A D D E N D U M N O. 1

Pike High School – Baseball and Softball Turf

Project No. 224064.00

MSD of Pike Township
Indianapolis, Indiana

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Addendum No. 1, 5 Items, 1 page
Revised Project Manual Sections: 01 23 00 – Alternates, 13 34 17 – Angle Frame Bleachers, and 32 18 13 - Synthetic Grass Surfacing
Revised Drawing Sheets: GD1.10, GD1.20, G1.00, G1.10, G1.20, SD4.00, and SD4.10
Pre-Bid Meeting Sign-In Sheet

Date: October 17, 2024

FANNING/HOWEY ASSOCIATES, INC.
ARCHITECTS/ENGINEERS/CONSULTANTS

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. 1 to Drawings and Project Manual, dated October 4, 2024, for MSD of Pike Township, 3950 W. 56th Street, Indianapolis, Indiana 46278; as prepared by Fanning/Howey Associates, Inc., Indianapolis, Indiana. This Addendum shall hereby be and become a part of the Contract Documents the same as if originally bound thereto.

The following clarifications, amendments, additions, revisions, changes, and modifications change the original Contract Documents only in the amount and to the extent hereinafter specified in this Addendum.

Each bidder shall acknowledge receipt of this Addendum in his proposal or bid.

NOTE: Bidders are responsible for becoming familiar with every item of this Addendum. (This includes miscellaneous items at the very end of this Addendum.)

RE: ALL BIDDERS

ITEM NO. 1. REVISED PROJECT MANUAL SECTIONS

A. Sections 01 23 00 – Alternates, 13 34 17 – Angle Frame Bleachers, and 32 18 13 Synthetic Grass Surfacing have been revised, dated 10/17/24, and is included with and hereby made a part of this Addendum.

ITEM NO. 2. PROJECT MANUAL, SECTION 00 41 16 – BID FORM

A. The Bid Form has been revised for this Project. This revised form, dated 10/17/24, is the applicable form to be used by all bidders and is included with and hereby made a part of this Addendum. Revision includes the addition of Alternates No. 3 and 4.

These revisions will be reflected on the Bid Forms provided for the convenience of the bidders.

ITEM NO. 3. PROJECT MANUAL, SECTION 01 10 00 - SUMMARY

A. Article 2.8: Replace paragraphs B., and C., as follows:

"B. Construction operations on site can begin on June 3, 2025.

C. All Work shall achieve substantial completion in all areas by April 13, 2026.

ITEM NO. 4. PROJECT MANUAL, SECTION 01 21 00 - ALLOWANCES

A. Article 3.3, A: Change Allowance No. 1 amount from "$50,000.00" to "$60,000.00".

ITEM NO. 5. REVISED DRAWING SHEETS

A. Drawing Sheets: GD1.10, GD1.20, G1.00, G1.10, G1.20, SD4.00, and SD4.10 have been revised, dated 10/17/24, and is included with and hereby made a part of this Addendum. These Drawings supersede the original documents.

END OF ADDENDUM

DOCUMENT 00 41 16 - CONTRACTOR'S BID FOR PUBLIC WORKS – FORM 96

PART I

(To be completed for all bids. Please type or print)

Date: _____

1. Governmental Unit (Owner): _____
2. County: _____
3. Bidder (Firm): _____
   Address: _____
   City/State/Zip: _____
4. Telephone Number: _____
5. Agent of Bidder (if applicable): _____

Pursuant to notices given, the undersigned offers to furnish labor and materials necessary to complete the public works project of the Pike High School – Baseball and Softball Turf for MSD Pike Township (Governmental Unit) in accordance with plans and specifications prepared by Fanning Howey Associates, Inc., Indianapolis, Indiana and dated October 4, 2024:

BASE BID:

For the sum of _____
(sum in words)

DOLLARS $ _____
(sum in figures)

Bidder has reviewed the Construction Schedule and the intent of the schedule can be met.

_____ Yes _____ No

ALTERNATE BIDS

If awarded a Contract for the Work, the undersigned also proposes to furnish or to omit labor and material necessary to complete work as required by the following "Alternate Bids". Should the Bidder awarded the work fail to fill in an Alternate Price and later it is found that the contracted work is affected by the Alternate, the Contractor will be required to perform the work for no change in Contract Price.

****MARK "ADD" OR "DEDUCT" FOR EACH ALTERNATE****

Alternate Bid No. 1: Non-rubber based, heat reducing environmental infill material.

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT
(sum in figures)

Alternate Bid No. 2: New Angle Frame Bleachers.

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT

Alternate Bid No. 3: Resurfacing of existing asphalt paving.

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT

Alternate Bid No. 4: New Fencing at Junior Varsity fields.

Change the Base Bid the sum of _____
(sum in words)

_____ DOLLARS ($_____) ADD / DEDUCT

PROPOSAL TIME

Bidder agrees that this Bid shall remain in force for a period of sixty (60) consecutive calendar days from the due date, and Bids may be accepted or rejected during this period. Bids not accepted within said 60 consecutive calendar days shall be deemed rejected.

The undersigned acknowledges receipt of the following Addenda:

Receipt of Addenda No(s). _____

Attended pre-bid conference	YES	NO
Has visited the jobsite	YES	NO

The undersigned further agrees to furnish a bond or certified check with this Bid for an amount specified in the notice of the letting. If alternate bids apply, the undersigned submits a proposal for each in accordance with the notice. Any addenda attached will be specifically referenced at the applicable page.

If additional units of material included in the contract are needed, the cost of units must be the same as that shown in the original contract if accepted by the governmental unit. If the bid is to be awarded on a unit basis, the itemization of the units shall be shown on a separate attachment.

The contractor and his subcontractors, if any, shall not discriminate against or intimidate any employee, or applicant for employment, to be employed in the performance of this contract, with respect to any matter directly or indirectly related to employment because of race, religion, color, sex, national origin or ancestry. Breach of this covenant may be regarded as a material breach of the contract.

CERTIFICATION OF USE OF UNITED STATES STEEL PRODUCTS
(If applicable)

I, the undersigned Bidder or agent as a Contractor on a public works project, understand my statutory obligation to use steel products made in the United States (I.C. 5-16-8-2). I hereby certify that I and all subcontractors employed by me for this Project will use U.S. steel products on this Project if awarded. I understand that violations hereunder may result in forfeiture of contractual payments.

ACCEPTANCE

The above bid is accepted this _____day of _____, _____, subject to the following conditions: _____

_____

Contracting Authority Members:

_____ _____

_____ _____

_____ _____

PART II
(For projects of $100,000 or more – IC 36-1-12-4)

Governmental Unit: _____

Bidder (Firm): _____

Date: _____

These statements to be submitted under oath by each Bidder with and as a part of his bid. Attach additional pages for each section as needed.

SECTION I - EXPERIENCE QUESTIONNAIRE

1. What public works projects has your organization completed for the period of one (1) year prior to the date of the current bid?

Contract Amount	Class of Work	Completion Date	Name and Address of Owner

2. What public works projects are now in process of construction by your organization?

Contract Amount	Class of Work	Expected Completed Date	Name and Address of Owner

3. Have you ever failed to complete any work awarded to you? _____ If so, where and why?

4. List references from private firms for which you have performed work.

SECTION II - PLAN AND EQUIPMENT QUESTIONNAIRE

1. Explain your plan or layout for performing proposed Work. (Examples could include a narrative of when you could begin work, complete the project, number of workers, etc. and any other information which you believe would enable the governmental unit to consider your bid.)

2. Please list the names and addresses of all subcontractors (i.e. persons or firms outside your own firm who have performed part of the work) that you have used on public works projects during the past five (5) years along with a brief description of the work done by each subcontractor.

3. If you intend to sublet any portion of the Work, state the name and address of each subcontractor, equipment to be used by the subcontractor, and whether you will require a bond. However, if you are unable to currently provide a listing, please understand a listing must be provided prior to contract approval. Until the completion of the proposed project, you are under a continuing obligation to immediately notify all governmental unit in the event that you subsequently determine that you will use a subcontractor on the proposed project.

4. What equipment do you have available to use for the proposed project? Any equipment to be used by subcontractors may also be required to be listed by the governmental unit.

5. Have you entered into contracts or received offers for all materials which substantiate the prices used in preparing your proposal? If not, please explain the rationale used which would corroborate the prices listed.

SECTION III CONTRACTOR'S FINANCIAL STATEMENT

Attachment of Bidder's financial statement is mandatory. Any Bid submitted without said financial statement as required by statute shall thereby be rendered invalid. The financial statement provided hereunder to the governing body awarding the Contract must be specific enough in detail so that said governing body can make a proper determination of the Bidder's capability for completing the Project if awarded.

SECTION IV – CONTRACTOR'S NON-COLLUSION AFFIDAVIT

The undersigned bidder or agent, being duly sworn on oath, says that he has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding.

He further says that no person or persons, firms or corporation has, have or will receive directly or indirectly, any rebate, fee, gift, commission or thing of value on account of such sale.

SECTION V OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE FACTS AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC WORKS ARE TRUE AND CORRECT.

Dated at _____ this _____ day of _____, _____

_____
(Name of Organization)

By _____

_____
(Title of Person Signing)

ACKNOWLEDGEMENT

STATE OF _____)
)SS:
COUNTY OF _____)

Before me, a Notary Public, personally appeared the above-named _____

and swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to before me this _____ day of _____, 20_____.

_____
Notary Public

My Commission Expires: _____

County of Residence: _____

BIDDER REMINDER LIST TO BE COMPLETED AND INCLUDED
IN BID PACKAGE FOR REVIEW AT BID OPENING

	YES	NO
Have you properly and completely executed the Form No. 96 (Format) Bid Form (Section 004116)?		
Have you included your company's Financial Statement (Part II, Sect. III)?		
Note that the Non-Collusion Affidavit is part of the new Bid Form and is to be notarized.		
Have you enclosed a certified check or Bid Bond? (Note: bond must be signed by Surety and Principal)		
Have you indicated the Project Name, Bid Category No., and Description on the outside of your Bid envelope?		
Have you provided the additional information required by Section 32 18 13 – Synthetic Grass Surfacing.		

NOTE: IF ANY OF THE REQUIRED BIDDING DOCUMENTS ARE NOT INCLUDED, DATED, PROPERLY EXECUTED, THE CONTRACTOR'S BID MAY NOT BE ACCEPTED.

END OF DOCUMENT 00 41 16

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

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

1.2 DEFINITIONS

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

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of 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 Contract, notify each entity involved, in writing, of 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 same conditions as other work of Contract.

D. Schedule: A Schedule of Alternates is included at end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Provide Manufacturer's non-rubber based, heat reducing environmental infill material mixture in lieu of specified infill as described in Specification Section 32 18 13.

B. Alternate No. 2: Provide two new Angle Frame Bleacher assemblies including ramp, stairs, guardrails, handrails and landings as indicated on the Drawings and described in Section 13 34 17. Removal of existing bleachers shall be included in this Alternate.

C. Alternate No. 3: Resurface existing paving in area indicated on Drawings, refer to Drawing Sheet G4.01 for additional information.

D. Alternate No. 4: Remove existing fencing and provide new fencing for the perimeter of the junior varsity fields as indicated on the Drawings.

END OF SECTION 01 23 00

SECTION 13 34 17 – ANGLE FRAME BLEACHERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Bleachers, ramps, stairs, accessories, and necessary mounting and installation hardware as indicated, the following types are required:
   1. Bleachers – Angle Frame Type.
   2. Permits: The Bleacher Contractor shall secure and pay for all required permits and governmental fees.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM).
   1. A36 – Specification for Structural Steel
   2. A572-50 – Structural Steel Hot-Dipped Galvanized after fabrication to ASTM A123 Specifications.
   3. A307 – Specification for Carbon Steel Bolts and Studs.
   4. A325 – Specification for Carbon Steel Bolts.

B. The Aluminum Association (AA) – Specification & Guidelines for Aluminum Structures.

C. American Concrete Institute (ACI) – Building Code for Reinforced Concrete.

D. Americans with Disabilities (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG).

E. American Iron and Steel Institute (AISC), Manual of Steel Construction, Load & Resistance Factor Design, 2nd Edition.

F. American National Standard Institute (ANSI)
   1. ICC/ANSI 300-2003, Bleachers, Folding and Telescoping Seating, and Grandstands.

1.3 SYSTEM DESCRIPTION

A. Design Summary
   1. General: Provide a complete, bleacher system mutually dependent components and assemblies that form a bleacher system capable of withstanding structural and other loads, thermally induced movement, and exposure to weather without failure. Include primary and secondary framing, fully closed decking system, seating, handrails/guardrails and accessories complying with requirements indicated, including those in this Article.
   2. Bleachers (Baseball): Angle frame type bleacher with fully closed decking and bench seating.
      a. Configuration, Capacity and Dimensions: As indicated on Drawings.
         1) Minimum capacity 144 including accessible seating.
      b. Rise: 8 inches
      c. Run: 24 inches minimum.
      d. Walkway elevation: Manufacturer's standard 30 inch minimum.
      e. Accessible seating locations and companion seating as required for capacity.
      f. One aisle, two access stairs and one access ramp.
      g. Guardrail system with vinyl coated chain link fence
      h. Stair, ramp, and aisle handrails as required by configuration.
      i. Understructure configuration as required for mounting to concrete slab.

B. Structural Requirements
   1. General: The structure shall be braced for wind and construction loads until all structural elements are secured. Grandstand/Bleacher shall be designed to withstand, with or without live loads, the horizontal and uplift pressures due to the wind. Wind pressures shall be derived from ANSI/ASCE 7-93, Minimum Design Loads in Buildings and Other Structures.
      a. Under these loads and design loads, stresses shall not exceed those allowed in the "Specifications for Structural Steel Buildings, June 1, 1989 as adopted by the American Institute of Steel Construction."
      b. Guardrails and handrails shall be capable of withstanding structural loads required by ASCE 7 without exceeding allowable design working stresses of materials involved.
      c. Welded Shop Connections: Shall be capable of carrying stress put upon them as per AWS Standards.
   2. Design Loads
      a. Dead Load: 6 psf; seat and footboards, risers, steel framing, etc.
      b. Live Load:
         1) Uniformly distributed live load of not less than 100 psf of gross horizontal projection. All stringers and girders shall be limited to L/200 for maximum vertical live load deflection.
         2) Seat and footboard members shall be designed for live loads of not less than 120 lb. per lineal foot.
         3) Horizontal swaying force applied to the seats, in a direction parallel to the length of the seats, of 24 lbs./ft.
         4) Horizontal swaying force applied to the seats, in a direction perpendicular to the length of the seats, of 10 lb./ft.

C. Code
   1. General: Design shall conform to ICC/ANSI 300-2007, unless otherwise indicated and approved by authorities having jurisdiction.

1.4 ACTION SUBMITTALS

A. Shop Drawings: Fabrication and installation of bleachers including plans, elevations, section, details of components, and attachments to other units of work.
   1. For installed products indicated to comply with certain design loadings, including handrails and guardrails, provide structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
   2. Provide applicable anchorage details.
   3. Product Data: Manufactured items and products consisting of standard published literature and catalog data with proposed items identified thereon.
   4. Qualification Data: For installer, engineer, and fabricator.
   5. Certification: Manufacturer shall submit a letter of certification verifying all structural steel is fabricated and made in the USA in accordance with all federal and state laws.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer to perform work of this Section who has specialized in installing types of grandstands and bleachers similar to those required for this Project and who is acceptable to, or certified by, manufacturer.

B. Professional Engineer Qualifications: A professional engineer who is legally authorized to practice in the jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of grandstands and bleachers that are similar to that indicated for this Project in material, design, and extent.

C. Welding Standards: Comply with applicable provisions of AWS D1.1 "Structural Welding Code – Steel" and AWS D1.3 "Structural Welding Code – Steel Sheet."

D. Grandstands and bleachers shall be provided to conform with the International Building Code, 2006, the American with Disabilities Act Accessibility Guidelines (ADAAG) and applicable State and Local Regulations.

E. Warranty: Product shall be guaranteed for one year against defective materials and workmanship. Damages resulting from abnormal use of vandalism are not applicable.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Approved Manufacturers:
1. E & D Specialty Stands, Inc.
2. Dant Clayton Corporation
3. Outdoor Aluminum
4. Sturdisteel
5. Southern Bleacher Company

B. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified product. Requests for Architect's approval must be accompanied by the "Substitution Request Form" and complete technical data for evaluation. All materials for evaluation must be received by the Project Manual and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 MATERIALS

A. All detailing, fabrication and erection shall be in accordance with AISC Specifications, Latest Edition.

B. Structural Steel: ASTM A 572-50, miscellaneous steel shall be ASTM A36
1. Structural Steel shall be protected by one of the following methods:
a. Hot-dipped galvanized to ASTM-A 123 specifications.

C. High Strength Bolts and Nuts: ASTM A 325 steel.

D. Standard Bolts and Nuts: ASTM A-307

E. Aluminum: Extruded alloy 6061-T6 or 6063-T6.
1. End Caps: Channel aluminum alloy 6063-T6.

F. Cross Bracing: Structural angle bracing or channels shall be used for side to side bracing.

2.3 UNDERSTRUCTURE

A. Understructure shall be fabricated from 6061-T6 alloy aluminum, welded aluminum or welded galvanized steel angles.
1. Stringers: Manufacturer's standard supporting members of welded angles or tubing spaced approximately 6 feet on center.

B. Horizontal members and cross braces shall be channels or angles as required to meet loading requirements and for overall unit strength.

2.4 GUARDRAIL AND HANDRAIL SYSTEM, STANDARD

A. Guardrails: Anodized aluminum post and pipe of 6061-T6 alloy, 1-5/8 inch O.D.
1. Manufacturer's standard configuration and attachment methods.

2. Provide chain link fence infill. Provide two inch mesh with vinyl coating.
    a. Color as selected by Architect.
    b. Chain link fence fabric shall extend down in front of understructure at front walkway.
3. Vertical guardrail supports will have cast aluminum safety top cap.

B. Handrails: Anodized aluminum pipe of 6061-T6 alloy. Diameter as required to meet structural and ADA guidelines.
1. All handrails will be smooth consistent diameter.
2. Handrails shall provide 1-1/2 inch clearance from the guardrail material and shall extend 12 inches past the last riser with a return. Newel posts will not interrupt handrail.
3. Two line center aisle handrails shall be anodized extruded aluminum pipe. Rails shall be discontinuous and spacing between rails shall be not less than 22 inches or more than 36 inches. Rails shall not span more than 5 rows of seating.
4. All handrail design must meet ADA guidelines and regulations.
5. Handrails at stairs and ramps shall be returned or shall terminate in a newel post or safety terminal.

2.5 SEATING

A. Seats, General: Unless otherwise indicated, 6063-T6, clear anodized, extruded aluminum plank with a fluted surface and a wall thickness of 0.078 inches. Size of seatboard shall be 2 inches x 10 inches nominal with manufacturer's standard edge.

2.6 DECKING SYSTEM

A. General: Construct from 6063-T6 extruded aluminum with a wall thickness of 0.078 inches. Footboard and riser plank arrangement in a fully closed configuration. The following decking systems may be utilized.
1. Interlocked decking.
2. Welded decking.
    a. If utilized, welded deck system shall be factory welded
3. Channel Interlock (tongue and groove).

B. Footboard and riser plank arrangement shall be interconnected to create a single system minimizing deflection that will not separate due to loading. The interconnection avoids the system acting like independent individual deck members. System shall be designed for a concealed fastening system to the understructure.
1. Fillerboards and riserboards shall be of same material.
    a. Riserboards shall be full height and interlock with top and bottom treads.
2. Ends of decking system will be finished with a one-piece aluminum end cap.
3. Front walkways: Similar to bleacher decking.
4. Walking surface shall be fluted, non-skid.

C. Seat attachment shall be manufacturer's standard system to maintain a fully enclosed decking system with no gaps or voids to the underside of the bleacher unit.

2.7 RAMPS AND RAMP PLATFORMS

A. Manufacturer's standard under structure.

B. Treads shall be 6063-T6 extruded aluminum with a fluted surface and a minimum wall thickness of 0.078 inches. Minimum vertical height of treads shall be 2 inches nominal. Treads shall be mill finish.

C. Ramp and ramp platform treads shall mate via tongue-and-groove design 2 inches nominal dimension and a minimum wall thickness of 0.078 measured between the flutes. All ramp footboards will run perpendicular to the direction of travel.

D. Ramp configuration and quantity shall be as shown on the Drawings. The slope of the ramp shall be 1 inch vertical to 12 inches horizontal with intermediate landings at turns, midpoints, or 30 feet maximum spacing. There shall be a minimum clear distance between support channels of 60 inches. The ramp shall egress to concrete threshold on grade.

E. Ramps will egress to concrete threshold on grade as part of overall concrete slab foundation for bleacher unit.

F. Guardrails and handrails as required and indicated in other parts of this Section.

2.8 STAIRS AND STAIR PLATFORMS

A. Manufacturer's standard under structure.

B. Treads shall be 6063-T6 extruded aluminum with a fluted surface and a minimum wall thickness of 0.078 inches. Minimum vertical height of treads shall be 2 inches nominal. Treads shall be mill finish.

C. Risers shall be provided to fully close the stairs in all directions of travel.

D. Stairs will egress to concrete threshold on grade as part of overall concrete slab foundation for bleacher unit.

E. Guardrails and handrails as required and indicated in other parts of this Section.

F. Stair, stair platforms and railing assembly for access to pressbox shall be matching construction.

2.9 AISLES AND INTERMEDIATE STEPS

A. Aluminum plank material similar to decking.

B. Intermediate steps in vertical aisle stairs will be completely enclosed and divide the rise and run in half, +/- 3/16 inch for code compliance. Intermediate aisle stairs will not create a trip hazard within the 12 inch required aisle access way in a row. Intermediate steps in vertical aisle stairs that create a vertical change in aisle accessway are strictly prohibited. There will be no variance allowed for tread depth to exceed +/- 3/16 inches.
   1. Intermediate aisle stair tread will be in line with seatboards in section view and plan view.

C. All aisles shall have a 1 inch powder coated black tread nosing to delineate the leading edge.

D. Provide center aisle handrail as required by Code.

2.10 FINISHES, GENERAL

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
   1. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

B. Aluminum Finishes
   1. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.
   2. Manufacturer's standard mill finish only where indicated specifically within specifications and for understructure elements not visible from the front view of the bleacher assembly.

3. Class II, Clear Anodic Finish: AA-M12C22A31 (Mechanical Finish: Nonspecular as fabricated; Chemical Finish: Etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.010 mm or thicker) complying with AAMA 607.1, unless otherwise noted.
    a. Location: All aluminum bleacher components visible to spectators from front view including but not limited to railings, steps, seats, decking, ramps and stairs.
4. Painted Finish:
    a. Powder-Coat Applied Finish: Apply manufacturer's standard powder coat applied finish consisting of primer and topcoat(s) according to coating manufacturer's written instructions for cleaning, pretreatment, application, thermosetting, and minimum dry film thickness, where indicated.
    b. Electrostatically applied, baked-on siliconized acrylic or siliconized polyester enamel.
        1) Color and Gloss: Match School athletic color. Sample to be provided.
    c. Location: All bleacher seating vertical risers, aisle risers, intermediate step risers and access stair risers.

C. Steel
1. Galvanized Steel: Structural fabrication with ASTM-A529 steel. Shop connections are seal welded. After fabrication all steel is hot-dipped galvanized to ASTM-A123 specification.
    a. Location: All bleacher understructure and framework.

PART 3 - EXECUTION

3.1 FOUNDATIONS

A. Install foundations or concrete slabs as indicated on shop drawings in compliance with loading indicated. Total dead and live loads shall not exceed the allowable soil bearing pressure.
1. Comply with requirements indicated for sizing and reinforcing.

3.2 INSTALLATION

A. Installation shall be handled directly by the manufacturer or by a factory certified installation subcontractor.

B. Structure shall be erected in accordance with plans, shop drawings, and specifications.

C. Grandstands/bleachers shall be sufficiently anchored to the concrete slab to withstand the wind loads of their particular areas.

3.3 CLEANING

A. Clean all surfaces after erection, in accordance with manufacturer's recommendations.

B. Remove and properly dispose of all packaging and construction debris.

END OF SECTION 13 34 17

SECTION 321813 - SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

A. Section Includes:
   1. Synthetic grass infill system and accessories.
      a. New synthetic grass infill system and flatpipe underdrain system on new base and subgrade for athletic fields.
      b. A heat reducing or cool turf infill material for athletic fields shall also be submitted as an alternate for consideration by the owner.
      c. New synthetic turf with thatch layer and foam backing but without infill adhered to existing prepared concrete slab of batting cages.
      d. New synthetic turf with thatch layer and permeable backing but without infill adhered to existing prepared concrete slab of dugouts.
   2. FieldSpec 7’ Drag Brush
   3. FTMAG 7’ tow behind magnet
   4. Drainage testing of new infill turf field.

B. Related Work:
   1. Division 31 Section “Site Clearing”: For removal of existing natural turf and existing improvements.
   2. Division 31 Section “Earth Moving”: For preparation of subgrade and field base materials.
   3. Division 33 Section “Subdrainage”: For storm drainage structures and field drainage system.

1.2 DEFINITIONS

A. Terminology Definitions:
   1. Base Materials: Materials that provide porosity and stability such as crushed aggregate or porous pavement.
   2. Denier: The weight in grams of 9000 meters of fiber.
   3. Drainage System: A method of removing surface and subsurface moisture/water.
   4. Fiber: A specific form of fibrous textile material from which yarn is manufactured.
   5. Fiber Thickness: A measurement in microns (metric) or mils. (U.S.) of the thinnest cross section of a fiber.
   6. G-Max: A measurement of impact (shock absorption) in terms of gravity units as a ratio of deceleration.
   7. Infill: Loosely dispersed materials that are added to the synthetic turf system, typically sand, rubber, other suitable material, or a combination thereof.
   8. Knitted: A process in which the yard fibers of the pile are tied to the backing which was simultaneously constructed in the same over and under, crisscross process.
   9. Water Permeability: The rate at which water flows through a surface or system cross-section or components of the cross-section.
   10. Planarity: Uniformity of the surface as compared to certain fixed predetermined points or prescribed slopes.
   11. Primary Backing System: A single or multiple layers of woven or non-woven materials, into which the fiber is either tufted or knitted, to provide the initial construction of the synthetic turf.
   12. Secondary Backing System: A coating and/or woven or non-woven fabric layer(s) applied to the primary backing after the fiber pile has been locked into place which serves to provide tuft bind and additional structural integrity.
   13. Shock Absorbing System: Component(s) that add resiliency to the system.
   14. Subgrade: A stabilized foundation onto which the base materials and field systems are installed.
   15. Synthetic Pile Fiber: Grass-like blades made of synthetic materials.
   16. Tufted: A process by which the fiber yarns that form the pile are inserted into a previously prepared blanket-like primary backing.

1.3 PERFORMANCE REQUIREMENTS

A. General: Design of synthetic turf system is based on products and systems by manufacturers as specified in Part 2. Systems shall be engineered by manufacturer to provide a complete turf system.

B. Standard Test Methods: Systems shall comply with all applicable test standards as follows:
   1. ASTM F 1551; "Standard Test Methods for Characterization of Synthetic Turf Playing Surfaces and Materials."
      a. Suffix-DIN 18-035, Part 6 – Water Permeability of Synthetic Turf Systems and Permeable Bases.
      b. Suffix ASTM – Turf System Ball Bounce and Ball Rebound.
   2. ASTM D-1682; Grab Strength Test
   3. ASTM D-1335; Tuft bind
   4. ASTM D-4158; Uniform Abrasion Method
   5. ASTM F-1015; Relative Abrasiveness
   6. ASTM F-355; Procedure A; Shock Absorbency
   7. ASTM D-1876; Peel Resistance

C. Field Markings: Conform to requirements of the National Federation of State High School Association's High School Baseball and Softball Rules and Records.

D. Shock Absorbency: Field shall achieve a minimum of 130 Gmax Shock Absorbency at all tested locations and a maximum of 175. Meeting all requirements for NFSHSA player safety for high school synthetic baseball and softball fields.

E. Player-Surface Interface, ASTM F1936: The field surface should provide consistent footing across the entire field area in all directions. Footing includes traction, slip resistance, and rotational resistance. It should also allow for movement between the shoe and the field surface so that contact can be made between athletes without the foot locking into place.
   1. Traction: The surface should provide good traction in all types of weather with the use of conventional athletic type shoes applicable to the sports and/or activity specified.
   2. Rotational Resistance: The surface should allow for twisting movements as is common in athletic activities. Rotational resistance measures the ability of the user to perform twisting motions when in contact with the surface.
   3. Slip Resistance Component: The system should enable a predictable range of movement between the user and the surface uniformly throughout. The surface should balance traction and slippage by way of the sliding coefficient.
   4. Surface Abrasiveness: The field surface should have fibers that minimize skin abrasions.
   5. Impact Absorption (force reduction): The field surface should have the ability to adequately absorb player impact with the surface.
   6. Surface Stability (vertical deformation): The surface should provide adequate stability so that the athlete can maintain body control to help prevent or properly control contact between athletes. This is an important consideration that should be balanced with the surfaces' ability to absorb impact. If the surface is too soft, the stability provided by the field may not be optimal for player movement and body control.

F. Ball-Surface Interface, ASTM F1936: The field surface should provide consistent and predictable ball performance reaction characteristics.
   1. Surface Uniformity: The synthetic turf playing field should be slightly sloping as noted on plans. The synthetic surface shall provide a true and uniform playing surface throughout.
   2. Ball Bounce: The synthetic turf field should provide a ball bounce as close to the optimal playing characteristics of the sport or sports (baseball or softball). The published standards for the regulatory organizations as applicable for each sport should be referenced.

3. Ball Roll: The synthetic turf field should provide a ball roll as close to optimal playing characteristics of the intended sport or sports (baseball or softball). The published standards for the regulatory organizations as may be applicable for each sport should be referenced.

G. Appearance: Unless otherwise dictated by design, the synthetic turf should have a consistent color and shade without significantly noticeable streaks or other irregularities when observed in any direction.

1.4 ACTION SUBMITTALS

A. Shop Drawings: Prepare at scale of the construction documents and contain all pertinent information regarding installation. Drawings shall include the following:
1. Seaming plan; seams of pad are not to coincide with seams of synthetic turf or interfere with subsurface drainage system.
2. Installation details; edge detail, goal post detail, other inserts, etc.
3. Striping plan: layouts for baseball, softball and reference marks for other sports as noted on plans showing any field lines, markings and boundaries, and field logos as indicated.

B. Samples for Verification: Synthetic Turf, 30 inches by 30 inches with two 4 inches by 12-inch lines, (1 white and 1 yellow), installed per manufacturers recommended method.
1. Color samples of A/E selected colors to match School colors.
2. Provide at project site for review by A/E representative and owner.

C. Product Submittals:
1. Product Data: For each type of product indicated.
2. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency for turf system performance.
   a. Compliance with Pile Height, Face Weight and Total Fabric Weight per ASTM D418.
   b. Primary and Secondary Backing Weights per ASTM Dd418.
   c. Tuft Bind per ASTM D1335.
   d. Grab Tear Strength per ASTM D1682.
3. Certification of Subbase, drainage system and aggregate base installation: Manufacturer/installer shall certify acceptance of subbase, storm drainage system and aggregate base for the purpose of obtaining manufacturer's warranty for the finished synthetic playing surface.
4. Certification of Installer: Proof of compliance with "Quality Assurance" provisions.
5. Warranty: Manufacturer's warranty with provisions specified herein that will be utilized for the Project. Generic warranties are not acceptable.

1.5 CLOSEOUT DOCUMENTS

A. General: Closeout Submittals are to be submitted with O and M Manuals only. Do not submit with other ACTION and INFORMATIONAL Submittals:
1. Maintenance Data: For the proper care and preventative maintenance of the synthetic turf system, including painting and striping.
2. Warranties: Special Warranties specified in this Section.

1.6 QUALITY ASSURANCE

A. Manufacturer/Installer's
1. The synthetic turf installer/manufacturer shall demonstrate experience with at least 3 similar projects with contract amounts over $1,500,000.00. Submit information with the bid.
2. The installer/manufacturer shall employ only qualified, experienced supervisors and technicians skilled in the installation of this system. All turf technicians shall be full time statutory employees of the turf manufacturer/installer. Submit resumes of the top 5 technicians and 2 supervisors with the bid.

3. The turf installer/manufacturer must provide competent workmen skilled in this specific type of synthetic grass installation. The designated supervisory personnel on the project must be certified in writing by the turf manufacturer as competent in the installation of this material, including seaming and proper installation of the infill mixture. The manufacturer shall have a representative on site to certify the installation and warranty compliance.
4. The manufacturer's representative and installation project manager shall observe establishment of subgrade, drainage system, and perimeter drain at periodic intervals during construction and notify the Architect of any items observed that may be detrimental to final installation of the synthetic turf.
5. The Manufacturer must be a certified member of the Synthetic Turf Council (STC).

B. Prospective bidders must meet the following criteria:
1. Have proper license, in good standing, and have never had a license revoked.
2. Have not been disqualified or barred from performing work for any public Owner or other contracting entity.
3. Shall have demonstrable financial strength to fully service and warrant the systems through the provision of audited financial statement for the past 3 years.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer shall warrant artificial grass against defects in the material provided, including ultraviolet degradation, excessive fading, wrinkling, panel movement, shock absorbency, etc.
1. The warranty submitted must have the following provisions even if not part of Manufacturer's standard Warranty form.
a. Warranty Period: Eight (8) years from date of Substantial Completion.
b. Warranty shall include materials and workmanship.
c. Must repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.
d. Must be a warranty from a single source covering workmanship and all self-manufactured or procured materials for the field surface and installation.
e. Warrant that the yarn used to make the grass-like tufts will maintain its UV stability and tensile strength such that the strength of the fiber when measured in accordance with ASTM D-2256 will not decrease by more than 50% during the warranty period due to breakdown of UV stability.

1.8 MAINTENANCE SERVICE

A. Maintenance Proposal: Provide a maintenance proposal from Manufacturer/Installer to the Owner in a form of a standard one-year maintenance agreement. State the services to be provided, obligations, conditions, and terms for agreement period and for future renewal options.

1.9 EXTRA MATERIALS

A. Furnish two additional standard infill container with rubber infill for the owners use. Container shall contain a min of 45 c.f. of rubber and alt. cool infill material.

B. Furnish 2 rolls of additional synthetic turf fabric for owners use. Roll shall contain a min. of 1500 s.f of turf fabric.
1. All salvageable pieces of colored turf used during the installation should be left with the Owner.

C. Provide 3 sets of Velcro slide/wear zone patches for all noted areas on plans – provide specified sizes and turf colors matching areas noted on plans.
1. 1^{ST} base side zone , second base 1^{st} – 2^{nd} slide zone , second base 2^{nd}-3^{rd} slide return zone , third base 2^{nd} – 3^{rd} slide zone , home plate batter box wear zone and pitcher landing zone in front of fixed pitching mound.

PART 2 - PRODUCTS

2.1 MANUFACTURERS/PRODUCTS

A. Varsity Baseball / Softball Stadium athletic field turf – Basis of Design: Subject to compliance with requirements.
   1. Sprinturf ; Atlanta, Georgia
      a. Infield and Warning Track: Ultrablade 50 Sharktooth
      b. Outfield: DFE Skarktooth – no thatch version

B. Varsity Baseball or Softball Stadium athletic field turf- Approved Manufacturers: Subject to compliance with specified requirements, provide customized products to match the Basis of Design performance and system characteristics specified herein by one of the manufacturers listed below:
   1. Fieldturf Tarkett; Calhoun, Georgia.
   2. Motz Group; Cincinnati, Ohio.
   3. Astroturf, Harmony, Pennsylvania.
   4. Mondo, Conshohocken, PA

C. Products of other manufacturers will be considered for acceptance provided they equal or exceed the material requirements and functional qualities of the specified Basis of Design product. Requests for Architect's approval must be accompanied by the "Substitution Request Form" and complete technical data for evaluation. All materials for evaluation must be received by the Project Manager and Specification Department at least 15 days prior to bid due date. Only the listed approved manufacturers will be issued by Addendum.
   1. With any substitution request, the manufacturer must submit all information and specifications of the equal material to the architect.

2.2 SYSTEM COMPONENTS

A. Drainage System, by Division 33, Section "Subdrainage".

B. Base Materials by Division 31, Section "Earthwork"

C. Materials: All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in the area of the Project, be resistant to insect infestation, rot, fungus, and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow-through drainage allowing free movement of surface run-off through turf where such water may flow to the subbase and into the field drainage system.

D. Synthetic Turf: The synthetic turf surface should provide the performance characteristics, components and construction that meet the needs of the declared use for the playing field. (Baseball-Softball).
   1. Synthetic turf construction should provide a system that is resistant to weather, rot, mildew and fungus growth. The system components should be non-toxic, not cause commonly known allergic reactions, and conform to environmental requirements. Each synthetic turf system should be constructed to provide dimensional stability and resist damage from wear and tear during athletic and recreational usage. Each system should be resistant in its entirely to excessive ultraviolet degradation.
   2. Fibers for Tufted Systems: The polypropylene or polyethylene fiber should be of flat film, extruded or texturized slit film for Baseball and Softball fields.
   3. Primary Backing Systems: The primary backing materials should be either polyester tire cord, utilized in the knitting process, or a woven, non-woven, or other suitable materials in one or more layers, utilized in the tufting process.

4. Secondary Backing Systems: The secondary backing materials should be applied through a coating process that can be single or multiple applications of one or several different materials. A knitted turf fabric should receive an initial acrylic coating followed by different options of polyurethane or suitable latex coatings in various weights and thickness configurations, depending on individual system design. A tufted turf fabric should receive a polyurethane or suitable latex precoat or a performance-based acceptable equal which than can be followed by an attached cushion or a laminated secondary backing utilizing polyurethane, suitable latex, or an acceptable performance-based equal. The purpose of the secondary backing is to provide the desired level of tuft bind and structural integrity of the turf components. In cases where an increased level of system resilience is desired, multiple layers of secondary backing materials of different physical characteristics can be applied.
5. Water Permeability Rate: Permeable system by design with adequate drainage, perforations should be put through all of the backing coatings to provide for adequate drainage through the system as specified.
6. Seams: New synthetic turf materials are manufactured in panels or rolls that are usually 15 feet wide. Each panel or roll should be attached to the next with a seam to form the fabric of the field. Seams should be glued with a supplemental backing material or sewn with high strength sewing thread.
7. Adhesive: All adhesives used in bonding the system together should be resistant to moisture, bacterial and fungus attacks, meet local/regional environmental requirements and be resistant to ultraviolet rays at all locations within the installed system. The bonding or fastening of all system material components should provide a permanent, tight, secure, and hazard-free, athletic playing surface.
8. Seaming Tape: Seaming tape is commonly used for seams and/or inlaid lines and markings. The tape is comprised of a fabric that should be installed below the backing material on both sides of a seam or inlay. Adhesive is then applied to the seaming tape to provide a bond between adjacent turf panels to sections. The fabric used for seaming tape should provide dimensional strength and enough surface texture to bond well with the adhesive.
9. Turf Characteristics: For playing field and bull pen areas
    a. Fiber type: polyethylene fibrillated, parallel long slit film.
    b. Yarn: UV-Resistant polyethylene.
    c. Tuft Bind Strength: 8-10 lbs/force
    d. Face/Pile Yarn Weight: Minimum of 50 oz/sqyd.
    e. Total Weight without infill: Minimum of 78.5 oz.
    f. GMax Range: 150 – 165.
    g. Infill Materials: Sand 70% (3 pounds) and Rubber 30% (2 pounds)
    h. Infill Material Density: Minimum of 6 lbs/sf.
    i. Pile Height: 1-3/4 inch and 2 inch as indicated on Drawings.
    j. Colors: Five minimum, manufacturer's standard colors for green field, white lines, and tan dirt areas. Custom colors as required to match school colors for logos and text – Pike Red,white and Brick Dust red for all skinned areas.
10. Turf Characteristics: For batting cages
    a. Foam backed turf PGPN style with thatch layer and no infill with T5 backing as manufactured by Synthetic Turf Resources Corp.706-272-4200 or approved equal in colors to match playing field turf to be adhered to prepared concrete slab surface.
11. Turf Characteristics: For Dugouts
    a. Permeable backed synthetic turf with thatch layer but no infill in colors to match playing field turf to be adhered to prepared dugout concrete floor surface.

E. Infill Material: Infill materials on playing field turf only are comprised of rubber and sand, thereof which are placed on top of the synthetic turf backing and between the synthetic surface fibers.
1. Sand: The sand material utilized as infill should be silt free, similarly sized, and rounded to sub-angular. The sand should be delivered to the site graded, washed and dried.

2. Rubber: The rubber infill utilizes material that is either styrene butadiene rubber (SBR) or ethylene propylene dien polimerisat (EPDM) rubber granules. Both ambient and/or cryogenic rubber can be used.
    a. Rubber granules must be clean and metal free.
3. Hybrid: Constitutes the use of sand and rubber or other suitable materials in various combinations.
4. Heat reducing or Cool infill: Each contractor shall submit as an alternate price for a heat reducing or cool infill material option for consideration by the owner. The contractor shall submit with the alternate price information and specifications on the heat reducing or cool infill material. Cool infill material should be priced to be added as a ¼" top dressing to the base bid infill requested.
    a. Cool infill that's not accepted by owner:
        1) Cork infill – floats to the surface during inclement weather – thus owner does not wish to have this type of infill within the new turf system.
        2) Pine – pine infill not accepted for use. – the material doesn't compact as desired and breaks down into smaller particles in a short period of time.
    b. Cool infill accepted use type:
        1) Walnut shell – out of bounds areas, warning track, backstop only – material is abrasive and should not be used within field of play areas where players will be sliding, diving and or falling upon the turf regularly.

F. Lines, Markings, Logos or text: Construction and materials used should be harmonious with the synthetic surface.
1. Installation: Lines, markings, logos or text shall be inlaid in the synthetic turf surface. Paint shall not be used unless otherwise approved by A/E.
2. Color of inlaid lines, markings logos or text fabric shall be in colors as selected by the Owner / Architect from custom color selections, to match school colors. Any colors selected from custom colors shall be supplied at no additional cost to the owner.
    a. Refer to Drawings for field markings, lines, graphics, text and colors.
3. Consistency: Synthetic turf and fibers utilized for the tufted or inlaid lines, markings, logos or text should be similar to that used in all other areas of the field and installed to the same tolerances.

G. Inserts: Covers for goal or base sleeves and anchors below synthetic turf.
1. Consistency: The synthetic turf used for the inserts should be like that used in the area adjacent to the insert.
2. Installation: The inserts should be anchored securely in the surrounding areas so that they cannot be displaced by the activities occurring on the field and installed to the same tolerances.

H. Nailer Strip: The nailer strip shall be 2 inches by 4 inch composite lumber.

I. The entire synthetic turf system shall be "lead-free".

J. In Ground utility boxes (if required): In ground utility boxes #3500 with infill retainer system for synthetic turf as supplied by Sportsfield Specialties, 888-975-3343 to be installed at each of the locations of existing boxes if required or as adjusted on site.

K. FieldSpec 7' Drag Brush:
1. Basis of Design: FieldSpec 7' Drag Brush and Accessories as Manufactured and/or supplied by:
    a. Sportsfield Specialties, Inc.; P.O. Box 231, 41155 State Highway 10 Delhi, NY 13753, P. (888) 975-3343
2. System to Include:
    a. Powder coated steel construction
    b. Towable with small tractor or utility vehicle
    c. Reversible & replaceable grooming brushes
    d. Replaceable dethatching tines
    e. Simplified height adjustment

f. Easily upgradable to 15’ brush
g. Fully portable for off-field storage
h. Approx. Unit weight: 240 lbs.

L. FTMAG - 7’ Tow Behind Magnet:
1. Basis of Design: FTMAG - 7’ Tow Behind Magnet and Accessories as Manufactured and/or supplied by:
a. Sportsfield Specialties, Inc.; P.O. Box 231, 41155 State Highway 10 Delhi, NY 13753, P. (888) 975-3343
2. System to Include:
a. Tow behind magnet system for synthetic infill turf
b. Pull handles allow debris to be released from magnet
c. Powder coated steel and aluminum construction
d. Compatible with SweepRight Pro and GroomRight
e. Approximate unit weight: 150 lbs.
f. Store inside when not in use

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspection: Synthetic materials should be inspected prior to installation for:
1. Damaged or defective goods.
2. Missing goods or quantities.
3. Correct turf pile height.
4. Correct backing perforation diameter and spacing if applicable.
5. Materials out of tolerance with the specification.

3.2 GENERAL, INSTALLATION

A. The installation shall be performed in full compliance with shop drawings and manufacturer’s printed instructions.

B. All installation operations shall be performed by personnel directly employed by the manufacturer, fully familiar with the materials and their application, under the full-time direction and supervision of a qualified technical supervisor employed by the manufacturer of the synthetic turf.

3.3 TURF INSTALLATION FOR PLAYING FIELDS

A. Subgrade Preparation, refer to Division 31, Section “Earthwork”: The subgrade should provide a stabilized foundation upon which base materials and subsequent components of playing field systems will be installed.
1. Subgrade (Rough) Planarity: The tolerances for the finished subgrade should not exceed one inch as measured by a 10-foot straight edge. Grading of the subgrade shall minimize ponding to the extent practical.

B. Aggregate refer to Division 31, “Earthwork”: Installation of the aggregate base should provide a close, evenly textured surface meeting the required tolerances.

C. Nailer: Attach the composite lumber nailer for the turf attachment to curbs or concrete slabs by means of a galvanized 3/8-inch minimum bolt at 4 feet on center, minimum. The elevation of the nailer shall be determined by the turf manufacturers specifications.

D. Synthetic Turf Installation: All synthetic turf systems should be installed to provide stability that will prevent panels from shifting or bunching.

1. Seaming Method: The synthetic turf panels should be securely fastened together for the warranted life of the system. These seams are typically glued or sewn, the method for which varies from system to system. Seam gaps should be uniform. For tufted infill systems the gap between the fibers should not exceed the gauge of the tufting. For other synthetic turf systems, the seam gaps should not exceed 1/16 inch.
    a. Major panel seaming: Seams must be sewn. Seams shall be flat, tight and permanent with no separation or fraying.
    b. Inlays shall be glued and warranted for workmanship per the Warranty Article.
2. Edge Anchoring: Attach turf to composite nailer strips with fasteners as approved by turf manufacturer. Provide a secure anchor.

E. Infill Material Installation: Correct installation is critical to performance of these systems and should follow the manufacturer's recommendations.
1. Environmental Conditions: It is recommended infill materials should be installed under dry field conditions.
2. Method of Application: The infill material should be installed uniformly. The equipment used for the application of the infill materials should erect the fiber, place the infill materials, and should incorporate a metering method to provide consistent distribution. The equipment utilized should not distort or displace any base materials or damage to system in any way.
    a. Apply infill in numerous thin lifts using specialized broadcasting equipment.
    b. Infill material shall be installed to a depth of approximately 1.75 inches. A maximum of 0.75 inches of fiber can be exposed.
    c. Infill mixture can only be applied when dry.

F. Fiber Conditioning: It is essential to maintain the integrity and uniformity of the fiber throughout the manufacturing, shipping and handling, installation and maintenance processes in order to prevent damage which could alter the specified performance and void the warranty.

3.4 TURF INSTALLATION IN BATTING CAGES AND DUGOUTS

A. Installer shall use an adhesive as approved by turf manufacturer for the specific turf product to adhere turf to prepared concrete substrate.

3.5 SYNTHETIC TURF FIELD TESTING

G. Manufacturer shall perform porosity testing.

H. Porosity is the measure of how much ground water a soil can hold, permeability is the measure of how quickly water passes through a soil, while retention is the measure of how much water stays behind. To calculate the exact area of land required for effective drainage an 'assessment' is required, usually by performing a percolation/water table test as described below.
1. Stage one: Work out the groundwater level – a Trial hole should be dug to determine the position of the standing groundwater table a minimum of 1m squared in area and 2m deep, or a minimum of 1.65m below the invert of the proposed drainage field pipework. The groundwater table should not rise to within 1m of the invert level of the proposed distribution pipes. If the test is carried out in summer, the likely winter groundwater levels should be considered.

2. Stand two: the percolation test – a percolation test should then be carried out to assess the further suitability of the proposed area. A hole 300mm square should be excavated to a depth of 300mm below the proposed invert level of the distribution pipe. Where deep drains are necessary the whole should conform to this shape at the bottom but may be enlarged above the 3oomm level to enable safe excavation to be carried out. Fill the 300mm square section of the hole to a depth of at least 300mmm with water and allow it to seep away overnight. Next day, refill the test section with water to a depth of at least 300mm and observe the time, in seconds, for the water to seep away from 75% full to 25% full level (ie: a depth of 150mm). Divide this time by 150. The answer gives the average time in seconds (Vp) required for the water to drop 1mm. the test should be carried out at least three times with at least two trial holes and the average figure from the test should be taken. The test should not be carried out during abnormal weather conditions such as heavy rain, sever frost or drought. This minimum value ensures that unwanted duff and litter cannot percolate too rapidly into groundwater. Where Vp is outside these limits effective treatment is unlikely to take place in a drainage of the field.
3. Stage Three: The Drainage Calculation
    a. To calculate the floor area of the drainage field (A in m squared) use the following formulas:
        1) For athletic fields: First, determine the time for water to drop (T) in minutes
        2) Next, measure the drop distance (D) in inches
        3) Use the formula from above: RT=T/D
        4) Finally, calculate the percolation rate (PR) in minutes per inch
        5) After inserting the variables and calculating the result, check your answer with the use of an online calculator to make sure values are correct.

3.6 FIELD MARKINGS

A. Installer shall install striping, logos, and additional markings as indicated in accordance with process indicated on shop drawings.

3.7 CLEANUP

A. Contractor shall provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items.

B. All useable remnants of new material shall become the property of the Owner.

C. The Contractor shall keep the area clean throughout the project and clear of debris.

D. Surfaces, recesses, enclosures, etc. shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Owner.

3.8 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing agency to perform field quality-control testing.

B. G-Max Testing, ASTM F1936:
1. Temperature: Ambient shaded air temperature of 40 – 100 degrees Fahrenheit.
2. Number: 10 tests shall be conducts throughout each field area at completion of work. Test locations shall conform as closely as possible to the test sites specified in ASTM F1936 (Football) or FIFA Handbook 3-06 (Soccer).
    a. Provide complete report of testing values and diagram of locations.
    b. Acceptable industry manufacturer tolerance of +/- 2 percent.
    c. Test results shall be between 130 and 175. If test results in values above 175, adjustments should be made to the installation and materials until test results are within the acceptable range.

3.9 DEMONSTRATION

A. The synthetic turf installer shall provide detailed written maintenance instructions, suggested guidelines for the system, and training of maintenance personnel. Maintenance of the systems typically consists of cleaning, stain removal, minor seam repair, dragging or redistribution of any infill material, and management of infill compaction. Specialized equipment is typically required for the maintenance of the surface and should be included with the field contract. Utilizing this equipment as recommended by the installation builder will generate the proper maintenance in relation to any future warranty claims.

3.10 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable infill, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
   1. Burning of combustible cleared and grubbed materials is not permitted on Owner’s property.

3.11 MANUFACTURER / PRODUCT INFORMATION REQUIREMENTS

A. Manufacturer product characteristics and specifications shall be submitted for consideration by each contractor following bidding for consideration.

END OF SECTION 32 18 13

FANNING HOWEY

Project Name MSD OF PIKE TOWNSHIP
PIKE HIGH SCHOOL – BASEBALL AND SOFTBALL TURF
Project No. 224064.00
Meeting Date OCTOBER 10, 2024

PLEASE PRINT CLEARLY. YOUR NAME AND TITLE WILL BE INCLUDED IN THE MEETING REPORT.

THANK YOU!

SIGN-IN SHEET

NAME *(Please print)*	TITLE	COMPANY	PHONE/ FAX	E-MAIL
Peter Winters	Project Manager	Fanning Howey	317.410.1289	pwinters@fhai.com
Ernso Brown	Landscape Designer	Fanning Howey		ebrown@fhai.com
Jeff Fowler	Sales / Construction	Sprinturf	765-744-2757	JFowler@sprinturf.com
Randy Hammond	Sales	Sprinturf	706-48	7'4 & 85.
Jordyn Nelson Fox	PM/Pre-Con	Holladay Construction	317-649-6574	jnelson@hcgllc.net
Korbin Craven	Project Manager	Custom Net Backstops	765-661 6007	Korbin@customnet Backstops.com
Jacob Stevenson	PM	Sub-surface of Indiana	317-650-9919	jstevenson@sub-surface.net
Brooke Reid	Estimator	Powers	864-382-708	breid@powersbrothers.com
Skip Myers	Sales	Toadvine	8125576167	smyers@toadvine.com