for this project.
5. Product Data: Submit manufacturer's general specifications and installation instructions for all products in the Synthetic Grass Surfacing System, including certifications and other data as may be required, to show compliance with the Contract Documents.
 - a. Synthetic Turf Grass Surfacing System
 - b. Yarn Fiber
 - c. Backing Materials
 - d. Seaming Materials
 - e. Performance Infill
 - f. Sand Infill
 - g. Synthetic Grass Surface Carpet
 - h. Resilient Shock Pad
6. Material Safety Data Sheets (MSDS) sheets for all products and product components to be utilized on site, as necessary. This shall include solvents and other products required as part of clean-up.
7. Certified Statement: Statement of the presences of toxic and or hazardous materials. Any toxic and/or hazardous material exceeding 100 parts per million (ppm) shall be identified in list form. The list shall reference the standard in name and threshold if applicable, and the test results. This requirement is above and beyond the requirements for MSDS.
8. Material and Performance Testing Agency: Submit for approval all material and performance testing agencies to be utilized for this project. (By Owner)
9. In-house Material Testing Qualifications: Submit for approval all required certifications and third-party calibration testing if an in-house laboratory is to be utilized for the post-manufacturing testing on this project.
10. Material Testing: Submit for approval test results for all material testing performed under "Quality Control Testing, Pre-Manufacturing" herein. Provide copies of all Testing Agency reports. Testing shall be no more than 36 months old from date of submittal.
 - a. Intent:
 - 1) The intent of the pre-manufacturing submittal is for the synthetic turf manufacturer to provide the required documentation listed below for the **manufacturers standard system that most closely resembles the system specified.**
 - 2) The intent of this section is for manufactures to provide a **standard system that has been previously been tested** for conformance to the requirements below.
 - 3) The intent is not to require a manufacture to conduct the required pre-manufacturing submittal testing on a non-standard system.
 - 4) Systems that meet the requirements of this system and have been approved by FIFA should meet the requirements of this specification, apart from the infill material.

11. Material Samples: Submit three (3) samples for approval for all materials under 2.1 Materials including, but not limited to, the following:
 - a. Synthetic Grass Surfacing Yarn Fiber: Provide samples for each color used for the field, markings, and logos.
 - b. Synthetic Grass Samples: Twelve-inch (12") square samples of un-filled synthetic grass surface carpet for each color used for the field.
 - 1) The samples shall be the manufacturers standard product that most closely resembles the specified system and is to be reviewed as the general product intended for use on the field.
 - 2) Manufacturer shall note any discrepancies between the standard product sample submitted and the product to be manufactured for this project.
 - c. Seaming Materials: Twelve-inch (12") long samples of all materials to be used for seaming of the synthetic grass turf system.
 - d. Synthetic Grass Surfacing Infill: One-pound samples of performance infill and infill sand (in separate bags).
12. Shop Drawings: Submit for approval the following:
 - a. Seaming plan; Seams of the field shall not coincide with the subsurface drain system nor seams of pad (if applicable).
 - b. Field Markings and Logos Inlays.
 - 1) Layouts for all sports shown on the Drawings showing any field lines, markings, boundaries on the appropriate field(s) and all specified colors. All markings shall be tufted in the factory or inlaid. Provide certification that field layouts meet all NFHS and CIAC/MIAA sport marking requirements as installed in the field.
 - 2) Details on field construction, making special note of any details that may deviate from the Drawings or Specifications. Include: edge detail, goal post detail, covers for access to subsurface structures, other inserts, etc.
13. Warranties: Submit a draft copy of the warranties in Owner's name for all products furnished under this section for review and approval.
14. Synthetic grass surfacing manufacturer/vendor and installer qualifications:
 - a. Installer Qualifications: Synthetic Grass Installation Sub-Contractor shall certify in writing the designated supervisory personnel on the project are competent in the installation of the all-weather grass material, including gluing or sewing seams and proper installation of the infill mixture. The synthetic grass surfacing installer shall have a representative on-site to certify the installation and warranty compliance. Provide experience to show that installation crew is competent to complete the level of work outlined in this project. Synthetic Grass Installation Sub-Contractor's superintendent shall demonstrate experience that the superintendent is competent to oversee and complete the level of work outlined in this project.
 - b. At a minimum, provide the following documentation: Fifteen (15) reference projects consisting of Synthetic Grass Multi-Sport Grass Fields of 75,000 square-feet or

larger within the past five (5) years completed by the proposed on-site full-time installation superintendent.

- c. Project Information: At a minimum, provide the following information for each reference project:
 - 1) Project Name
 - 2) Project Location
 - 3) Project scope
 - 4) Construction timeline
 - 5) Construction cost
 - 6) Reference name, title, affiliation, and contact information.

15. Field Maintenance Equipment:

- a. 2.1 Materials, H. Field Maintenance Equipment

16. Field Attic Stock

- a. 2.1 Materials, G. Attic Stock

- 17. Surveyor: Submit name and qualifications of Professional Land Surveyor who will be responsible for layout and verification of the work of this Section. (As-Built Survey By Owner).

B. Post Manufacturing/Pre-Installation Submittals (By Manufacturers in-house testing facility)

- 1. Material Testing: Submit for approval test results for all material testing performed under “1.8 Quality Control Testing, Post-Manufacturing/Pre-Installation” herein. Provide copies of all testing agency reports.
- 2. Material Samples: Submit two (2) samples, with required testing data, for approval for all materials under 2.1 Materials including, but not limited to, the following:
 - a. Synthetic Grass Carpet Sample: Twelve-inch (12") square samples of un-filled synthetic grass surfacing carpet for each color manufactured for the project. Samples shall be the same as samples send to the testing agency for conformance of the product declaration.
 - b. Synthetic Grass System Sample: Sample box of synthetic grass system, including infill material.
- 3. Acceptance of Prior Work: Refer to section 3.2 Examination.

C. Post-Installation Submittals

- 1. Material Testing: Submit for approval test results for all material testing performed under “1.8 Quality Control Testing, Post-Installation” herein. Provide copies of all testing agency reports.

D. Warranty Quality Control Submittals

- 1. Material Testing: Submit for approval test results for all material testing performed under “Quality Control Testing, Warranty” herein. Provide copies of all testing agency reports to the Owner and Landscape Architect for review and approval for the entire warranty period.

1.6 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. The Owner, or Landscape Architect on the Owners behalf, reserves the right to submit any material, either before or after installation, for testing it deems necessary to satisfy the conditions of this contract.
 - 1. Any material tested and found not in compliance with the contract will be rejected and replaced with material conforming to the specifications. This will be done at the sole expense of the Contractor.
 - 2. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for reimbursing the cost of all Owner paid testing that fails. Contractor will bear the cost of all retesting as required by the Owner.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Schedule delivery to minimize on-site storage. Segregate differing materials and prevent from contamination with other materials.
- B. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturers' identification. All materials shall be stored in a dry place out of the direct sunlight.
- C. Prior to the installation of any materials and immediately upon delivery of the synthetic grass system and components to the project site, the Contractor shall inspect materials as follows:
 - 1. For damaged or defective items.
 - 2. Measure synthetic grass roll lengths, perforations, and uniformity.
 - 3. Adhesives and seaming tap shall arrive in sealed dry containers and be kept in adequate temperature per manufactures requirements.
 - 4. Performance in-fill
 - a. Shall arrive in large sacks or bags without tears and loose material.
 - b. Shall arrive dry and loose. No infill shall be accepted that is bulked or solid.
 - c. Shall be free of exposed metal particles.
 - 5. Sand in-fill
 - a. Shall be free from contamination of site materials.
 - b. Shall arrive in large sacks or bags without tears and loose material or
 - c. Shall be delivered and stored on a solid, level, and clean surface.
 - 1) It is the Contractors responsibility to coordinate the delivery and storage of the infill materials with the OPM and Architect. Loose materials may need to be delivered in super sacs due to site limitations.
 - 2) It shall be assumed the school parking lot is NOT to be used as a storage or material lay down area during this project. Contractor is responsible for coordination stockpile and storage areas with the Owner and Architect.
 - 6. Bulk Materials:
 - a. Deliver materials in clean, washed, and covered trucks to eliminate contamination during transportation.

- b. Contractor is responsible for the preparation of all stockpile areas for bulk materials. Stockpile areas shall be level, solid surfaces free from debris and prepared to minimize the ability for material migration.
- c. On site stockpiling locations to be coordinated with the Owner. Stockpile only in areas free of debris and away from drainage routes. Cover all materials with plastic or geotextile.

1.8 QUALITY CONTROL TESTING

- A. All sampling/testing shall be the responsibility of Manufacturer/Supplier. The Manufacturer/Supplier shall retain and pay for the services of a third-party Testing Agency to perform all sampling/testing in accordance with applicable standards.
- B. All testing, unless otherwise noted, shall be completed by an independent (third-party) Testing Agency as approved by Architect. Testing must be for current materials with current date from independent testing laboratory as described herein.
- C. Certified copies of laboratory reports shall be submitted for all testing.
- D. Pre-Manufacturing Testing
 - 1. The intent of the pre-manufacturing testing is for manufacturers to submit the required testing for a previously tested standard system that most closely resembles the specified system. Manufacturer shall note any discrepancies between the standard system previously tested and the system proposed for this project, if any.
 - A. IT IS NOT THE INTENT OF PRE-MANUFACTURING TESTING SECTION TO REQUIRE MANUFACTURERS TO ENGAGE IN TESTING OF SYSTEM NOT PREVIOUSLY TESTED BETWEEN THE TIME OF BID AND MANUFACTURING.
 - B. MANUFACTURERS WITHOUT A PREVIOUSLY TESTED SYSTEM CLOSELY RESEMBLING THE SPECIFICATION SHALL NOT BE CONSIDERED FOR THIS PROJECT.
 - 2. Timing: Contractor shall submit to Landscape Architect a copy of all test results certified by the independent Testing Agency prior to manufacturing of the Synthetic Grass Surfacing for the Project. Provide testing data for the following:

| TESTING METHOD | CHARACTERISTIC | DECLARATION |
|--|-----------------------------------|--|
| SYNTHETIC GRASS YARN (INCLUDE RESULTS FOR EACH YARN COLOR SEPARATELY) | | |
| ASTM D1907/ FIFA TEST METHOD 23 | LINEAR DENSITY OF YARN | WITHIN 90% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D3218/ FIFA TEST METHOD 25 | YARN THICKNESS | WITHIN 90% COMPARED TO SUPPLIERS DECLARATION |
| FIFA METHOD 22 | PILE YARN CHARACTERISTIC | SAME POLYMER |
| ASTM D 789 | MELTING POINT | > 235 DEGREES F |
| ASTM D 5034 | BREAKING STRENGTH (LENGTH) | > 283 LBS./ FT. |
| ASTM D 5034 | BREAKING STRENGTH (WIDTH) | > 200 LBS./FT |
| ASTM F 2765-09 | LEAD CONTENT | < 50 PPM |
| ARTIFICIAL WEATHERING (FIFA 10) | | |

| | | |
|---|--|---|
| EN ISO 20105-A02 | COLOR FASTNESS (CHANGE) - ARTIFICIAL WEATHERING (5000 HOURS) | > GRAY SCALE 3 |
| EN 13864 | TENSILE STRENGTH AFTER ARTIFICIAL WEATHERING (5000 HOURS) | <50% REDUCTION |
| SYNTHETIC GRASS SEAMING | | |
| EN 12228 METHOD 1 | SEAM STRENGTH – UNAGED | > 1000N/100MM |
| EN 13744 & EN 12228 METHOD 1 | SEAM STRENGTH – AGED | > 75% OF THE UNAGED VALUE |
| EN 12228 METHOD 1 | BONDED PEAL STRENGTH – UNAGED | > 50N/100MM |
| EN 13744 & EN 12228 METHOD 1 | BONDED PEAL STRENGTH – AGED | > 75% OF THE UNAGED VALUE |
| SYNTHETIC GRASS INFILL MATERIALS (INCLUDE RESULTS FOR EACH INFILL MATERIAL SEPARATELY) | | |
| EN 71-3 | STABILIZING INFILL EXTRACTABLE HAZARDOUS METALS | PASS |
| ASTM F3188 | STABILIZING INFILL SOLUBLE THRESHOLD LIMIT CONCENTRATION | PASS |
| EN 933/ FIFA TEST METHOD 20 | STABILIZING INFILL BULK DENSITY | |
| EN 14955 | STABILIZING INFILL PARTICLE SIZE | < 1 SIEVE SIZE CHANGE COMPARED TO MANUFACTURER'S DECLARATION |
| EN 1097-3 | STABILIZING INFILL PARTICLE SHAPE | SAME SHAPE |
| | PERFORMANCE INFILL EXTRACTABLE HAZARDOUS METALS | PASS |
| | PERFORMANCE INFILL SOLUBLE THRESHOLD LIMIT CONCENTRATION | PASS |
| | PERFORMANCE INFILL BULK DENSITY | |
| | PERFORMANCE INFILL PARTICLE SIZE | < 1 SIEVE SIZE CHANGE COMPARED TO MANUFACTURER'S DECLARATION |
| | STABILIZING INFILL PARTICLE SHAPE | SAME SHAPE |
| EN ISO 20105-A02 | PERFORMANCE INFILL ARTIFICIAL COLOR FASTNESS (CHANGE) - ARTIFICIAL WEATHERING | > GREY SCALE 3, NO CHANGE IN SHAPE |

| SYNTHETIC GRASS SYSTEM (SURFACING (CARPET), INFILL, & SHOCKPAD) (PREVIOUS RESULTS FOR TESTING OF PRODUCT THAT CLOSELY MEETS SPECIFICATION) | | |
|---|--|---|
| ASTM D5848/ISO 2549 | PILE HEIGHT (PILE LENGTH ABOVE BACKING) | <5% |
| ASTM D5793 | STITCH GAUGE | < 3/8" |
| ISO 1763 | TUFTS PER UNIT AREA/KNOTS PER WOVEN AREA | |
| ASTM D5848/ISO 8543 | PILE WEIGHT | < +/- 5% OF PRODUCT DECLARATION |
| ASTM D5848 | TOTAL WEIGHT | |
| ASTM D1335/ISO 4919 | TURF BIND (WITHDRAWAL) | .40N (UNAGED) |
| EN 13744 & ASTM D1335/ISO 4919 | TURF BIND (WITHDRAWAL) | .40N (AFTER IMMERSION IN HOT WATER) |
| EN 13746 | DIMENSIONAL STABILITY | < 0.5% AFTER EACH STAGE |
| EN 12228 METHOD 1 | SEAM STRENGTH - UNAGED | >1000N/100MM |
| EN 13744 & EN 12228-1 | SEAM STRENGTH – AFTER | >75% OF THE UNAGED VALUE |
| EN 1969/ FIFA TEST METHOD 18 | FREE PILE HEIGHT | < ½" FIBER REVEAL |
| EN 1969/ FIFA TEST METHOD 21 | INFILL DEPTH | WITHIN 90% COMPARED TO PROJECT SPECIFICATIONS |
| | FIBER (PILE YARN) REVEAL/ FREE PILE HEIGHT | < ½" FIBER REVEAL |
| EN 13672 | SIMULATED WEAR (PERCENTAGE OF YARN AFFECTED) (CAN BE EQUIVALENT YARN ON SIMILAR SYSTEM) | > 6,000 PASSES WITHOUT SPLITTING |
| ASTM F1551/EN 12616 (FIFA METHOD 24) | WATER PERMEABILITY (HEAD PRESSURE) | > 25 INCHES / PER HOUR |
| PERFORMANCE TESTING | | |
| ASTM F 1936 | IMPACT ATTENUATION(G-MAX) | < 100 G'S |
| EN 1177 | IMPACT ATTENUATION, HEAD INJURY CRITERIA (HIC) | <1000 @ 1.0M |
| EN 14808/ FIFA 04&09 | FORCE REDUCTION/ SHOCK ABSORPTION | 55% TO 70% |
| | ENERGY RESTITUTION | 45 – 70% |
| EN 14809/ FIFA 05A&15 | VERTICAL DEFORMATION | 4.0 - 11.0 MM |
| EN 15301/ FIFA 06&15 | ROTATIONAL RESISTANCE | 25 – 50 NM |
| | WEIGHTED ROTATIONAL RESISTANCE | 25NM - 50NM |

| | | |
|--|---|--------------|
| | VERTICAL BALL REBOUND | 0.60 - 1.0 M |
| | REDUCED BALL ROLL <i>*LABORATORY TEST ONLY</i> | 4 – 12 M |
| | SKIN/ SURFACE FRICTION <i>*LABORATORY TEST ONLY</i> | 0.35 – 0.75 |

| RESILIENT SHOCK PAD | | |
|---|--|--|
| BS 7044 METHOD 4 OR EN 12616 AS APPLICABLE | DRAINAGE / PERMEABILITY | PERFORATED OR PERMEABLE 50 INCHES PER HOUR MINIMUM |
| ASTM D2859 | GMAX | 90 MINIMUM, 120 MAXIMUM |
| EN 1177 | IMPACT ATTENUATION, HEAD INJURY CRITERIA (HIC) | <900 @1.2 M |
| ASTM D 1056-07 | MATERIAL DENSITY | 3.6 TO 12.5 LBS/FT3 |
| ASTM D 1056-07 | WATER ABSORPTION | <5% |
| EN 14809 | VERTICAL DEFORMATION W/OUT TURF | 4MM MAXIMUM |
| ASTM D696-03 | THERMAL EXPANSION (PER 1°C) | 0.0000833MM/MM |
| ASTM D3575 | COMPRESSION STRENGTH | @25% 30 PSI @50% 49 PSI @75% 102 PSI |
| ISO 1856C | COMPRESSION SET – STATIC LOAD (25% STRAIN, 22 HRS, 23°C AFTER 24 HRS) | 8.2% (0.089 IN) MAX |
| SYSTEM TEST | COMPRESSION SET – REPEATED IMPACTS (106 PSI, REPEATED, 10,000 CYCLES) | 6.0% MAXIMUM |
| ISO 8295 | FRICTION COEFFICIENT | 2.44 LBS MAX 1.35 LBS AVERAGE |
| ASTM G22-76 ASTM G21-96 ASTM F925 | MICROBIOLOGICAL ANALYSIS BACTERIA RESISTANCE, FUNGAL RESISTANCE CHEMICAL RESISTANCE | NO GROWTH OR DETRIMENTAL EFFECTS |
| | ACCELERATED AGING 20 YR MODEL - % TENSILE STRENGTH LOSS 20 YR MODEL - % ELONGATION LOSS | -<10% AFTER 120 DAYS @ 85C -<5% AFTER 120 DAYS AT 85C |

- E. Post Manufacturing/Pre-Installation Material Identification Testing
1. Manufacturers may utilize in-house testing facilities to perform post-manufacturing conformance testing so long as the following requirements are met:
 - a. Facility must hold a current ISO 9000 Certification
 - b. Provide documentation equipment calibration by means of third-party testing result no more than 12 months from date of submittal.
 2. The intent of the post manufacturing/pre-installation testing is for manufacturers to submit the required testing for quality control and conformance to the approved pre-manufacturing submittal for the manufactured product.
 3. IT IS NOT THE INTENT OF POST-MANUFACTURING TESTING SECTION TO REQUIRE MANUFACTURERS TO ENGAGE IN THIRD-PARTY TESTING OF MANUFACTURED PRODUCT.
 4. THE OWNER AND ENGINEER RESERVE THE RIGHT TO INDEPENDENTLY TEST PRODUCT MANUFACTURED FOR THIS PROJECT. CONTRACTOR SHALL BARE THE COST OF ALL TESTING, MATERIAL REPLACEMENT, AND RE-TESTING FOR MATERIALS THAT FAIL TO MEET THE SPECIFIED REQUIREMENTS.
- F. Timing: Contractor shall submit to Landscape Architect a copy of all test results certified by the in-house testing facility manager prior to shipping of the Synthetic Grass Surfacing to the Project.
- G. Provide testing data for the following:

| PRODUCT IDENTIFICATION - SYNTHETIC GRASS SURFACING CARPET | | |
|--|-----------------------------------|--|
| ASTM D1907/ FIFA TEST METHOD 23 | LINEAR DENSITY OF YARN | WITHIN 90% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D3218/ FIFA TEST METHOD 25 | YARN THICKNESS | WITHIN 90% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D 5034 | BREAKING STRENGTH (LENGTH) | > 283 LBS./ FT. |
| ASTM D 5034 | BREAKING STRENGTH (WIDTH) | > 200 LBS./FT |
| PRODUCT IDENTIFICATION – PILE YARN | | |
| ASTM D 1907/FIFA Test Method 23 | DENIER (DTEX) | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D 3218/FIFA Test Method 25 | MICRONS | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D 5848 | PRIMARY BACKING WEIGHT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D 5848 | SECONDARY BACKING WEIGHT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| Visual | PERFORATIONS | >3/16” dia. holes, spaced 4” on center |

| SYNTHETIC GRASS SURFACING (CARPET) | | |
|---|---|--|
| ASTM D5848/ISO 2549 | PILE HEIGHT (PILE LENGTH ABOVE BACKING) | <5% |
| ASTM D5793 | STITCH GAUGE | < 3/8" |
| ISO 1763 | TUFTS PER UNIT AREA/KNOTS PER WOVEN AREA | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D5848/ISO 8543 | PILE WEIGHT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D5848 | TOTAL WEIGHT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| ASTM D1335/ISO 4919 | TURF BIND (WITHDRAWAL) | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |

H. Field Base Stone Approval

1. Synthetic Grass Surfacing System Installer shall review all testing, the as-built survey, performance string line layout, and confirm dimensional relationship to all existing and installed conditions prior to installation the system. Review shall be documented to Owner and Engineer along with a Letter of Acceptance of the field sub-base.
2. See SPECIFICATION SECTION 33 46 16 'FIELD SUBDRAINAGE SYSTEM' for quality control requirements for the field sub-base.

I. Post-Installation Testing

1. Timing: Submit to Landscape Architect a copy of all test results certified by the approved third-party testing agency prior to issuance of any project Substantial Completion.
 - a. Testing shall be completed on-site and within five (5) days of the completion of installation.
 - b. Testing results shall be submitted for review within three (3) days of the completion of testing.
2. Submit to Landscape Architect a copy of all test results certified by the independent Testing Agency.
3. Provide testing data for the following:

| SYNTHETIC GRASS SURFACING SYSTEM (INSTALLED ON-SITE, AFTER INSTALLATION OF SYNTHETIC GRASS SURFACING, INFILL) | | |
|--|-------------------------------------|---|
| ASTM F1551/EN 12616 | WATER INFILTRATION RATE | >16 IN./HR. (1 TEST PER 20,000 S.F.) |
| EN 1969/ FIFA 21 | INFILL DEPTH MEASUREMENT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION (ANY LOCATION, NOT AVERAGE) |
| EN 13036/FIFA 12 | PLANARITY/SURFACE REGULARITY | <10 MM |

| | | |
|-----------------------------|--|--|
| ASTM F 1936 | IMPACT ATTENUATION(G-MAX) (MINIMUM 10 LOCATIONS) | < 100 G'S (ANY LOCATION - NOT AVERAGE) |
| EN 1177 | IMPACT ATTENUATION, HEAD INJURY CRITERIA (HIC) (MINIMUM 10 LOCATIONS) | <900 @ 1.0M (ANY LOCATION – NOT AVERAGE) |
| EN 14808/ FIFA 04A | SHOCK ABSORPTION | 55% TO 70% |
| EN 14809/ FIFA 05A | VERTICAL DEFORMATION | 4MM TO 11MM |
| EN 15301/ FIFA 06 | ROTATIONAL RESISTANCE | 25N TO 50N |
| EN 12235/ FIFA 01 | VERTICAL BALL REBOUND | .6 TO 1M |
| EN 12234/ FIFA 03 | BALL ROLL | 4M TO 10M |
| EN 71-3 | STABILIZING INFILL EXTRACTABLE HAZARDOUS METALS | PASS |
| ASTM F3188 | STABILIZING INFILL SOLUBLE THRESHOLD LIMIT CONCENTRATION | PASS |
| EN 933/ FIFA TEST METHOD 20 | STABILIZING INFILL BULK DENSITY | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION |
| EN 14955 | STABILIZING INFILL PARTICLE SIZE | < 1 SIEVE SIZE CHANGE COMPARED TO MANUFACTURER'S DECLARATION |
| EN 1097-3 | STABILIZING INFILL PARTICLE SHAPE | SAME SHAPE |

4. Any material tested and found not in compliance with the contract may be rejected and Contractor shall rectify the issue to be acceptable. Any area/item not within conformance shall be retested at the Contractors expense after remedy is implemented until satisfactory results are achieved.
5. The Owner, or Landscape Architect on the Owner behalf, reserves the right to independently test any material. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for reimbursing the cost of all Owner directed testing that fails. Contractor will bear the cost of all retesting as required by the Owner.

J. Warranty Testing (base bid)

1. Timing: Testing shall be completed on-site and annually for the warranty period (8 years).
2. Contractor shall submit to Architect and Owner a copy of all test results certified by the independent Testing Agency.
3. Provide testing data for the following:

| SYNTHETIC GRASS SURFACING SYSTEM (ANNUALLY) | | |
|--|--|---|
| EN 13036 | PLANARITY/SURFACE REGULARITY | <10 MM |
| EN 1969 | INFILL DEPTH MEASUREMENT | WITHIN 95% COMPARED TO SUPPLIERS DECLARATION (1/2" EXPOSED FIBER) |
| ASTM F 1936 | IMPACT ATTENUATION(G-MAX) (MINIMUM 10 LOCATIONS) | < 160 G'S (INDIVIDUAL LOCATIONS, NOT AVERAGE FIELD RESULTS) |
| EN 1177 | IMPACT ATTENUATION, HEAD INJURY CRITERIA (HIC) (MINIMUM 10 LOCATIONS) | <1000 @ 1.0M (INDIVIDUAL LOCATIONS, NOT AVERAGE FIELD RESULTS) |
| EN 71-3 | SAFETY OF TOYS PART 3 | PASS (MINIMUM OF 3 SAMPLES) |
| ASTM F3188 | SAFETY OF SYNTHETIC TURF INFILL | PASS (MINIMUM OF 3 SAMPLES) |

4. Any materials tested and found not in compliance with the warranty requirements shall be rectified at Contractors expense. Contractor shall rectify the issue to be acceptable and pass all warranty testing requirements. Any area/item not within conformance shall be retested at the Contractors expense after remedy is implemented until satisfactory results are achieved.

1.9 PATENT RIGHTS AND INFRINGEMENT

- A. The Drawings and Specifications are not indented to be proprietary or in violation of any current or pending patents. The Contractor and subcontractors are responsible to provide the Owner and Landscape Architect with any violations contained here in prior to bidding. By bidding on the project, the Contractor and subcontractors shall hold the Owner, Construction Manager, and Design Consultants harmless from infringement of any current or future patent issued for the synthetic grass surfacing system.
- B. Contractor and subcontractors shall hold the Owner, Construction Manager, and Design Consultants harmless from infringement of any current or future patent issued for the synthetic grass surfacing system, fibers, backings, including Resilient Shock Pad (if required), installation methods and vertical draining characteristics. The successful bidder will be required to submit a letter for consent from their surety. The Surety shall indemnify the requirements.
- C. There are various established performance criteria throughout this request for products and services. There may exist patent coverage for some means and methods of achieving those performance criteria. Bidders are responsible for ascertaining that means and methods of the products and services which they are providing are not being provided in violation of any such patent rights. Bidder's responsibilities are as follows:
1. To hold harmless, the Owner, Construction Manager, and Design Consultants, as to any violation to include dollar amounts that could be owed as a result of damages for infringement including potential treble damages as provided for under U.S. Patent Law.

2. Any and all costs that the Owner, Construction Manager, and Design Consultants, would incur in replacing materials and services which are determined to infringe patent rights.
3. All administrative, legal and other costs that would be incurred as a result of an infringement.

1.10 WARRANTY

- A. Synthetic Grass Surfacing Warranty – Sports Fields: See Specification Section 32 18 13.10 Synthetic Grass Surfacing Warranty.
 1. The Synthetic Grass Manufacture/Supplier shall be required to meeting the requirements, as described under G. Warranty Testing and inspection plan for the lifespan of the warranty as part of this Contract and shall submit a schedule of visits at the time of completion.
 - 1) Contractor shall make corrections as necessary to meet all testing requirements.
- B. Synthetic Grass Infill Warranty
 1. The Contractor shall provide a non-prorated Manufacturer/Installer Warranty/Guarantee (also referred to herein as the Warranty) for the synthetic grass infill materials and installation as specified herein, for a minimum non-pro-rated period of eight (8) years to the Owner from the date of Certificate of Substantial Completion.
 2. Infill material shall be warrantied against breakdown of material outside of project specifications, deterioration of infill coatings, and failure to adhere to EN 71-3 and ASTM F3188 testing.
- C. Resilient Shock Pad Warranty
 1. The Contractor shall provide a non-prorated Resilient Shock Pad Manufacturer/Installer Warranty/Guarantee (also referred to herein as the Warranty) for the Resilient Shock Pad materials and installation as specified herein, for a minimum non-pro-rated period of sixteen (16) years to the Owner from the date of Certificate of Substantial Completion.
 2. Warranty shall include coverage for the following:
 - a. Drainage issues, or Failure to drain at rate of 16" per hour or greater.
 - b. Undulations or heaving repair for any undulation caused by the padding material apparent in the turf over 10mm vertical height, whether periodic (due to weather) or persistent.
 - c. Persistent depressions, or deformation of the pad material 10 mm or greater caused by the Resilient Shock Pad materials.
 - d. Any failure in the physical properties of the pad that negatively affect the aesthetics, playability, G-Max rating, HIC rating, or longevity of the synthetic turf of the athletic field.
 - e. Costs for repair or replacement of the synthetic turf and infill above Resilient Shock Pad in affected areas in the event of product failure.
 3. The Contractor shall inspect and repair any areas of concern caused by the Resilient Shock Padding System under warranty including, but not limited to, the following:
 - a. Drainage Issues
 - b. Base Depressions and Undulations Repair

- c. The Warranty shall cover, in general, the usability of the Synthetic Grass System (and pad); accessories, use, characteristics, and suitability, of the installation to the minimums specified in this Section.
- 4. All items covered by the warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting manufacturer/surface supplier over the life of the Warranty.
- D. Seaming Materials shall be warrantied against separation, deterioration, and dimensional stability by the material supplier for the entirety of the field warranty period of eight (8) years.
- E. The Warranty shall cover, in general, the usability of the Synthetic Grass System accessories, use, characteristics, and suitability, of the installation to the minimums specified in this Section.
- F. All items covered by the warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting manufacturer/surface supplier over the life of the Warranty.
- G. Sports Field Synthetic Grass Use: The materials utilized in the sports field synthetic grass system (carpet, infill, Resilient Shock Pad, seaming, logo's, inlays, etc.) shall be guaranteed for the designated uses as follows:
 - 1. Football, Rugby, Soccer, Baseball, Softball, Field Hockey, Lacrosse
 - 2. Marching Band
 - 3. Graduations and Ceremonies
 - 4. Physical Education and Intramural Sports Programs
 - 5. Physical Education exercises and activities
 - 6. Pedestrian traffic and other similar uses
 - 7. Pneumatic rubber-tired maintenance and service equipment, designed for use on athletic fields and golf courses.
- H. Warranty documents and terms of Warranty shall be in accordance with this Specification.
 - 1. The use of the Manufacturers' standard or modified form of Warranty shall in no circumstance supersede the conditions set forth in this Specification Section, which shall be considered part of the Warranty.
 - 2. This Warranty shall constitute a contract made in the State of where the project is located and shall be governed by the laws of that State.
- I. Warranty shall include coverage for the following:
 - 1. Drainage issues, or Failure to drain at the specified rate for the Synthetic Grass Surfacing System.
 - 2. Any failure in the physical properties that negatively affect the aesthetics, playability, G-Max rating, HIC rating, or longevity of the synthetic grass surfacing system.
 - 3. Test results, field repairs, and field concerns shall be submitted to the Owner and the Landscape Architect in a Field Inspection Report and Testing Results for review.

1.11 WARRANTY AND MAINTENANCE OBLIGATIONS

- A. Base Bid: The Synthetic Grass Manufacture/Supplier shall be required to meeting the requirements, as described under G. Warranty Testing and inspection plan for the lifespan of the warranty as part of this Contract and shall submit a schedule of visits at the time of completion. (base bid)
1. The Synthetic Grass Manufacture/Supplier to return to the site once (1) per year for the duration of the warranty, no less than 8 visits.
 2. The Synthetic Grass Manufacture/Supplier shall visit the field and inspect any areas of concern and make repairs as necessary under warranty including, but not limited to, the following:
 - a. Nailer Board/Concrete Anchor Cub Repairs (general contractor)
 - b. Inlays, Numbers, Logo, and Seam Conditions
 - c. Fiber Conditions
 - d. Fiber Height
 - e. Infill Condition
 - f. Test results, field repairs, and field concerns shall be submitted to the Owner and the Landscape Architect in a Field Inspection Report and Testing Results for review.
 3. Contractor shall make corrections as necessary to meet all testing requirements.
 - a. Additional infill may be required by Contractor to maintain the G-Max, HIC levels and required infill depths at the Contractor expense.
 4. All items covered by the warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting manufacturer/surface supplier over the life of the Warranty.
- B. Alternate Bid: The Synthetic Grass Manufacture/Supplier shall provide Maintenance Contract to service the field twice a year for a period of 10 years from the date of substantial completion. Maintenance service shall include the following:
1. Contractor shall provide the cost for the materials, labor, and other items necessary to fully groom and decompaction of the field as needed.
 2. Field shall be maintained in the spring prior to spring sports and late summer prior to fall sports, annually for a period of 10 years from substantial completion of the project.
 3. Maintenance shall include redistribution of infill, providing additional infill as required, fixing all warranty issues such as torn seams, delaminating edges, Including, but not limited to, typical drag brush and deep tine raking of entire field, dragging field with litter cat to remove debris and dragging field with magnet bar to remove all metallic debris from infill. Grooming shall also include additional equipment and methods necessary to achieve desired results.
 - a. Field shall be groomed in two directions with brush during each visit.
 - b. Motorized brushing shall be provided if required to release trapped fibers
 - c. Payment for maintenance contract provider shall be bi-annually after services have been provided contingent on town receipt of acceptable required annual field testing and inspections.

4. Maintenance shall not substitute for or affect the scope of require warranty maintenance or repairs as listed in this section.
5. Contractor shall provide a maintenance schedule to the Owner prior to issuance of Final Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Synthetic Grass Surfacing System

1. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The finished surface shall resist abrasion and cutting from normal use.
2. The materials as hereinafter specified should be able to withstand full climatic exposure in all climates, be resistant to insect infestation, rot, fungus, mildew, ultraviolet light, heat degradation, and be non-allergenic and non-toxic. The entire system shall be constructed to maximize dimensional stability, to resist damage and normal wear and tear from its designated uses and to minimize the ultra-violet degradation.
3. The system shall have the basic characteristics of flow-through drainage, allowing free movement of surface runoff through the synthetic grass system where such water may flow to the existing base and into the field drainage system.
4. Pile fibers shall resemble freshly grown natural grass in appearance, texture and color (except as noted for markings and graphics). Streaks, discoloration, or different dye lots shall not be accepted.
5. Manufacturer is to guarantee that the synthetic grass fiber (yarn) is adaptable to painted lines.
6. The synthetic grass surfacing system shall be a proven athletic caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants.
7. All adhesives used in bonding the system together shall be resistant to moisture, bacterial and fungus attacks, and resistant to ultra-violet rays at any location upon installation.
8. Fabric surface shall be constructed and installed in minimum widths of 15 feet with no longitudinal or transverse seams, except for inlaid lines with a finished roll assembly.
9. The Synthetic Grass System shall remain free draining at all times before, during, and after the infill materials are installed.
10. The synthetic grass surfacing shall be made up of the following systems:
 - a. Multi-Sport Field – Tufted combination of Diamond Shaped Monofilament and Slit-Film, and thatch fibers.
 - b. The intent of the system is for manufacturers to utilize a standard system that most closely resembles the specified system. Refer to Section 1.8 Quality Control for system performance and safety requirements.
 - c. It is not the intent of the pre-manufacturing testing section to require manufacturers to engage in testing of system not previously tested between the time of bid and manufacturing.

- 1) Manufacturers without a previously tested system closely resembling the specification shall not be considered for this project.

11. Synthetic Turf Carpet Properties:

| | |
|--------------------------|---|
| Denier | 9,000 (mono & slit-film) 5,000 (thatch/rootzone/spikezone) |
| Microns | 310 microns (mono) 120 microns (slit-film) |
| Pile Height | 2 inches |
| Pile Weight | 60 oz. |
| Stitch Gauge | < 3/8" |
| Primary Backing Weight | >7 oz. |
| Secondary Backing Weight | >20 oz. |

B. Perforations

1. Synthetic grass carpeting shall be perforated to provide vertical drainage as specified herein.
2. Size and spacing of perforations shall be as specified herein. Spacing of perforations shall be uniform in both directions.
3. Perforations shall be complete and full diameter for a minimum of 95% of each roll.

C. Markings and Logos

1. All field lining, marking, field boundary system with team area limits, logos, etc. shall be same material (yarn, infill, and backing) as playing field system.
2. Lines, logos, and graphics to be installed on the synthetic grass surface as per documents are to be tufted in the factory to the maximum extent practical. Those not tufted in the factory shall be inlaid in the field (**shaving is not permitted**).
3. A complete field lining, marking, and field boundary system with team area limits, etc. shall be provided with the initial installation. Layouts shall be accurately surveyed and marked prior to installation. Layouts shall include all incidental markings required by the NFHS or state athletic organization, whichever is applicable.
4. All markings shall be uniform in color, providing a sharp contrast with the synthetic grass field color and shall have sharp and distinct edging.
5. Logos and lines shall be true and shall not vary more than 1/2" from specified width and location.
6. Tick marks for field markings shown on Plans shall be 4" x 4" in size. At a minimum, ticks shall be installed at the following locations:
 - a. Corners of field
 - b. Corners of boxes, goal areas, and goal locations
 - c. At radii for creases and arches
 - d. Corners of player, coaches, and substitution areas
7. Turf Graphics (other than field lining)
 - a. Field Graphics: (See drawings for detail and location)
 - 1) Centerfield Logo (Add Alternate)
 - a) Three color 'B'

2) Football Yardline Numbers and Arrows (Add Alternate)

D. Adhesive Materials and Seaming Tape

1. Adhesive material to fix the synthetic grass carpet to the seaming tape shall be a polyurethane adhesive:
 - a. Mapei Ultrabond Turf PU 2K - Two-Part Component Adhesive or approved equal
2. Bonding surfaces shall be clean, dry, and free from grease, oil, wax, weak oxide films, mold release agents, and other surface contaminants.
3. The adhesive shall be applied at the rate not to exceed 60 square feet per gallon.
4. The adhesive shall have the same warranty period as the synthetic grass system.
5. Seaming tape shall be a 12" wide polypropylene or polyethylene fabric acceptable for use with the synthetic turf carpet system and the adhesive material.
6. Seaming tape shall meet FIFA Joint Strength $>50\text{N}/100\text{mm}$

E. Infill

1. Infill Materials shall be uniformly filled to a depth which leaves no more than 1/2" of exposed pile after settlement.
 - a. Infill materials shall consist of a homogeneous non-compacting mixture of silica sand and CRM ChillFill meeting the following criteria:
 - 1) CRM ChillFill content shall be between approximately 30-40% by weight.
 - 2) Sand shall be between 60-70% by weight.
 - 3) Manufacturer to provide infill ration based on pre-installation testing.
 - b. Performance Infill
 - 1) Chill Fill as manufactured by CRM
 - a) Shall be free of all metal and foreign materials
 - b) The material shall be UV stabile and resistant to heat degradation to the best of its ability.
 - c. Stabilizing Infill
 - 1) Sand

F. Resilient Shock Pad

1. SP-17 as manufactured by Brock USA or approved equal
2. Load Capacity: No permanent deformation under periodic loading (e.g. grooming equipment, or ambulance).
3. Connectors, couplers, and other fittings: As required to complete the system and prevent heaving buckling or movement of the mat. Material of construction and configuration shall be in accordance with the Resilient Shock Pad manufacture's requirements or recommendations, whichever is more stringent.
4. Warranty: Minimum 16-year manufacturer's warranty.
5. Resilient Shock Pad performance requirements:

| <u>Resilient Shock Pad</u> | | |
|---|--|--|
| Characteristic | Testing Method | Requirements |
| Material | PVC/Nitrile Rubber Or Expanded Polypropylene | |
| Material Thickness | >17 mm (0.67 inch) +/-0.18" | |
| Format / Type | Sheet - or interlocking panels | |
| Drainage / Permeability | BS 7044 Method 4 or EN 12616 as applicable | Perforated or Permeable 50 inches per hour minimum |
| GMAX, With Turf and infill | ASTM D2859 | 90 minimum, 120 maximum. (throughout warranty period) |
| Impact Attenuation, Head Injury Criteria (HIC) (with pad) | EN 1177 | <900 @1.4m (throughout warranty period) |

| | | |
|---|---|--|
| Material Density | ASTM D 1056-07 | 3.6 to 12.5 lbs/ft3 |
| Water Absorption | ASTM D 1056-07 | <5% |
| Vertical Deformation w/out turf | EN 14809 | 4mm maximum |
| Thermal Expansion (per 1°C) | ASTM D696-03 | 0.0000833mm/mm |
| Compression Strength | ASTM D3575 | @25% 30 psi @50% 49 psi @75% 102 psi |
| Compression Set – Static Load (25% strain, 22 hrs, 23°C after 24 hrs) | ISO 1856C | 8.2% (0.089 in) max |
| Compression Set – Repeated impacts (106 psi, repeated, 10,000 cycles) | System Test | 6.0% maximum |
| Friction Coefficient | ISO 8295 | 2.44 lbs Max 1.35 lbs average |
| Microbiological Analysis Bacteria Resistance, Fungal Resistance Chemical resistance | ASTM G22-76 ASTM G21-96 ASTM F925 | No growth or detrimental effects |
| Accelerated Aging 20 yr model - % tensile strength loss 20 yr model - % elongation loss | | -<10% after 120 days @ 85C -<5% after 120 days at 85C |

6. Manufacturer shall provide documentations that the Resilient Shock Pad meets the following:

- a. Product meets human health and total threshold limit concentrations using EPA method 3052
- b. Product meets human health and total threshold limit concentrations for Title 22 (CAM 17) metals using EPA 6020/7471A and hexavalent chromium using EPA method 7196A.

G. Additional Field Materials (Attic Stock)

1. New and Used Carpet

- a. The Contractor shall manufacture and supply to the Owner the following materials. Materials shall be manufactured and delivered to the project at the same time as the installation of the field.
 - 1) 15' wide by 50' long single carpet roll of field material
 - 2) Three (3) sets of 4" wide by 15' long carpet pieces for each line and logo color.
 - 3) Adequate full-size material for two (2) additional (including material necessary for all inlays):
 - a) Full pitcher's mound circle
 - b) Batters area circles
- b. Materials shall be supplied on rolls, with original wrapping, and clearly labeled.

2. Carpet Remnants from Installation
 - a. All remnants smaller than 4'x5' shall be removed and disposed of properly by the Contractor.
 - b. Remnants larger than 4'x5', field cuts outs for the center logo, field lettering, pitcher's mound circle, and batters area circle shall protected and supplied to the Owner as additional attic stock.
 - c. All remnants shall be rolled and wrapped or neatly folded, placed on a pallet and wrapped for storage by the Owner.
3. Infill Materials
 - a. The Contractor shall supply and deliver an additional 2,000 lbs of ChillFill material as specified for the sports field synthetic grass surfacing system.
 - b. *The infill shall be placed in RubberMaid 50 gallon containers with covers and wheels and clearly labeled "FIELD INFILL".*

~~2.2 10 YEAR TWICE ANNUAL MAINTENANCE CONTRACT (ADD ALTERNATE)~~

- ~~A. For this item the contractor shall provide a price to provide a 10 year, bi annual maintenance Contract for maintaining the turf and infill:~~
- ~~1. Contractor shall provide the additional cost for the materials, labor, and other items necessary to restore the field to the conditions (infill and turf) outlined in the post installation warranty testing.~~
 - ~~2. Field shall be maintained in the spring prior to spring sports and late summer prior to fall sports, annually for a period of 10 years from substantial completion of the project.~~
 - ~~3. Maintenance shall include redistribution of infill, providing additional infill as required, fixing all warranty issues such as torn seams, delaminating edges, Including typical drag brush and deep tine raking of entire field, dragging field with litter cat to remove debris and dragging field with magnet bar to remove all metallic debris from infill.~~
 - ~~a. Field shall be groomed in two directions with brush during each visit.~~
 - ~~b. Motorized brushing shall be provided if required to release trapped fibers~~
 - ~~c. Payment for maintenance contract provider shall be bi annually after services have been provided contingent on town receipt of acceptable required annual field testing and inspections.~~
 - ~~4. Maintenance shall not substitute for or affect the scope of require warranty maintenance or repairs as listed in this section.~~

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify site conditions before proceeding with installation work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Architect in writing, of any hazardous conditions and/or discrepancies.
- B. Weather Permitted Conditions: The Contractor shall not perform any work if the conditions for working are:
 1. Ambient air temperatures are below 45 degrees F.
 2. Material temperature falls below 45 degrees F.

3. Rain is forecast or falling
4. Conditions exist or are pending that will be unsuitable to the installation of the system.
- C. Drawings / Specifications: The Contractor shall perform all work in strict accordance to the Contract Drawings / Plans, Shop Drawings and manufacturer's specifications and instructions.
- D. Verification: The Contractor shall be responsible for the inspecting, verifying, and completing all installed work of this section.
 1. The Owner, or Architect on the Owner behalf, reserves the right to independently test any material. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for reimbursing the cost of all Owner directed testing that fails. Contractor will bear the cost of all retesting as required by the Owner.

3.2 EXAMINATION

- A. Acceptance of Prior Work-Field Base Stone: Upon completion of the base and drainage work, the Site General Contractor shall submit a letter, addressed to the Owner, signed by the Site General Contractor and the Synthetic Grass Surfacing Installer. The letter shall confirm Field Base Stone has been reviewed, including all testing data, and is acceptable for installation of the synthetic grass surfacing system. Any discrepancies, problems, and/or conflicts shall be addressed prior to issuance of the letter.
 1. Continuing with the installation of the synthetic turf over the field base stone without issuance of such letter shall be considered as an approval of the base by the Synthetic Grass Surfacing Installer.

3.3 PREPARATION

- A. The Contractor shall take special care to protect all field structures and utilities. Any damage shall be repair or replaced at the cost of the Contractor.
- B. Layout: The Contractor shall be responsible for furnishing, setting and marking all lines, seams and markings for the field. The Contractor shall at all times maintain all necessary benchmarks and control points to locate all events and markings.
- C. Stone Base: The Contractor/Installer is responsible for maintaining the condition of the approved base stone. All area disturbed during the staging of materials or other activities during the installation of the synthetic turf system shall be rectified prior to installation of materials.
 1. The Owner and/or Architect reserve the right to test the base stone planarity at any time during or after installation.
 2. Any deformations in the stone base after acceptance shall be the installers responsibility to rectify.

3.4 INSTALLATION

- A. Synthetic Grass Surfacing System Installation
 1. The synthetic grass carpet and pad shall be staged as necessary to minimize disturbance of the approved stone base.
 2. The Resilient Shock Pad shall be covered and protect from UV exposure at all times.
 3. Carpet shall be unrolled and installed as necessary over the Resilient Shock Pad so as not to allow Resilient Shock Pad to be exposed to UV conditions for longer than 4 hours.

4. Carpet shall be unrolled and laid out to acclimate for an adequate time prior to seaming.
5. All panel seams spacing is to be held to a minimum of 15 feet with no longitudinal or transverse seams, except for inlaid lines with a finished roll assembly unless prior approval of seaming diagram indicates a lesser panel.
6. No fitted pieces shall be allowed to true alignment.
7. All panel seams shall be securely glued and lay flat. Minimum of 5" of seaming tape and glue shall be on either side of the seam.
 - a. Ridges or tenting of seams is not acceptable.
 - b. Gaps greater than 1/8" are not acceptable.
8. All seams shall be brushed thoroughly during installation and before infill materials are installed to release fibers trapped in seaming glue.
9. All seams shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.
10. The Synthetic Grass System shall remain free draining at all times before, during, and after the infill materials are installed.

B. Synthetic Grass System Edges and Termination

1. Field edges shall remain loose and unattached during infill material installation. Minimum of 50% of infill shall be installed prior to edge attachment being made.
2. All edges and ends of the synthetic grass system shall be secured to the anchor curb by 100% glue. Glue shall be installed per manufactures recommendations over full width of anchor curb shelf. Glue beading or failure to follow manufacturers recommendation is unacceptable.
3. Installer shall account for weather conditions and changes in climate conditions when determining the best time of day to make the edge attachment.
4. Final infill level shall be flush with adjacent anchor curb or track surfacing unless noted otherwise on plan.

C. Lines, Markings, Logos, and In-Lays

1. Lines and markings shall be tufted in the factory to the greatest extent possible during manufacturing.
2. All lines, numbers, and field markings are to be tufted or in-laid, shaving shall not be permitted, with the specific colored synthetic grass. All lines and markings shall be accurately set and surveyed to within 1/2" tolerance.
3. All lines and markings shall be installed and verified prior to any installation of in-fill material.
4. All glued inlays shall have a 12" wide seaming tape, fully coated with adhesive. All inlays shall not have any adhesive applied to any exposed fibers.
5. All inlays shall be tuft-in or cut-in (shaving is not permitted).
6. All inlays shall be brushed thoroughly before infill materials are installed.

7. All inlays shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.
8. Installer shall exercise caution to prevent gluing or adhesion of turf to Resilient Shock Pad. Glue shall not be applied directly to pad in any instance.

D. Synthetic Grass Surfacing Infill

1. No in-fill materials shall be installed until the synthetic grass surfacing is fully seamed and all inlays are installed.
2. Edges shall remain unattached until at least 75% of infill is installed.
3. The synthetic grass surfacing shall be thoroughly brushed prior to any in-fill materials to remove any wrinkles and defibrillate the slit film.
4. Acceptable Infill shall not leave less than ½" of exposed fiber on sports fields.
5. The in-fill materials shall be installed in layers not to exceed 0.30 lbs per sq ft per layer.
6. Infill material shall be 'worked into' the turf fibers. Contractor shall allow time and proper machinery to do so.

3.5 PROTECTION

- A. The Contractor shall take special care to protect all field and building structures and utilities. Any damage shall be repair or replaced at the cost of the Contractor.

3.6 TRAINING INSTRUCTION AND OWNERS MANUALS

- A. Provide a 4 hour, at a minimum, on-site training instructional program for the Owner. Prior to conducting training the contractor shall put together and test all maintenance equipment. Equipment shall be fully functional and ready to use at the time of the training. The training shall include review and demonstration generally of the following, but not be limited to:
 1. Daily/Weekly fiber, infill, and seam inspections.
 2. Low infill hand grooming and infill placement.
 3. Seam repair.
 4. Field sweeping, grooming, and decompaction (with tines groomer if applicable). Including demonstration of hock-up, detachment, and use of all equipment with the Owner's equipment.
 5. Field plowing (if applicable).
 6. Protection for events.
 7. Procedure for Warranty claims.

- B. The training instruction will be summarized on a DVD included in the Owner's Manual and close-out documents.

- C. Training shall take place no later than fourteen (14) days after article "Quality Control Testing, Post-Construction Testing" is completed.

3.7 AS-BUILT FIELD LAYOUT DRAWING (By-Owner)

- A. Provide As-Built Field Layout Drawing including verification of field layout dimensions, by licensed surveyor, to the Architect for review and approval.

1. Provide as-built survey in AutoCAD and .pdf format for review.

3.8 CLEAN UP

- A. The site shall be kept clean and free of debris throughout the installation. Empty barrels, sacks, bags, and remnant materials shall be stored or disposed daily in a proper container or legal manner.
- B. After completion of the entire Project, the site shall have a general cleanup removing all debris remaining on the site that is not a part of the final Project.
- C. The equipment supply requirements for this Project shall be part of the total price and shall be the sole expense of the Contractor.
- D. All natural grass areas disturbed during this construction shall be restored to the satisfaction of the Owner at no additional cost to the Owner.
- E. All attic stock materials shall be placed in its appropriate location as determined by the Owner.

3.9 ACCEPTANCE

- A. Should any imperfections develop in the surface areas prior to the final acceptance of the work, they shall be removed and replaced with new materials. All such repair work shall be done at no additional cost to the Owner.
- B. Acceptance will be issued to the Contractor as described under “Substantial Completion” when all work under this section is found to be completed. The Owner or Landscape Architect will not be responsible for any additional acceptance requirements by the Contractor or subcontractor.

END OF SECTION 32 18 13

CONSTRUCTION /
PROGRAM MANAGER

CONSULTANTS

PROGRESS PRINT

DATE:
NOT FOR CONSTRUCTION

ISSUE DATE
DATE DESCRIPTION
FEBRUARY 17, 2023 DRAWINGS ISSUED FOR BID

REVISIONS
DATE DESCRIPTION
March 8, 2023 Addendum #2

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS,
AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0 15' 30' 60'
SCALE: 1" = 30'-0"
TRUE



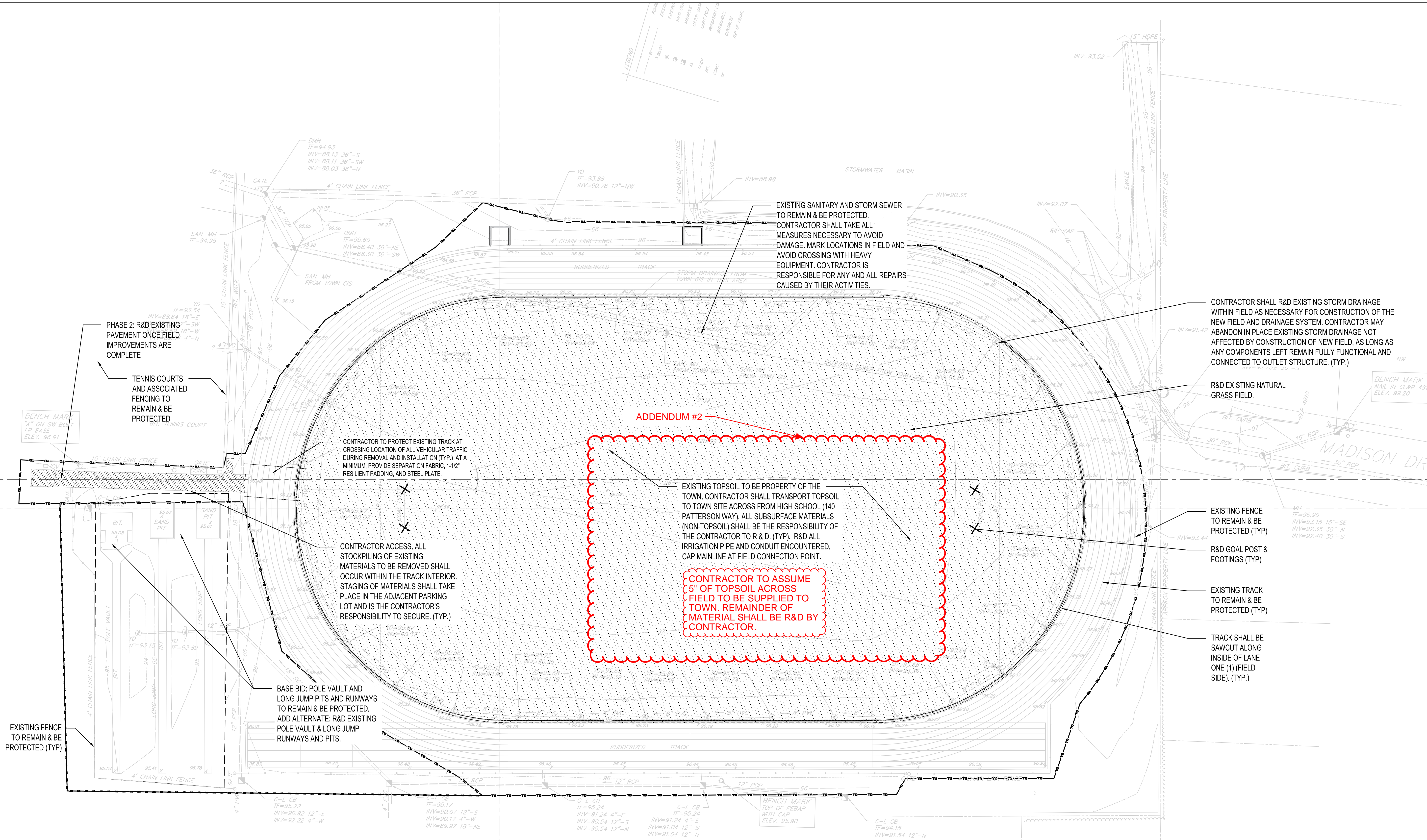
BISCOGLIO FIELD
RENOVATION
BERLIN
HIGH SCHOOL
139 PATTERSON WAY
BERLIN, CT 06037

PROJECT NO.: 22204.00 DRAWN BY: KM

SITE
DEMOLITION
PLAN

DRAWING NO.:

L1.00



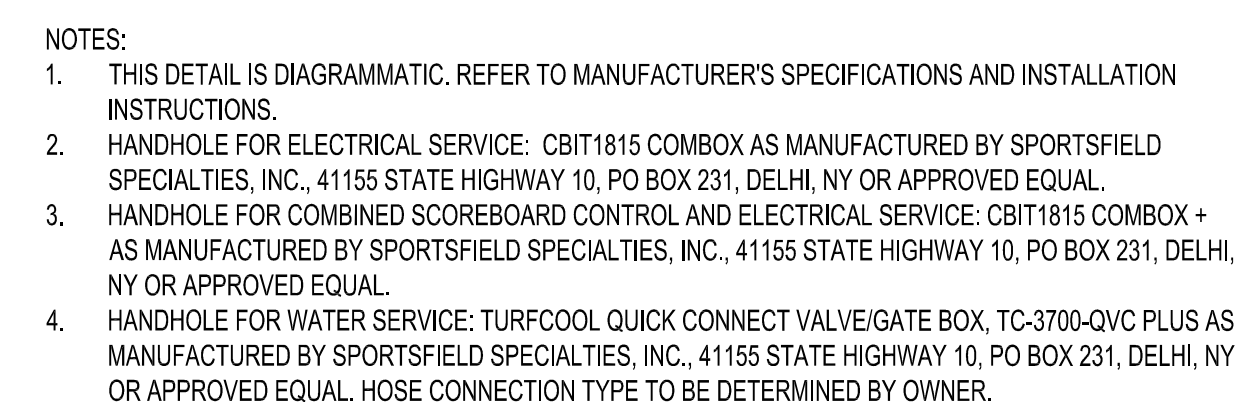
NOTES:

- EXISTING CONDITIONS AND UTILITIES INFORMATION WAS OBTAINED FROM SURVEY FILES ENTITLED "TOPOGRAPHIC SURVEY" DATED 8/25/22 BY THE BONGIOVANNI GROUP.
- CONTRACTOR SHALL NOTIFY *CALL BEFORE YOU DIG (CBYD) (CALL 811) AND VERIFY UTILITY MARK-OUT WITH THE OWNER PRIOR TO THE INITIATION OF ANY SITE DISTURBANCE.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFICATION OF THE LOCATION AND NATURE OF ALL SUBSURFACE UTILITIES AT THE PROJECT WHICH MAY BE AFFECTED BY THE WORK. SOME UTILITIES MAY NOT BE IDENTIFIED THROUGH THE CBYD SYSTEM. ALL UTILITIES SHALL BE PROTECTED UNLESS OTHERWISE NOTED. COORDINATE WITH PERSPECTIVE UTILITY OWNERS AS NECESSARY.
- THE CONTRACTOR SHALL TAKE GREAT CARE TO PROTECT SITE UTILITIES AND SITE FEATURES THAT ARE TO REMAIN, INCLUDING BUT NOT LIMITED TO: WATER LINES, VALVES, AND HYDRANTS, SANITARY FACILITIES, DRAINAGE FACILITIES TO REMAIN, LIGHT POLES AND ASSOCIATED UNDERGROUND OR ABOVE GROUND WIRING, SIGNS, AND UTILITY POLES, FENCING AND GATES.
- NOTIFY THE LANDSCAPE ARCHITECT OF ANY AND ALL DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK.

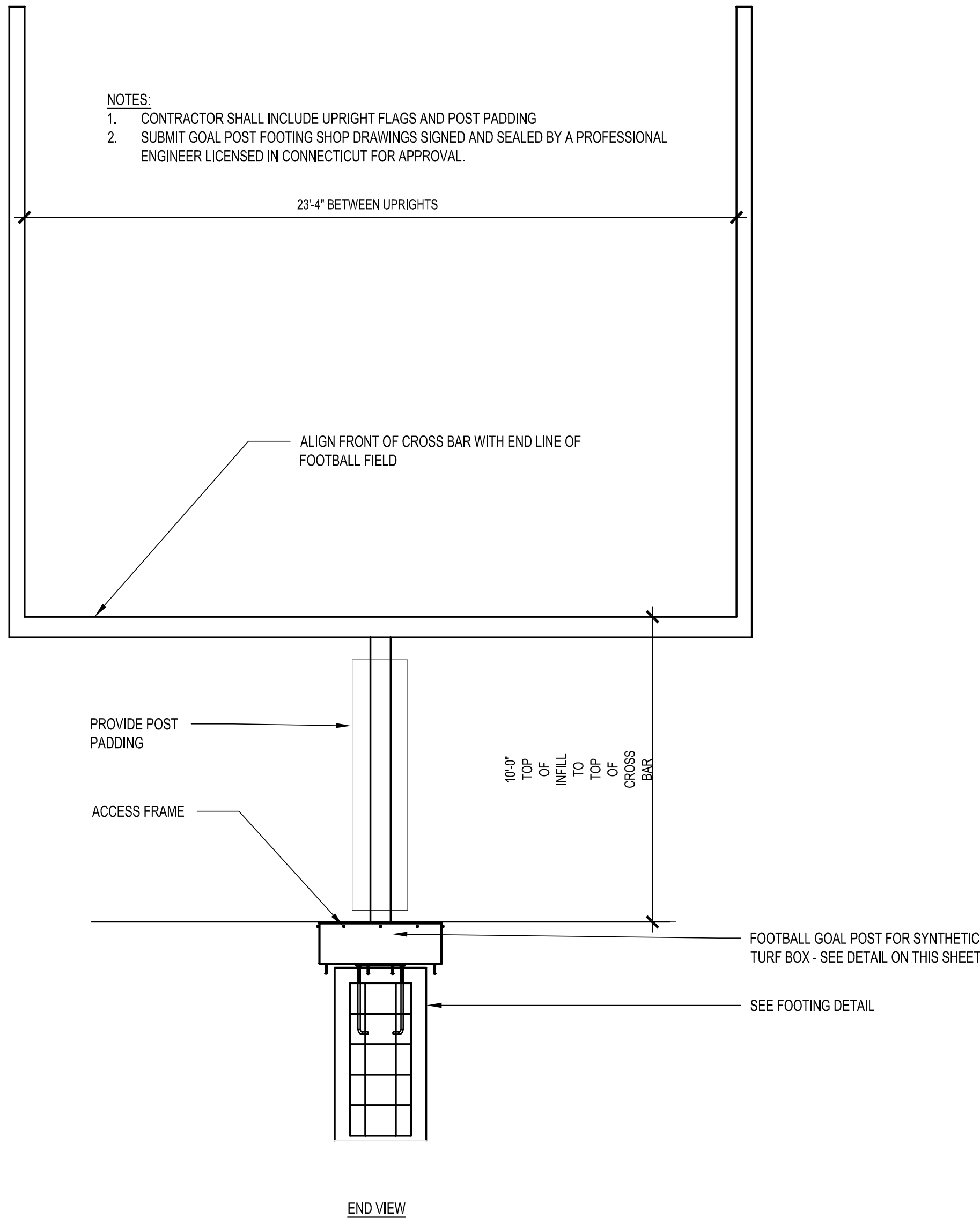
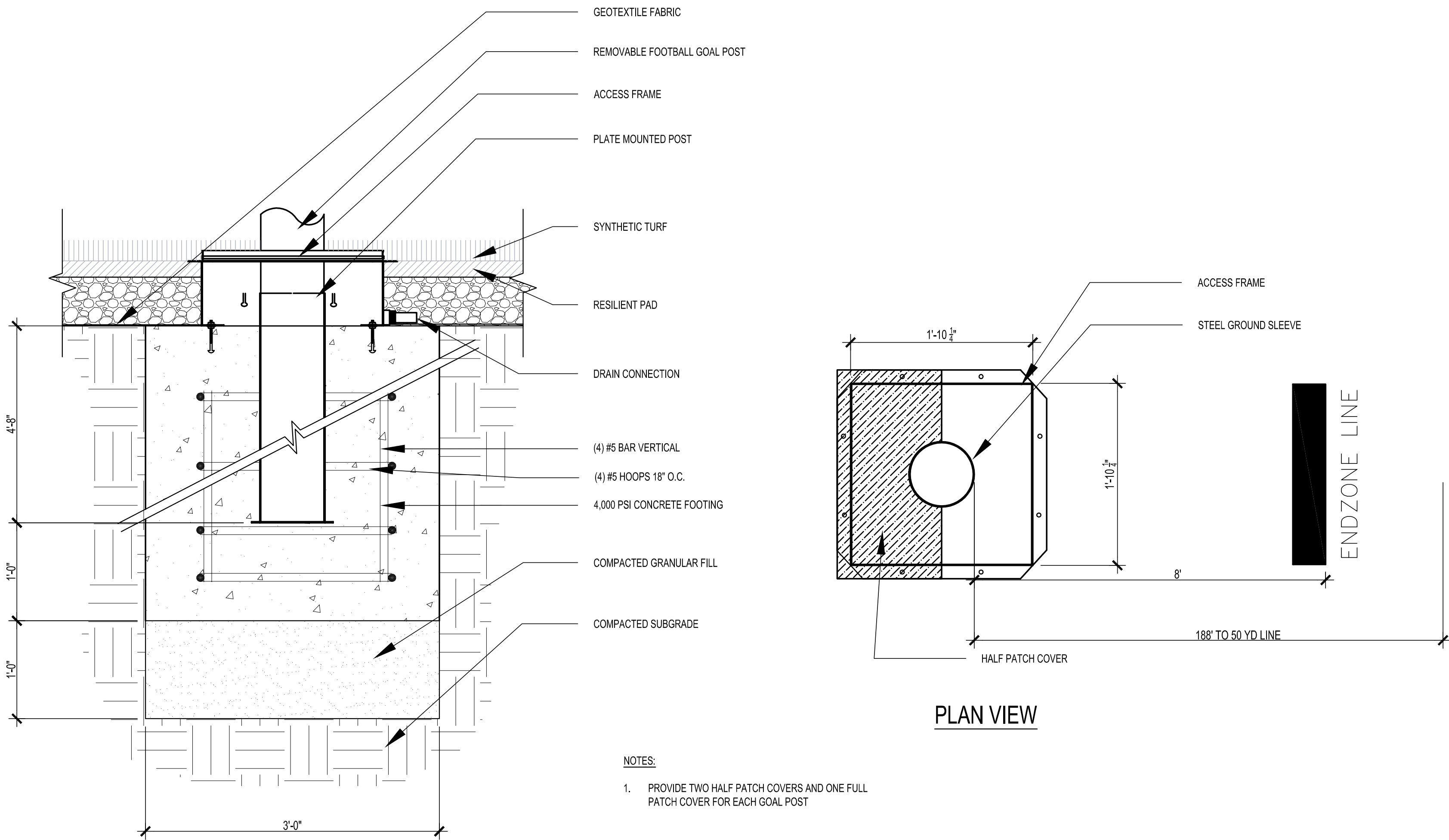
- THROUGHOUT THE WORK, THE CONTRACTOR SHALL PROVIDE FENCING, BARRIERS, SIGNAGE AND OTHER SAFETY DEVICES AS REQUIRED TO PREVENT UNAUTHORIZED ENTRY TO CONSTRUCTION AREAS, COMPLY AT ALL TIMES WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS, ADAPT FENCING, BARRIERS SIGNAGE AND OTHER SAFETY DEVICES TO EVOLVING SITE CONDITIONS THROUGHOUT THE PROGRESS OF THE WORK.
- THE LOCATIONS OF EXISTING SITE FEATURES AS SHOWN MUST BE CONSIDERED APPROXIMATE AS TO THE LOCATION, SIZE, AND AS-BUILT CONDITION AND ARE PROVIDED FOR INFORMATION PURPOSES ONLY. CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL FIELD CONDITION.
- THE PROVISIONS OF WORK SAFETY AND/OR HEALTH PROTOCOLS THAT ADDRESS COMPLIANCE WITH RULES, LAWS, AND REGULATIONS PERTAINING TO CONSTRUCTION SAFETY AND/OR RISK OF EXPOSURE TO SITE-SPECIFIC PHYSICAL OR CHEMICAL HAZARDS IS SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.
- STOCKPILES OF TURF REMOVAL SHALL OCCUR WITHIN SHOWN LIMITS OF WORK, HAULING AND TRUCKING OPERATIONS SHALL BE COORDINATED TO LIMIT DISTURBANCE OF EXISTING HIGH SCHOOL PROGRAMS.
- CONTRACTOR IS RESPONSIBLE FOR SAFETY AND SECURITY OF MATERIALS STORED ON-SITE.

LEGEND

- | | |
|---------------------------|---|
| —●—●—●— | CONTRACT LIMIT LINE |
| - - - - - | SAWCUT |
| X | R&D EXISTING FEATURE |
| [Pattern: Dotted] | NATURAL GRASS FIELD TO BE REMOVED BASE BID |
| [Pattern: Diagonal Lines] | PAVEMENT TO BE REMOVED |
| R&D | REMOVE AND DISPOSE OF |

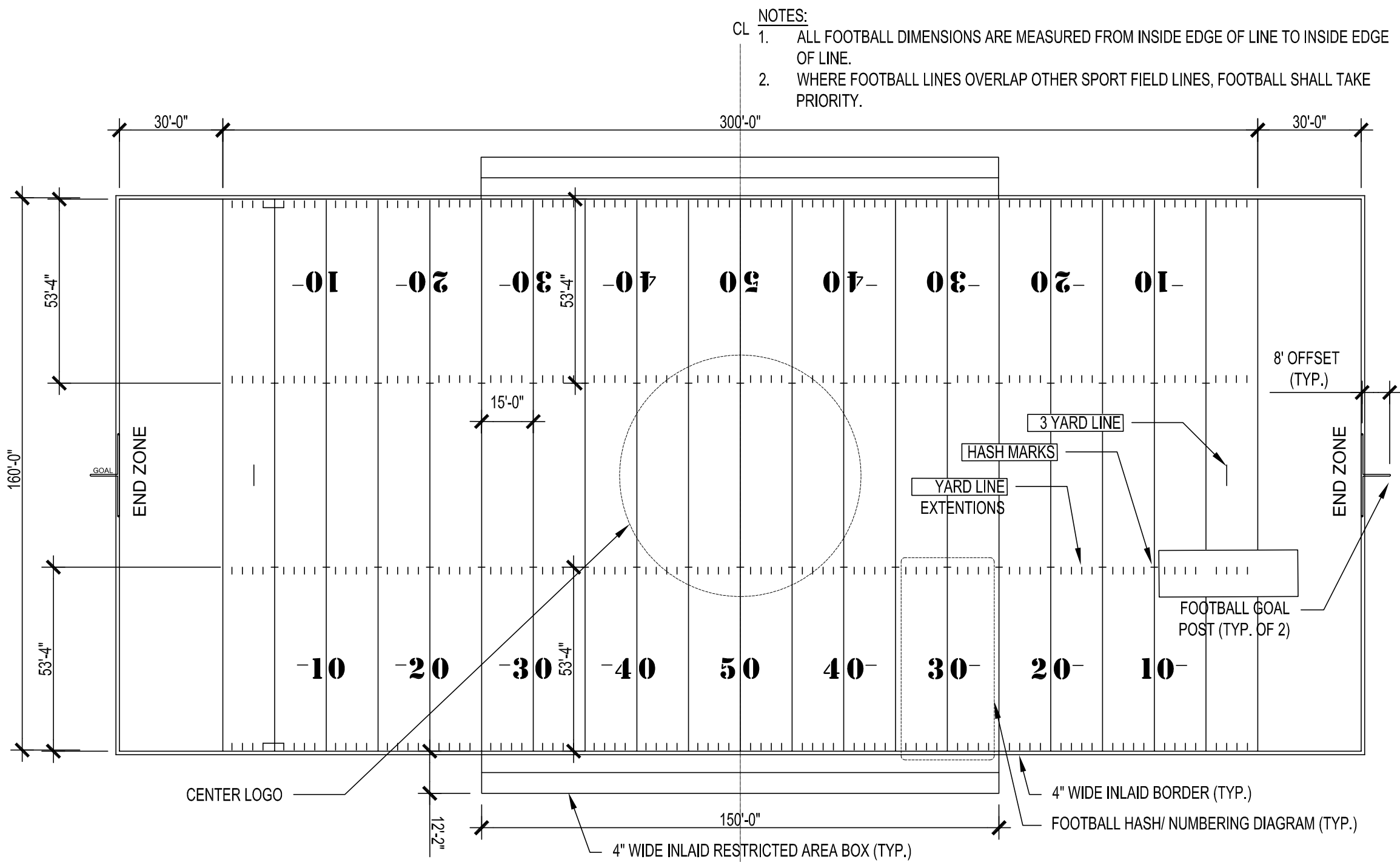


L4.00

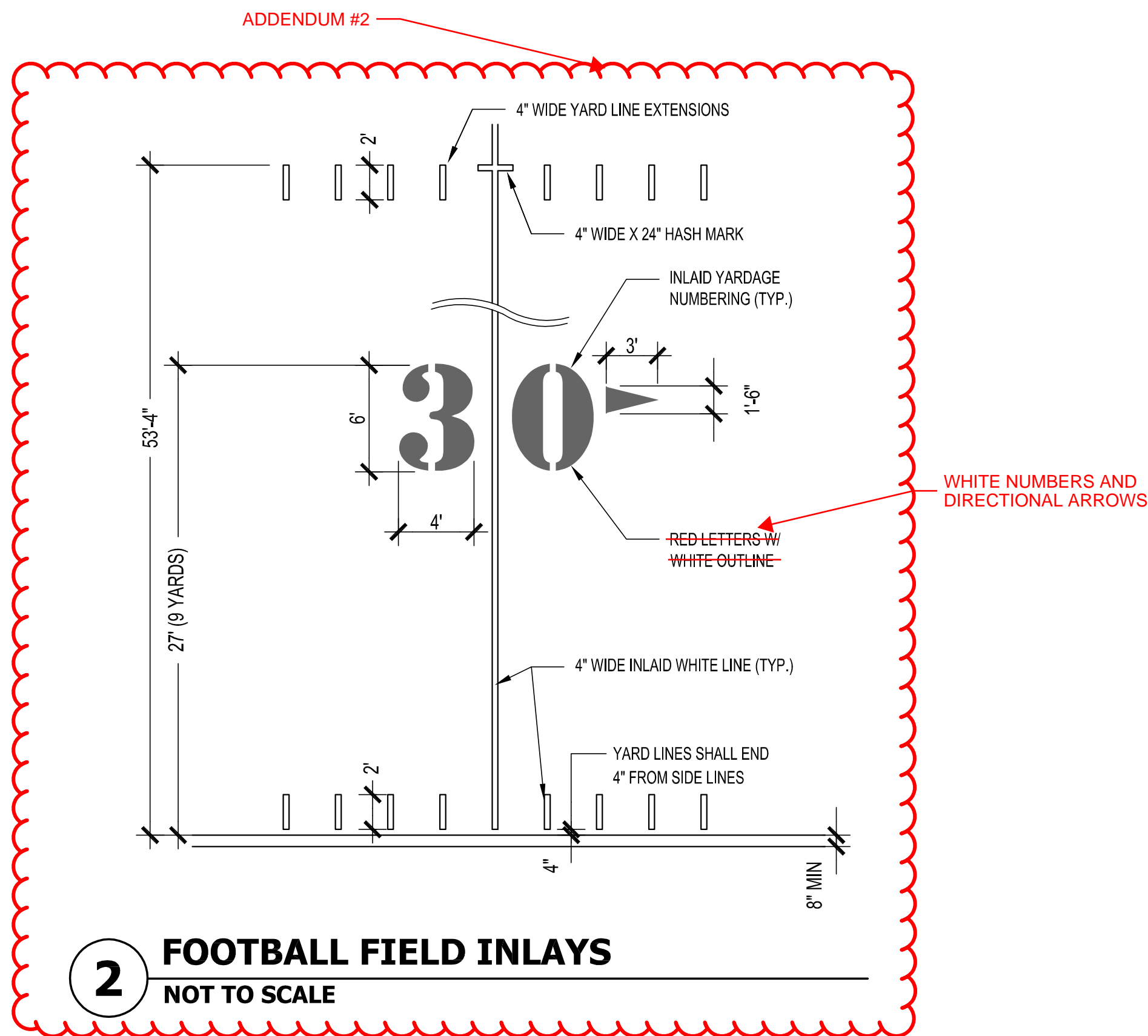


3 FOOTBALL GOAL POST FOOTING
NOT TO SCALE

1 FOOTBALL GOAL POST
NOT TO SCALE



4 FOOTBALL FIELD LAYOUT (WHITE INLAID LINES) (NFHS)
NOT TO SCALE



2 FOOTBALL FIELD INLAIS
NOT TO SCALE

CONSTRUCTION /
PROGRAM MANAGER

CONSULTANTS

PROGRESS PRINT

DATE:
NOT FOR CONSTRUCTION

| DATE | DESCRIPTION |
|-------------------|-------------------------|
| FEBRUARY 17, 2023 | DRAWINGS ISSUED FOR BID |

| DATE | DESCRIPTION |
|---------------|-------------|
| March 8, 2023 | Addendum #2 |

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS,
AND GENERAL NOTES SEE SHEET R0.01

KEY PLAN

0 15' 30' 60'

SCALE: 1" = 30'-0"

TRUE



BISCOGLIO FIELD
RENOVATION
BERLIN
HIGH SCHOOL
139 PATTERSON WAY
BERLIN, CT 06037

PROJECT NO.: 22024.00 DRAWN BY: KM

DETAILS

DRAWING NO.:

L4.01

This architectural site plan shows a circular building with a semi-circular extension on the left side. The building is divided into three sections by two vertical lines. The leftmost section contains a semi-circular extension with a radius of 30' and a central circular feature with a radius of 9'-11". The middle section contains a central circular feature with a radius of 30'-0". The rightmost section contains a semi-circular extension with a radius of 30' and a central circular feature with a radius of 9'-11". The overall dimensions of the building are 195' in height and 360' in width. The semi-circular extension on the left has a radius of 30' and a central circular feature with a radius of 9'-11". The central circular feature has a radius of 30'-0". The semi-circular extension on the right has a radius of 30' and a central circular feature with a radius of 9'-11".

FAN ENLARGEMENT

150°-3"

15'-4"

32'-6"

95'-5"

R 47'-10"

R 34'-10"

R 8'-6"

13'-2"

13'-2"

13'-2"

Diagram illustrating the dimensions and key areas of a soccer field:

- Overall Dimensions:**
 - Length: 360'-0"
 - Width: 225'-0"
- Goal Area Dimensions:**
 - Goal Width: 24'-0"
 - Goal Depth: 18'-0"
 - Goal Area Width: 30'-0"
 - Goal Area Depth: 60'-0"
 - Goal Area Radius: 3'-0"
- Penalty Area Dimensions:**
 - Penalty Area Width: 30'-0"
 - Penalty Area Depth: 60'-0"
 - Penalty Area Radius: 3'-0"
- Other Dimensions:**
 - Distance from Goal Line to Penalty Area: 33'-0" TYP.
 - Distance from Goal Line to Goal Area: 46'-6"
 - Distance from Goal Line to Penalty Area: 132'-0"
 - Distance from Goal Line to Goal Area: 54'-0"
 - Distance from Goal Line to Penalty Area: 60'-0"
 - Distance from Goal Line to Goal Area: 18'-0"
 - Distance from Goal Line to Goal Area: 24'-0"
 - Distance from Goal Line to Goal Area: 30'-0"
 - Distance from Goal Line to Goal Area: 36'-0"
 - Distance from Goal Line to Goal Area: 42'-0"
 - Distance from Goal Line to Goal Area: 48'-0"
 - Distance from Goal Line to Goal Area: 54'-0"
 - Distance from Goal Line to Goal Area: 60'-0"
 - Distance from Goal Line to Goal Area: 66'-0"
 - Distance from Goal Line to Goal Area: 72'-0"
 - Distance from Goal Line to Goal Area: 78'-0"
 - Distance from Goal Line to Goal Area: 84'-0"
 - Distance from Goal Line to Goal Area: 90'-0"
 - Distance from Goal Line to Goal Area: 96'-0"
 - Distance from Goal Line to Goal Area: 102'-0"
 - Distance from Goal Line to Goal Area: 108'-0"
 - Distance from Goal Line to Goal Area: 114'-0"
 - Distance from Goal Line to Goal Area: 120'-0"
 - Distance from Goal Line to Goal Area: 126'-0"
 - Distance from Goal Line to Goal Area: 132'-0"
 - Distance from Goal Line to Goal Area: 138'-0"
 - Distance from Goal Line to Goal Area: 144'-0"
 - Distance from Goal Line to Goal Area: 150'-0"
 - Distance from Goal Line to Goal Area: 156'-0"
 - Distance from Goal Line to Goal Area: 162'-0"
 - Distance from Goal Line to Goal Area: 168'-0"
 - Distance from Goal Line to Goal Area: 174'-0"
 - Distance from Goal Line to Goal Area: 180'-0"
 - Distance from Goal Line to Goal Area: 186'-0"
 - Distance from Goal Line to Goal Area: 192'-0"
 - Distance from Goal Line to Goal Area: 198'-0"
 - Distance from Goal Line to Goal Area: 204'-0"
 - Distance from Goal Line to Goal Area: 210'-0"
 - Distance from Goal Line to Goal Area: 216'-0"
 - Distance from Goal Line to Goal Area: 222'-0"
 - Distance from Goal Line to Goal Area: 228'-0"
 - Distance from Goal Line to Goal Area: 234'-0"
 - Distance from Goal Line to Goal Area: 240'-0"
 - Distance from Goal Line to Goal Area: 246'-0"
 - Distance from Goal Line to Goal Area: 252'-0"
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 - Distance from Goal Line to Goal Area: 264'-0"
 - Distance from Goal Line to Goal Area: 270'-0"
 - Distance from Goal Line to Goal Area: 276'-0"
 - Distance from Goal Line to Goal Area: 282'-0"
 - Distance from Goal Line to Goal Area: 288'-0"
 - Distance from Goal Line to Goal Area: 294'-0"
 - Distance from Goal Line to Goal Area: 300'-0"
 - Distance from Goal Line to Goal Area: 306'-0"
 - Distance from Goal Line to Goal Area: 312'-0"
 - Distance from Goal Line to Goal Area: 318'-0"
 - Distance from Goal Line to Goal Area: 324'-0"
 - Distance from Goal Line to Goal Area: 330'-0"
 - Distance from Goal Line to Goal Area: 336'-0"
 - Distance from Goal Line to Goal Area: 342'-0"
 - Distance from Goal Line to Goal Area: 348'-0"
 - Distance from Goal Line to Goal Area: 354'-0"
 - Distance from Goal Line to Goal Area: 360'-0"
- Key Areas and Lines:**
 - Goal Line
 - Penalty Area
 - Goal Area
 - Goal
 - Halfway Line
 - Touchline
 - Penalty Mark
 - 9' Spot
 - 3' (1 YD) Radius (TYP.)
 - 30' (10 YDS) Radius
 - 3' (1 YD) Tick Mark (TYP.)

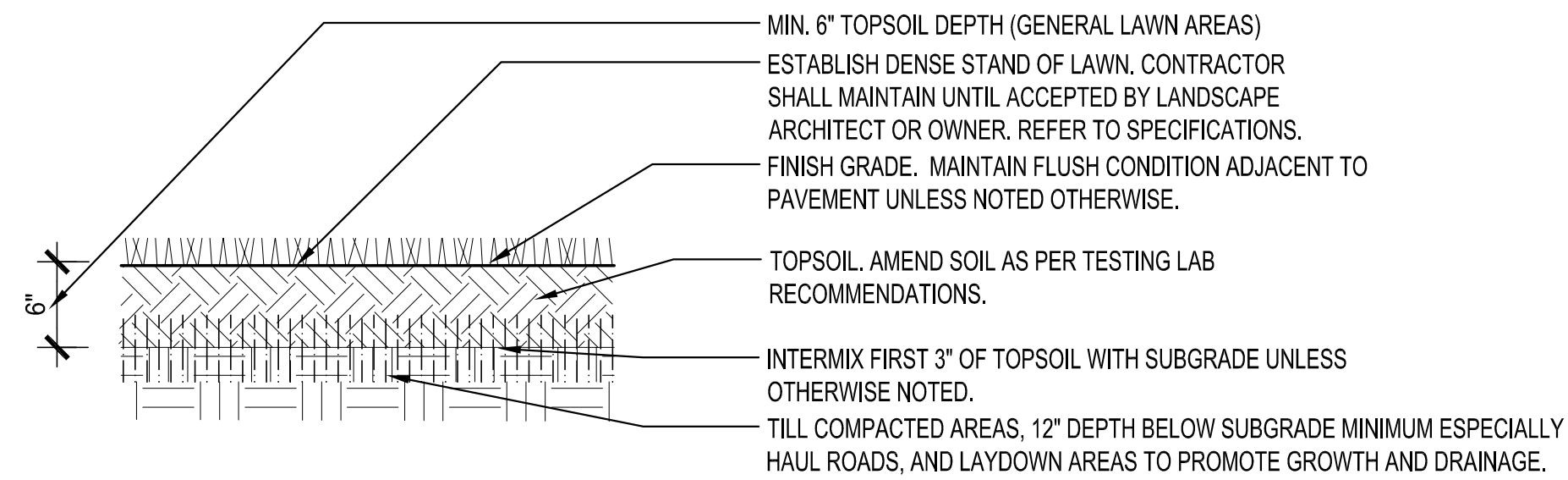
L4.02

A detailed technical diagram of a football field, oriented horizontally. The field is green with white yard lines and numbers. The yard lines are labeled from 10 to 50 on both sides of the center. The center of the field features a large red letter 'B' inside a yellow circle. The field is surrounded by a grey oval track. The diagram includes various colored lines (yellow, red, black) and dimensions (e.g., 10, 20, 30, 40, 50) indicating specific areas and distances. A large black 'B' is also visible in the center of the field.

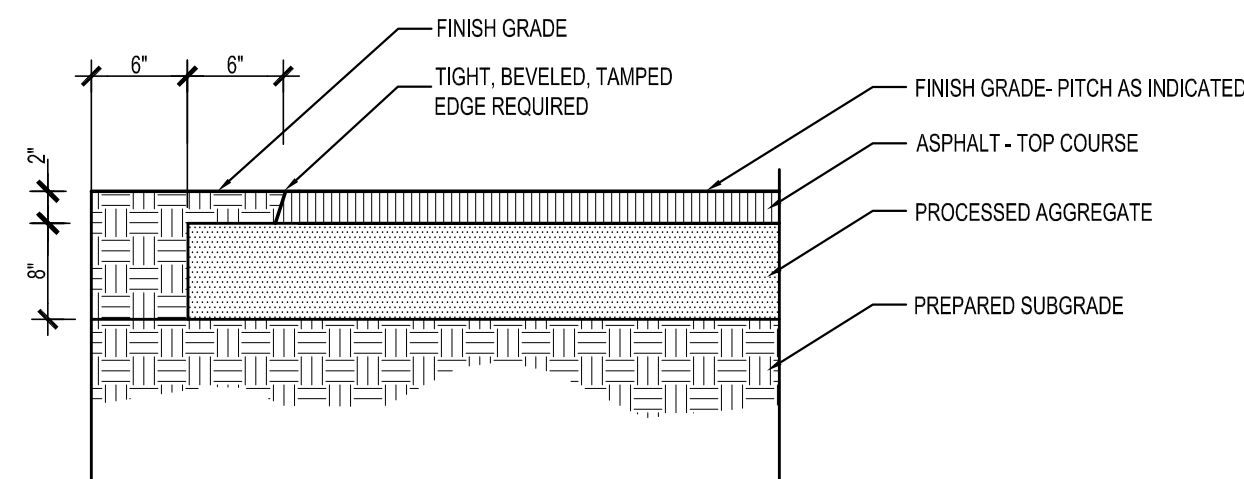
The diagram illustrates a soccer field layout with the following dimensions and areas:

- Overall Dimensions:**
 - Length: 120' (40 YDS)
 - Width: 60' (20 YDS)
- Goal Area:**
 - Radius: R9'-0"
 - Distance from center line: 6' (2 YDS)
- Defensive Area:**
 - Width: 105' (35 YDS)
- Wing Area:**
 - Width: 45' (15 YDS)
 - Distance from center line: 60' (20 YDS)
- Goal Area:**
 - Width: 30' (10 YDS)
- Other Dimensions:**
 - Distance from center line to goal area: 120' (40 YDS)
 - Distance from center line to goal area: 45' (15 YDS)
 - Distance from center line to goal area: 60' (20 YDS)
 - Distance from center line to goal area: 30' (10 YDS)
 - Distance from center line to goal area: 60' (20 YDS)
 - Distance from center line to goal area: 330' (110 YDS)

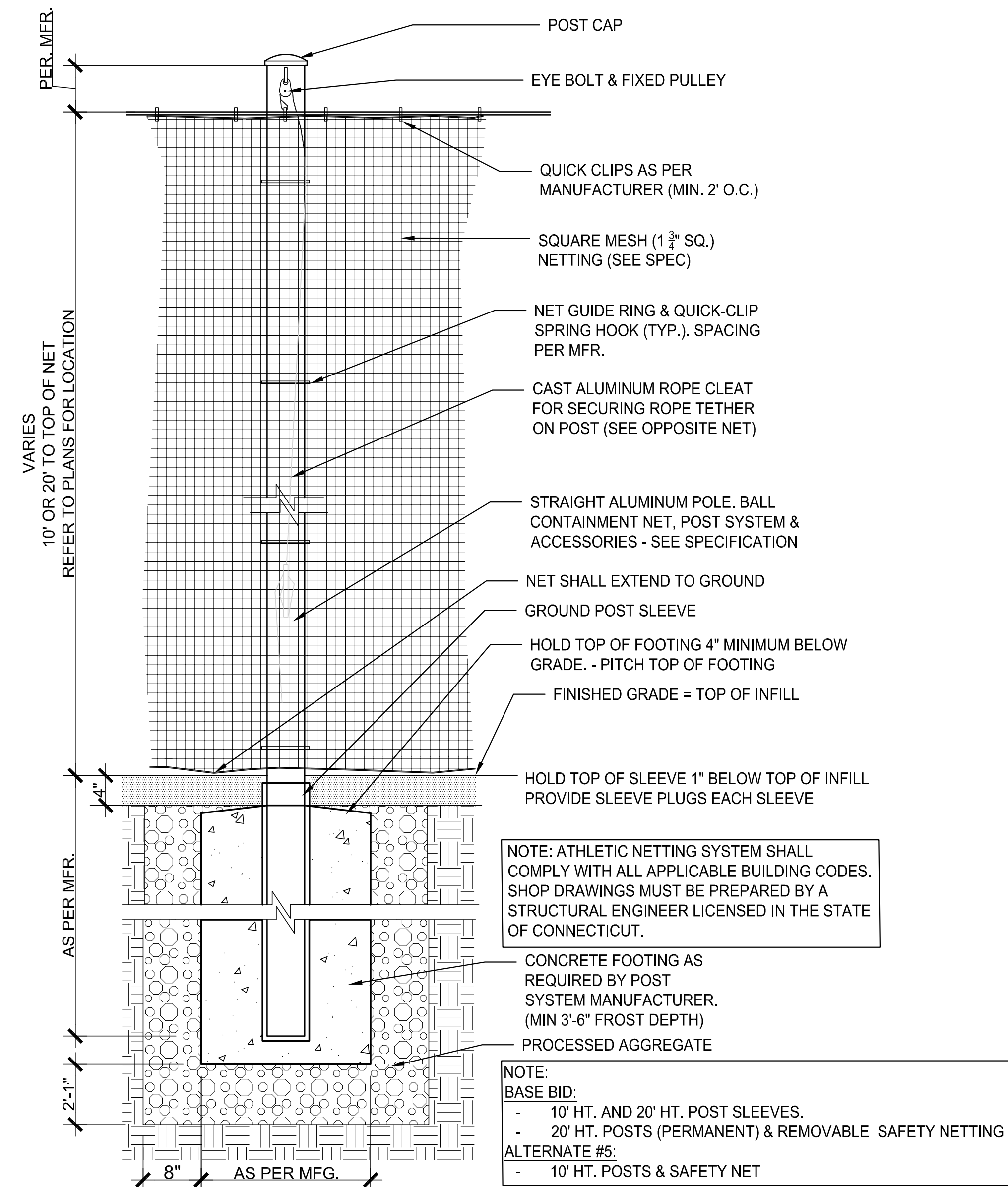
2023 © COPYRIGHT KAESTLE BOOS ASSOC., INC.



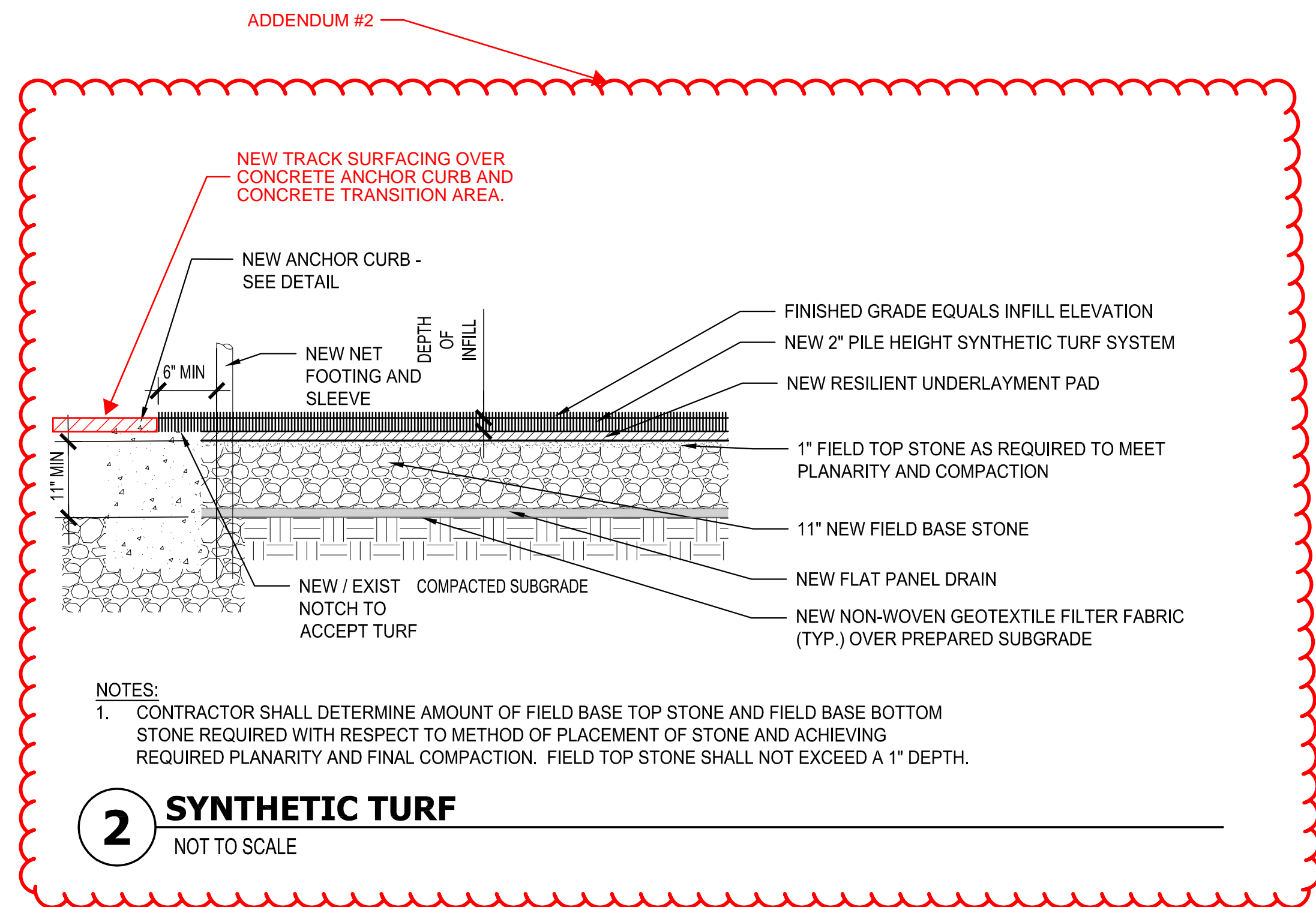
3 LAWN PLANTING (TYP.)
NOT TO SCALE



4 ASPHALT WALK - SINGLE COURSE
N.T.S.



1 ATHLETIC NETTING SYSTEM- BASE BID, ALTERNATE #5
NOT TO SCALE



2 SYNTHETIC TURF
NOT TO SCALE

CONSTRUCTION /
PROGRAM MANAGER

CONSULTANTS

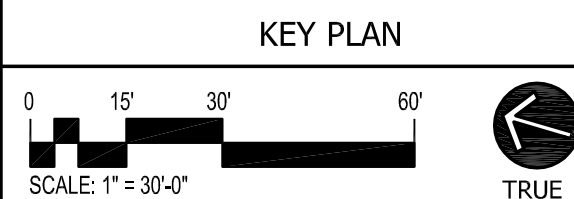
PROGRESS PRINT

DATE:
NOT FOR CONSTRUCTION

| DATE | DESCRIPTION |
|-------------------|-------------------------|
| FEBRUARY 17, 2023 | DRAWINGS ISSUED FOR BID |

| DATE | DESCRIPTION |
|---------------|-------------|
| March 8, 2023 | Addendum #2 |

FOR ALL ABBREVIATIONS, SYMBOL LEGENDS,
AND GENERAL NOTES SEE SHEET R0.01



**BISCOGLIO FIELD
RENOVATION
BERLIN
HIGH SCHOOL**
139 PATTERSON WAY
BERLIN, CT 06037

PROJECT NO.: 22024.00 DRAWN BY: KM

DETAILS

DRAWING NO.:

L4.03

PRE - BID MEETING SIGN - IN

BID # 2023 - 18

SYNTHETIC TURF FIELD
BISCOGLIO FIELD AT
BERLIN HIGH SCHOOL
Berlin, CT

KBA #22024.00
Meeting Date: March 3, 2023 at 10:00 am
Page: 1 of 2

| Company Name | Representative Name | Email | Phone |
|--------------------------|---------------------|---------------------------|--------------|
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| Mountain View Landscapes | Greg Vesco | GregV@mountainviewinc.com | 413-575-9567 |
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