

**ADDENDUM
NO. 02**

December 11, 2024

**ZCS Athletic Field Renovations and Multiple Building FA Improvements
900 Mulberry St.
Zionsville, IN, 46077**

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated November 13, 2024, by Fanning/Howey Associates, Inc. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 2-1 through ADD 2-3 and attached Fanning/Howey Associates, Inc. Addendum No. 02, dated December 11, 2024, consisting of narrative, Q/A and three (3) drawings.

A. General Information for All Contractors

1. This Addendum 02 consists of updates to drawings, specifications and Q/A for Zionsville High School – Baseball/Softball Synthetic Turf. This work is covered by Volume 01 & 02 Specifications, Drawing Volume 01 and FHAI Project No. 223142.00.
2. This Addendum 02 consists of updates to specifications and Q/A for Zionsville West Middle School Tennis Complex Renovation. This work is covered by Volume 01 & 03 Specifications, Drawing Volume 02 and FHAI Project No. 223143.00.
3. There is no information pertaining to Pleasant View Elementary Fire Alarm or Zionsville Middle School Fire Alarm scope of work in this Addendum 02.

B. 00 10 00 – Instructions to Bidders

1. REMINDER FOR ALL BIDDERS: All references to “Electronic Bid Submission” are to be deleted. All bid submission for this project is to be submitted in sealed envelope at the address listed for Bid Opening. There is no electronic version of bid submission for this project.

C. 01 12 00 – Multiple Contract Summary

A. Bid Category #1 – Baseball & Softball General Trades

Delete the following Specification Section:

Section 32 18 13.01 – Contractors Guarantee – Vol 2

Delete the following clarifications:

13. Specific to the synthetic turf field, the General Trades Contractor is responsible for earthmoving, establishing subgrade, and installation of geotextile fabric. The General Trades Contractor is also responsible for installation and backfill of perimeter drain and all associated accessories. The Synthetic Turf Contractor is responsible for flat pipe underdrain, 1” diameter crushed limestone base, open graded fine crushed limestone surface topping, and synthetic turf system. The Synthetic Turf Contractor is to review subgrade conditions for acceptance of General Trades Contractor’s Work prior to beginning installation of flat pipe underdrains.

Revise the following clarifications:

12. The General Trades Contractor is to include 250 equipment hours for a small bulldozer to accommodate the *operator hours listed in Clarification #11*. The use of equipment is at the discretion of the Construction Manager. At the end of the project, unused equipment hours will be converted into a dollar amount and returned to the Owner as a deduct Change Order.

Add the following clarifications:

18. Specific to the synthetic turf field, the General Trades Contractor is responsible for site demolition, earthmoving, establishing dirt subgrade to +/- a tenth, and concrete perimeter curb. The Synthetic Turf Contractor is to review subgrade conditions for acceptance of General Trades Contractor’s Work prior to beginning their scope of work.

19. The Synthetic Turf Contractor is responsible for installation of geotextile fabric across entire field, installation and backfill of perimeter drain and all associated accessories, flat pipe underdrain, all stone fill material and synthetic turf system. Reference Detail 13 on G4.0 for diagrammatic interpretation.

20. Repairs to damaged existing field underdrain system caused by typical and necessary construction operations will be covered using Contingency Allowance. No additional costs will be accepted for damages caused by lack of investigation, preparation or negligence by Contractor.

B. Bid Category #2 – Baseball & Softball Synthetic Turf

Add the following Specification Section:

Section 32 18 13.01 – Manufacturers Guarantee – Vol 2

Delete the following clarifications:

2. Specific to the synthetic turf field, the General Trades Contractor is responsible for earthmoving, establishing subgrade, and installation of geotextile fabric. The General Trades Contractor is also responsible for installation and backfill of perimeter drain and all associated accessories. The Synthetic Turf Contractor is responsible for flat pipe underdrain, 1” diameter crushed limestone base, open graded fine crushed limestone surface topping, and synthetic turf system. The Synthetic Turf Contractor is to review subgrade conditions for acceptance of General Trades Contractor’s Work prior to beginning installation of flat pipe underdrains.

Add the following clarifications:

4. Specific to the synthetic turf field, the General Trades Contractor is responsible for site demolition, earthmoving, establishing dirt subgrade to +/- a tenth, and concrete perimeter curb. The Synthetic Turf Contractor is to review subgrade conditions for acceptance of General Trades Contractor’s Work prior to beginning their scope of work.
5. The Synthetic Turf Contractor is responsible for installation of geotextile fabric across entire field, installation and backfill of perimeter drain and all associated accessories, flat pipe underdrain, all stone fill material and synthetic turf system. Reference Detail 13 on G4.0 for diagrammatic interpretation.

C. Bid Category #3 – ZWMS Tennis Court General Trades

Add the following clarifications:

2. This Contractor is responsible for all work outlined in the Contractor Documents for this project site. This includes any/all demolition, sitework, utilities, concrete, post-tension concrete, fencing, irrigation, electrical etc. as noted in Drawings and Specifications.

ADDENDUM NO. 2

Zionsville High School – Baseball/Softball Synthetic Turf

Zionsville Community Schools
Zionsville, Indiana

Project No. 223142.00

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Addendum No. 2, 3 items, 1 page

Revised Project Manual Sections: 31 20 00 Earth Moving and 32 18 13 – Synthetic Grass Surfacing

Revised Drawing Sheets: G1.1, G1.2, and G4.0

Date: December 11, 2024

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

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. 2 to Drawings and Project Manual, dated November 13, 2024, for Zionsville Community Schools, 900 Mulberry Street, Zionsville, Indiana; 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. ADDENDUM NO. 1

- A. Revised Project Manual Section 32 18 13 – Synthetic Grass Surfacing included in Addendum No. 1 has been revised, dated 12/11/24, and is included with and hereby made a part of this Addendum.

ITEM NO. 2. REVISED PROJECT MANUAL SECTION

- A. Section 31 20 00 – Earth Moving has been revised, dated 12/11/24, and is included with and hereby made a part of this Addendum.

ITEM NO. 3. REVISED DRAWING SHEETS

- A. Drawing Sheets: G1.1, G1.2, and G4.0 have been revised, dated 12/11/24, and are included with and hereby made a part of this Addendum. These Drawings supersede the original documents.

END OF ADDENDUM

SECTION 31 20 00 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Subbase and base course preparation for synthetic grass surfacing.
 - 2. Lawn renovation in all disturbed areas
 - 3. Coordination of misc. drainage work
 - 4. Installation and rough grading of topsoil
- B. Related Sections include the following:
 - 1. Division 31 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 2. Division 32 Section "Synthetic Grass Surfacing" for synthetic grass infill system.
 - 3. Division 33 Section "Subdrainage" for field subdrainage system

1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.
- C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- D. Drainage Course: Course providing subsurface drainage and to minimize upward capillary flow of pore water..
- E. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by A/E. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- F. Fill: Soil materials used to raise existing grades.
- G. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 50 blows/2 inches when tested by an independent geotechnical testing agency, according to ASTM D 1586.
- H. Subbase Course (Aggregate): Course placed between the subgrade and base course for infill turf.

- I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- J. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 SUBMITTALS

- A. Quality Assurance/Control Submittals:
 - 1. Product Data: For the following:
 - a. Each type of plastic warning tape.
 - b. Controlled low-strength material, including design mixture.

1.5 QUALITY ASSURANCE

- A. Blasting: Is not permitted:
- B. Subbase course preparation of the Synthetic Grass Surfacing fields shall be coordinated with the Synthetic Grass Surfacing Manufacturer's representative. Synthetic Grass Surfacing Manufacturer shall observe and review installation at periodic intervals to ensure compliance with their requirements. Cooperate with Manufacturer's representative as subgrade and base preparation must be acceptable to the Synthetic Grass Surfacing Manufacturer before installation of that surface.
- C. The Contractor preparing the aggregate subbase for the Synthetic Grass Surfacing fields shall be experienced in those activities and provide a list of at least five (5) projects of similar scope and scale within the last five (5) years.
 - 1. Project experience list shall include Synthetic Grass Surfacing utilized over preparation activities and Project Owner's contact information.

1.6 PROJECT CONDITIONS

- A. Contractor at no cost to Owner may make tests and other exploratory operations.
- B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by A/E and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the Architect immediately for directions as to procedure. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
 - 2. Notify Construction Manager not less than two days in advance of proposed utility interruptions.
 - 3. Do not proceed with utility interruptions without written permission.
 - 4. Contact utility-locator service for area where Project is located before excavating.
- C. Utility Locator Service: Notify utility locator service or "Call Before You Dig" for area where Project is located before beginning earth moving operations.
- D. Do not commence earth moving operations until temporary erosion- and sedimentation-control measures, specified in Division 31 Section "Site Clearing" are in place.
- E. The following practices are prohibited within tree protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment
 - 3. Foot traffic
 - 4. Erection of sheds or structures
 - 5. Impoundment of water

6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards tree protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near tree protection zones.

1.7 WARRANTY

A. Contractor shall Warrant the installation, preparation and materials utilized for the subgrade and aggregate base course below the Synthetic Grass Surfacing. Warranty shall include meeting the required compaction parameters, surface planarity, and stability of aggregate base course.

1. Period: Four years from the date of Substation Completion.
2. Voids, base movement, settling, humping or surface imperfections that occur within the subbase materials affecting the Synthetic Grass Surfacing system levelness shall be corrected by the Contractor during the Warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide product by the manufacturers specified.

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. The "Substitution Request Form" and complete technical data for evaluation must accompany requests for A/E's approval. All materials for evaluation must be received by the Project Manager and Specification Department at least 10 days prior to bid due date. Additional approved manufacturers will be issued by Addendum.

2.2 SOIL MATERIALS

A. Synthetic Grass Surfacing Subbase Materials: The subbase materials are critical to the performance of the entire system and shall meet the synthetic turf manufacturer's requirements for stability and permeability to satisfy local conditions.

1. Aggregate: The aggregate materials utilized to construct the field base must be a properly, graded, crushed stone to provide a balance between stability and permeability. A highly fractured material is desirable to provide the surface stability required for the synthetic turf surfacing, supplemental padding or porous paving as applicable. The graded aggregate particle sizes must be tightly controlled to fall within the bandwidth for all specified sieve sizes with just enough fines to provide stability while still allowing for sufficient drainage. Minimum stability and permeability requirements should be determined and confirmed by an independent certified laboratory prior to construction of the base course.
 - a. Aggregate materials shall be approved by the Synthetic Grass Surfacing Manufacturer and comply with their requirements.
2. Compaction: The base materials should be thoroughly compacted to prevent differential settlement across the field area. Minimum compaction levels should not be less than 90 percent density as measured by a standard proctor test or as required by the Synthetic Grass Surfacing Manufacturer. Special attention should be given to backfill compaction of any utility trenches that cross the field area.

- B. Topsoil : ASTM D 5268, pH range of 5.5 to 7, a minimum of 6 percent to a maximum of 20 percent organic material content; free of stones 1/2 inch or larger in any dimension and other extraneous materials harmful to plant growth.
 - 1. Topsoil Source (Disturbed Areas): Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from bogs or marshes.

2.3 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the A/E in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Water Permeability and Testing: Water permeability rates for both the field's surfacing and the field base materials should be designed to accommodate the local weather patterns. The permeability of both the field surface and the base materials will typically decrease over the life of the field. An adequate factor of safety should be utilized to provide initial infiltration rates for the completed field above those required by the local weather conditions. Perform permeability testing of existing turf field system prior to demolition. Reconduct permeability testing following demolition and establishment new finish grade of drainage stone base.
 - a. ASTM F2898-11 Standard Method for Permeability of Synthetic Turf Sports Field Base

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Provide and maintain erosion control measures in accordance with Division 31 Section "Site Clearing, to prevent erosion or displacement of soils and discharge of soil bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.4 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.5 EXCAVATION, GENERAL

- A. Dewatering: Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.
 - 1. Do not allow water to accumulate in excavations. Remove water to prevent softening of pavement subgrade, foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, sumps, suction, and discharge lines, and other dewatering system components necessary to convey water away from excavations.
 - 2. Convey water removed from excavations and rainwater to collecting or runoff areas. Provide and maintain temporary drainage ditches and other diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

3.6 LAWN RENOVATION

- A. Limit damage to existing lawn areas by preventing unnecessary construction traffic and material stockpiling.
- B. Unchanged Subgrades (7 months or greater): If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches.
 - 3. Remove stones larger than 1/2 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future

3.7 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

3.8 SUBSURFACE DRAINAGE

- A. Subdrainage Pipe: Specified in Division 33 Section "Subdrainage."

- B. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698.
- C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with 1 layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D 698.

3.9 SUBBASE AND BASE COURSES

- A. Synthetic Grass Surfacing Aggregate Subbase: Installation of the aggregate base should provide a close, evenly textured surface meeting the required tolerances.
 - 1. Construction: Extreme care should be taken to ensure that there is no disturbance to the subgrade and that there is no displacement of the soil separator. All disturbed, displaced, or damaged material is to be repaired or replaced.
 - 2. Placement: The aggregate base should be placed in a manner that will produce an evenly graded mass to the depth specified over layer of geotextile fabric and underdrain system. The material should be constructed in two lifts not over six (6) inches in depth when compacting across the entire field area when spread by appropriate equipment and methods, and should be thoroughly and uniformly compacted with a self-propelled roller to achieve the specified density. The material should be placed and distributed so that there will be no pockets of uniform size solid material. Any pockets resulting from segregation of the stone during installation should be reworked.
 - 3. Compaction, ASTM D698 or D2922: The field base materials should be thoroughly compacted to prevent any significant differential settlement across the area of synthetic turf surfacing. Typical minimum compaction levels are 95 percent Standard Proctor for the base materials. The appropriate moisture content must be maintained in the base materials to allow for optimal levels of compaction.
 - 4. Finish-Grade Planarity (surface tolerances) ASTM F2157: Irregularities in the surface of the base materials are typically reflected in the finished field surface. Therefore it is important to install the base materials to controlled tolerances. The local deviation of the finished surface of the base stone should not exceed 1/4 inch in any direction when measured beneath a 10 foot long straight edge. Hollows and depressions, which may have developed during the process of compacting the base, should be filled with acceptable material and re-compacted. The use of laser guided and controlled equipment is recommended to maintain planarity. Documentation should be provided showing compliance with planarity requirements. The Synthetic Grass Surfacing Manufacturer shall review and approve the subbase installation before commencing installation of Synthetic Grass Surfacing.

3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and conduct tests. Proceed with subsequent work only after test results for previously completed work comply with requirements.

3.11 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

3.12 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 20 00

SECTION 321813 - SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

- A. Section Includes:
1. Synthetic grass infill system and accessories.
 - a. ***New synthetic grass infill system 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 without infill adhered to on existing prepared concrete slab of batting cages and dugouts.
 - d. New synthetic turf without infill adhered to existing concrete floor slabs in 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 Track and Field Rules and Records.
- D. Turf Colors: Turf colors shall be as noted on plans. Owners logos and lettering shall match the owners technical branding guidelines in both layout and colors. Field colors shall be selected from manufacturers standard turf colors.
- E. Shock Absorbency: Field shall achieve a minimum of 130 Gmax Shock Absorbency at all tested locations and a maximum of 175.
- F. 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.
- G. 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.

H. 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 layout and 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, foul pole 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 field colors from vendors standard colors and owner custom logo and lettering to match owners technical branding and color guidelines.
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/manufacture 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/manufacture 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 provide a 3rd party warranty on all synthetic turf 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: Ten (10) 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 one additional standard infill container with rubber infill and one standard container with alternate cool infill if accepted for the owners use. Containers shall contain a min of 45 c.f. of rubber and alternate cool infill material.

B. Furnish roll 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. 1st base slide zone, second base 1st-2nd slide zone, second base 2nd -3rd slide zone return zone, third base 2nd-3rd slide zone, home plate batter box wear zones and pitcher landing zone in front of fixed pitching mound. Provide wear zone pads for both bullpens-home plate batter box wear zones and pitching rubbers.

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 – non thatch version
- B. Varsity Baseball or Softball Stadium athletic field turf- Approved Manufacturers: Subject to compliance with Basis of Design requirements, provide products by one of the manufacturers specified.
 - 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 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 entirety 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 football field.

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: slit film and monofilament.
 - b. Yarn: UV-Resistant polyethylene.
 - c. Tuft Bind Strength: 8-10 lbs/force
 - d. Face/Pile Yarn Weight: Minimum of 52 oz/sqyd.
 - e. Total Weight: Minimum of 72 oz.
 - f. GMax Range: 130 – 165.
 - g. Infill Materials: Owner desired mix of Sand 65% and Rubber 35% and alternate cool infill if alternate accepted by owner**
 - 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: Four 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.
10. Turf Characteristics: For dugouts
 - a. Permeable synthetic turf with heavy thatch layer and no infill SYN Augustine X47 as manufactured by SYN Lawn 866-796-5296 or approved equal in colors to match playing field turf.
11. Turf Characteristics: For batting cages
 - a. Foam backed turf PGPN style 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.

- 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.
- 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 custom colors as selected by the Owner / Architect from custom color selections, to match school colors.
 3. 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.
 4. 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 PVC.+
- 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 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: Tie anchor to trench drain. 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 DUGOUTS AND BATTING CAGES

- A. Installer shall use an adhesive as approved by turf manufacturer for the specific turf product to adhere turf to prepared concrete substrate. In dugouts installer shall not adhere turf to existing drain cover and shall insert white tuft in turf to identify drain cover location.

3.5 SYNTHETIC TURF FIELD TESTING

- G. 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 hole should conform to this shape at the bottom but may be enlarged above the 300mm 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 conducted 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

- B. 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 321813

PRE-BID REQUEST FOR INTERPRETATION/CLARIFICATION LOG

RFI#	Date Received	Request for Interpretation Item	Dwg./Spec.	Response
ADDENDUM NO. 1 – issued on 12-4-24				
PROJECT NO. 223142.00 – ZCHS Baseball/Softball Turf				
1	11-22-24	<ol style="list-style-type: none"> Can we please be provided the RGB for any desired custom colors? Will the company bidding on the drainage and turf need to provide a copy of the Independent 3rd Party Fully Insured Warranty? We will be providing this as a part of our bid because we don't want the owner to take any risk that the base or the turf will not be covered. Carmel High School had a \$210,000 change order several years ago because of issues with the previous drainage on the field. Some competitors claim this is not necessary when, in fact, they are not able to obtain the insurance for this coverage. We pay around \$800,000 per year for the coverage, so the owner has peace of mind. We would also like to suggest that each contractor states with their bid how extended the warranty is for the infields of the baseball and softball fields. Some of our competitors limit their coverage for wear and tear on the infields to only two years. Again, the owner should be fully aware of potential costs for repairs that are not covered by a warranty. There is an alternate for cooling infill. I would like to suggest that a company providing this alternate be required to submit independent third-party testing to support claims made for the cooling difference compared to a sand/rubber infill system, along with results for vertical ball bounce, rotational resistance, vertical deformation, critical fall height, energy restitution, and GMax. Claims should be substantiated so the owner knows how the fields should perform. I would also like to suggest that a listing of at least 25 to 50 fields within an hour's drive of the school be provided with the bid so the school can arrange for site visits if necessary. This also provides comfort 		Refer to Addendum No. 1 – refer to the revised specification sections and 2 drawings.

		<p>that the company has installed fields in the same climate conditions and has enough fields to help ensure that required maintenance can be provided.</p>	
2	12-4-24	<p>Synthetic Turf Contractor is responsible to provide and install 2x4 lumber nailer at concrete perimeter curb as detailed in Contract Documents.</p> <p>2. Specific to the synthetic turf field, the General Trades Contractor is responsible for earthmoving, establishing subgrade, and installation of geotextile fabric (You can't install 100% of the geotextile fabric to the subgrade prior to the stone installation. If it rains prior to the turf contractor getting on site the subgrade will never dry with fabric on it). The General Trades Contractor is also responsible for installation and backfill of perimeter drain and all associated accessories. The Synthetic Turf Contractor is responsible for flat pipe underdrain, 1" diameter crushed limestone base, open graded fine crushed limestone surface topping, and synthetic turf system. The Synthetic Turf Contractor is to review subgrade conditions for acceptance of General Trades Contractor's Work prior to beginning installation of flat pipe underdrains.</p> <p>3. General Trades Contractor and Synthetic Turf Contractor are to coordinate and discuss project schedule prior to beginning any Work within the perimeter of new synthetic turf field.</p> <p>Typical scope that Skillman generally puts our for subgrade up projects.</p> <ol style="list-style-type: none"> Accept the field at subgrade +/- 1 tenth Installation of perimeter collector pipes. The collector pipes into a structure inside the field limits. Backfill collector pipes with required stone. Place Mirafi 140N geotextile fabric on entire subgrade. Installation Of 4.5" of fractured open graded stone. This is typically a #8 drainage stone. If needed I can send you a sieve analysis. Installation of 1.5" of fractured open graded stone. This is typically the #11 or #12 drainage stone. The #12 is used in asphalt so its are to get a certain times of the year. If need I can 	<p>Confirming FHAI will not have a response to these questions from the potential contractor.</p>

		<p>get you a sieve analysis on this one as well.</p> <ul style="list-style-type: none"> h. Install 2"x4" treated wood nailer to all concrete curbs inside the field limits. i. Provide an 8 year prepaid third party fully insured warranty on base and turf. j. Installation of turf and Infill per specifications. 	
3	12-9-24	<p>What locations are you wanting the Bird Control Devices?</p>	<p>Refer to Addendum No. 2.</p>
4	12-3-24	<ul style="list-style-type: none"> 1. Interpretation is that Synthetic Turf Bid category contractor would be responsible for building the baseball stone mound, but all General Trades Contractor would be responsible for providing and installation the pitching rubber. Confirm. Also confirm if the General Trades contractor is providing and installing all other pitching rubbers, bases, home plates, & Portable pitching mounds. 2. Turf spec section mentions Sportsfield Specialties comboboxes. Are those applicable to this job. 3. Turf spec section specifies sportsfield specialties groomer and sweeper. Those were discontinued. Would another brand be acceptable. 4. Turf infill specification clarification between base bid and alternate. 	<p>#2 – Spec's note "if required". Provide if shown on drawings. #3 – What is included in the specifications still noted on manufacturer's website. Provide specified products. #4 – Refer to Addendum #2.</p>

ADDENDUM NO. 2

Zionsville West Middle School – Tennis Complex Renovation

Zionsville Community Schools
Zionsville, Indiana

Project No. 223143.00

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Addendum No. 2, 1 item, 1 page

Date: December 11, 2024

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

TO: ALL BIDDERS OF RECORD

ADDENDUM NO. 2 to Drawings and Project Manual, dated November 13, 2024, for Zionsville Community Schools, 900 Mulberry Street, Zionsville, Indiana; 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

Note: No items within Fanning Howey Addendum No. 1 for the various projects impacted the Zionsville West Middle School – Tennis Complex Renovation.

ITEM NO. 1. PROJECT MANUAL, SECTION 32 13 15 – UNBOUNDED POST-TENSIONED CONCRETE TENNIS COURTS

A. Replace 1.1, C., as follows:

- “C. A single “Tennis Court” Contractor shall be responsible for the construction work of this Section and work in related tennis court sections. The Tennis Court Contractor is responsible for the post-tensioned concrete surface including but not limited to grading, subbase, tendon installation, concrete placement, tendon stressing, concrete finishing, tennis court surfacing, and setting of fencing by own forces. Installation shall be monitored by Tennis Court Contractor representatives as specified.
1. Intent of this provision is to provide continuity and one single source of responsibility and warranty for the integrity of the post tensioned slab and tennis court construction. No part of this work shall be subcontracted.”

END OF ADDENDUM

PRE-BID REQUEST FOR INTERPRETATION/CLARIFICATION LOG

RFI#	Date Received	Request for Interpretation Item	Dwg./Spec.	Response
PROJECT NO. 223143.00 – ZCS Zionsville West Middle School Tennis Courts Upgrade				
1	12-4-24	<p>We read through the Unbounded Post-Tensioned Concrete Tennis Courts specs for the Zionsville West Middle School.</p> <p>We saw the following Installer Qualification left out of the ZWMS PT Spec:</p> <p>“Installer for the post-tension slab shall assure single-source responsibility by completing all work with his own forces (no part of the work to be subcontracted) to include fine grading, construction, tension placing, concrete placement and tension stressing.”</p> <p>The main question we would like to know is why this part of the spec was “left out” and/or removed from the Unbounded Post-Tension Concrete Tennis Courts Spec? The intent for having the paragraph is to assure that all work is completed by the pre-qualified contractor that is producing the 10-year warranty, i.e. the pre-qualified contractor cannot have someone else do the concrete placement or tensioning, for example or it voids the prequalification process.</p>		See Addendum No. 2