

Addendum

No. THREE Date: 3.19.19

Project:

Track and Field Improvements to the
Deshler High School for the
Tuscumbia City Schools
Tuscumbia, Alabama

McKee Project No. 17-238
Alabama Building Commission No. 2019087

A3.1 GENERAL MODIFICATIONS:

The following changes and/or substitutions to the plans and specifications are hereby made a part of same and are incorporated in full force as part of the contract.

Bidders shall acknowledge receipt of this Addendum in writing on his Proposal Form.

A3.2 SPECIFICATION MODIFICATIONS:

- A. Refer to **Section 02542, In Ground Track Equipment (Revised 3.19.19)**, herein.
- B. Refer to **Section 02720, Storm Sewers (Revised 3.19.19)**, herein.
- C. Refer to **Section 09681, Synthetic Turf (Revised 3.19.19)**, herein.

A3.3 DRAWING MODIFICATIONS: NONE

END OF ADDENDUM THREE

SECTION 02542 – INGROUND TRACK EQUIPMENT (Revised 3.19.19)

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the contract including General and Supplementary Conditions and Division 1 Specification Sections apply to work of this section.

DESCRIPTION OF WORK:

Extent of the in-ground track equipment is indicated on the drawings.

CODES AND STANDARDS

Codes and standards follow the current guidelines set forth by the National Federation of State High School Associations (NFHS).

SUBMITTALS:

Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

PART 2 - PRODUCTS

The Contractor shall be responsible for providing and installing all permanent, in-ground track and field event equipment as may be required and shown on the project drawings.

Manufacturer: The following manufacturers' products have been used to establish minimum standards for materials, workmanship and function:

1. UCS, Inc., Mr. Jeffery Schwartz, One Olympic Drive, Orangeburg, NY 10962, Tel: 1-800 526 4856
2. New Nevada Plastics, Mr. Stephen Chappell, 1601 Fairview Drive, Carson City, NV 89701, Tel: 1-800 537 7117
3. M-F Athletic Company, Mr. Mark Strawderman, P.O.Box 8090, Cranston, RI 02920-0090, Tel: 1-800 556 7464

Equal products of other manufacturers may be used in the work, provided such products have been approved by the Architect, not less than five (5) days prior to scheduled bid opening.

The following in-ground equipment is required (model # is UCS equivalent):

1. Pole Vault Boxes: Provide (#711-1100) cast aluminum vault boxes.
2. Take-Off Boards: Provide (#519-2100) take-off board systems.
3. Shot Put Toe Boards: Provide (#716-1630) shot put toe boards. **OMITTED**

4. Shot Put Rings: Provide (# 725-2540) shot put circle rings. **OMITTED**
5. Discus Rings: Provide (# 725-2530) discus circle rings. **OMITTED**
6. Hammer/Discus Conversion Ring: Provide (# 725-2535) hammer/discus conversion ring. **OMITTED**

Sand: All sand for the long/triple jumps sand pits shall be clean, washed, white sand, containing not more than five percent (5%) clay and shall be free of trash, organic matter, and rock. Installed sand to meet all specifications of the NFHS - washed river sand, 0 to 2mm graining, no organic components, max 5% of weight up to 0.2mm. Prior to installation the Contractor shall provide the Owner with a one- (1) gallon sample for approval.

PART 3 - EXECUTION

INSTALLATION REQUIREMENTS OF IN-GROUND TRACK AND FIELD EQUIPMENT

The Contractor is to purchase and install, all in-ground track & field equipment. The installation of any throw circles, pole vault boxes, long jump/triple jump take-off boards, are the responsibility of the Contractor.

It shall be the Contractors responsibility to see that each field event item is supplied and installed as per the manufacturer's specifications and NFHS rules. The items where synthetic surfacing material must be installed up to, or on top of, must be installed prior to the installation of the synthetic surfacing material. The pole-vault boxes, pit covers and take-off boards shall receive track and field surfacing.

The Synthetic Surface Contractor is to purchase and install all synthetic surfacing, including plugs for any pole vault boxes, throwing circles and take-off boards; surfacing on all junction boxes.

END OF SECTION

SECTION 02720 - STORM SEWERS (Revised 3.19.19)

PART 1 – GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the contract including General and Supplementary Conditions and Division 1 Specification Sections apply to work of this section.

QUALITY ASSURANCE:

Requirements of Regulatory Agencies: Comply with applicable codes, ordinances, rules, regulations, and laws of local, municipal, state or federal authorities having jurisdiction.

All locations including total jobsite: All storm drainage shall be in accordance with Local Requirements.

SUBMITTALS:

Submit manufacturer's data, test reports, material certifications as required.

SITE CONDITIONS:

Protection of Existing Utilities: Protect existing power lines, water mains, gas lines, telephone lines and other utilities. Should any functioning underground utilities be uncovered during the Work, advise for determination as to whether or not they are to be removed. Repair any damage to utility lines and restore service to original condition.

Coordination and Scheduling of Work:

1. Coordinate work with earthwork operations to avoid interference. Protect established construction stakes.
2. Establish and maintain center-lines, grades and elevations.
3. Construction of new sewers and drainage systems shall proceed as early in construction program as possible. Maintain adequate drainage of the project area at all times. Prevent flooding of adjacent roads and private properties.

Temporary Drainage: Wherever possible, construct new sewers and inlets to serve the various drainage areas, and place in service. Where this is not possible, provide temporary drainage facilities as required. These may include temporary connections into completed sewers, or such other means as the circumstances may require.

PART 2 – PRODUCTS

MATERIALS:

Storm Drain Pipe Materials:

Use ductile iron where indicated on the drawings.

Appurtenance Material:

See Civil Drawings

PART 3 – EXECUTION

INSTALLATION:

Storm Drainage System: Construct drainage structures and appurtenances in accordance with applicable standard drawings and construction details shown on the Drawings.

Lay all pipe in an open trench of dimensions as given below:

1. Lengths of storm drain pipe shown on the Drawings are approximate distances center-to-center of structures. Install pipe based on actual field measurements.

Excavation:

Excavation is open cut. The top portion of trenches may be excavated as required by the Contractor to any width which will not cause damage to adjacent structures. The lower portion of the trench, to a height of 1 ft. above the top of the pipe shall not exceed 18 in. greater than the pipe dia.

All excavation shall be prosecuted in accordance with requirements of OSHA "Safety and Health Regulations for Construction".

When sheeting or shoring is used, widths may be increased by the thickness of the timbers. All protective measures required are the responsibility of the Contractor and shall be provided at the Contractor's expense.

Carefully shape the bottom of trenches to conform to and support the lower 1/4 of the periphery of the pipe barrel. At the Contractor's option, trenches may be excavated slightly over depth, and then the pipe bed may be constructed of approved granular material, thoroughly tamped and carefully shaped to conform to and support the lower 1/4 of the periphery of the pipe barrel. Where rock is encountered, remove to a depth of 6 in. below the pipe and replace with an approved granular material.

Where suitable material, such as muck, is encountered at or below invert elevation during excavation, remove and replace with suitable material, or stabilize by the addition of a granular material.

Pipe Laying:

Proceed upgrade where practicable. Lay pipe shall true to grade and line with a straight and uniform invert. Do not lay pipe in a wet or muddy trench. Dewater trenches as required with firm, smooth and properly shaped bed as specified.

Lay corrugated metal pipe so that if invert paving has been damaged, repair with an asphaltic compound to the satisfaction of the Engineer.

Joints for reinforced concrete pipe shall be with sand-cement grout.

Backfilling: Backfill with selected material, free from rock larger than 2 in. in size, or debris. Carefully place backfill and tamp around and over the pipe to avoid displacement of the pipe or damage to the joints. Place all backfill in 6 in. lifts and compact as required in EARTHWORK Section. Compaction methods shall be at the Contractor's option as long as the desired results are obtained; otherwise, the Architect may order changes in methods or equipment.

Appurtenances and Drainage Structures:

Furnish and install drainage structures as shown in detail on the Drawings. Install shaped inverts.

Fill all mortar joints full. Tool all joints.

Cut and grind all pipe, where cut at face of structure wall, smooth with the face of the wall. Pack full all joints around pipe and structure wall at the face of the wall with mortar.

Clean bottom of drainage structures of all debris, and wipe walls clean of mortar as work progresses.

Construct catch basin tops true to line and grade, and slope continuous with gutter.

Install cast iron steps in all structures over 4 ft. deep, installed 15 in. o.c. in a vertical direction. Cast iron steps and manhole rings and covers shall meet ASTM A 48.

Construct junction boxes with bottom as shown in details for drop inlets, catch basins or other structures. Construct tops to accommodate a standard manhole ring, and adjust over to grade.

Where indicated in the Storm Structure Schedule, drainage basins by Contech or Nyloplast may be used.

ADJUSTING AND CLEANING:

At completion, remove all excess materials, debris, etc. resultant from operations of this Section of Work.

Leave drainage systems clean and free from mud or debris of any kind. When looked through, each line between structures shall show a full circle of light; otherwise the Contractor shall be required to remove and replace the defective portion of the work, at the Contractor's expense.

END OF SECTION

SECTION 09681 – SYNTHETIC TURF (Revised 3.19.19)

PART 1 – GENERAL

1.01 WORK

- A. Furnishing, delivery, installation and warranty of a complete synthetic turf system, including under field drainage, field turf, field markings and resilient infill material.

1.02 RELATED SECTIONS

- A. Drawings and general provisions of Contract including General and Supplementary Conditions and Division 1 Specification sections apply to work of this section.
- B. CONCRETE SUBFLOORS – 03300
 - a. The general contractor is responsible for preparing the concrete slab sufficiently to accommodate the turf system. The slab shall be smooth to a tolerance of 1/4" in any 10' radius by the general contractor. High spots shall be ground level, and low spots filled in with approved leveling compound by the general contractor to the full approval of the flooring contractor.

1.03 REFERENCES

- A. ATSM Standard Test Methods
 - **D1577** – Standard Test Method for Linear Density of Textile Fiber
 - **D5848** – Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Covering
 - **D418** – Standard Test Method for Testing Pile Yarn Floor Covering Construction
 - **D1338** – Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
 - **D1682** – Standard Method of Test for Breaking Load and Elongation of Textile Fabrics
 - **D5034** – Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)
 - **F1015** – Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces
 - **F1551** – Standard Test Methods for Water Permeability
 - **D2859** – Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials
 - **F355** – Standard Test Method for Shock-Absorbing Properties of Playing Surfaces
 - **1936** – Standard Test Method for Shock-Absorbing Properties of North American Football Field Playing Systems as Measured in the Field

- **D1557** – Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.
- B. National Federation of High School (NFHS) Rules, as applicable. FIFA Rules of the Game or NCAA Soccer Rules, as applicable.
 - C. ASBA Sports Fields Contractor Manual
 - D. Carpet & Rug Institute suggested guidelines.
 - E. STC Suggested Guidelines for the Essential Elements of Synthetic Turf Systems

1.04 SITE EXAMINATION

- A. **A 24 Hour Relaxation Period is recommended before gluing down turf to prevent shrinking and /or expanding after glue down. IDEAL temperatures should be above 70 degrees.**
- B. **When turf is delivered:** Check its texture, color, and style; make sure there are no visible defects before installation. Be sure the installer will adhere to the CRI 105 installation methods (www.carpet-rug.com). Among other things, it requires for proper installation that turf must be power-stretched to minimize wrinkling and rippling. Seam edges must be sealed with appropriate adhesive to prevent delaminating and edge ravel.
- C. **Floor Preparation (when not using seaming tape):** Each subfloor shall be inspected to determine the special care required to make it a suitable foundation for turf. All cracks 1/8 inch (3 mm) wide or protrusions over 1/32 inch (.8 mm) should be filled or leveled.
- D. **Temperature and Humidity:** The environment in which the turf is to be installed must be controlled with the temperature between 65o F and 95o F (18o C and 35o C) and the relative humidity between 10%and 65%. If installing over concrete, the slab temperature should not be less than 65o F (18o C). These conditions must be maintained for at least 48 hours before, during, and 48 hours after the installation.
- E. **Concrete:** Concrete shall be cured, clean, and dry. If the turf is to be installed using an adhesive, the concrete shall be free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that may interfere with the bonding of the adhesive. Whenever a powdery or porous surface is encountered, a primer compatible with the adhesive shall be used to provide a suitable surface for the glue-down installation. Patching of cracks and depressions shall be made with appropriate and compatible latex or polymer fortified patching compound. Do not exceed manufacturer's recommendations for patch thickness. Large patched areas must be primed.
- F. **Moisture Testing (when not using seaming tape):** Concrete floors, even with adequate curing time, can present an unacceptable moisture condition by allowing excessive amounts of moisture vapor to pass through to the surface. This can be a problem even on suspended concrete floors. All concrete floors should be tested for moisture emission rate by utilizing an anhydrous calcium chloride moisture test kit available from installation supplies and accessories distributors. This quantitative method is very precise and must be conducted carefully, with strict attention to the test kit manufacturer's detailed instructions. Moisture emission rate is expressed in lbs/1000 sq. ft. /24 hours. Because the calcium chloride test for emission rate requires 3 days to

conduct, proper installation planning is a must. As a general guideline, an emission rate of 3 lbs (1.4 kg) or less is acceptable for most turf. In the range from 3 lbs to 5 lbs (1.4 to 2.3 kg), carpet with porous backings can usually be installed successfully; but the risk of moisture-related problems increases. Since some floor covering products are less tolerant of moisture than others, always consult the individual manufacturer to determine the emission rate for specific products. When any or all corrective procedures have been completed, the finished sub-floor surface must be re-inspected, with the same representatives attending as the initial inspection. If required, additional repair and inspections are to be conducted until the sub-floor surface is deemed acceptable by the Engineer and Synthetic Turf Installer

- G. Once the sub-floor surface has been deemed acceptable, the Contractor shall submit a written certificate indicating the acceptance of:
 - 1. The sub-floor construction finished surface as totally suitable for the application of the selected synthetic turf system, and
 - 2. The sub-floor construction as totally suitable for work under this section to proceed with the final installation and fully warrant the athletic surface installation for the period and conditions specified herein.
- H. Commencement of work under this section shall constitute acceptance of the work completed under other sections by the Contractor, acceptance of dimensions of the sub-floor, and hence, no claims for extra work based upon these conditions will be permitted.

1.05 ENVIRONMENTAL CONDITIONS

- A. Install synthetic turf surfacing only when ambient air temperature is 35 F or above and the relative humidity is below 35% or as specified by the product manufacturer. Installation will not proceed if rain is imminent.
- B. Install product only when prepared sub-floor is suitably free of dirt, dust, and petroleum products, is moisture free and sufficiently secured to prevent unwanted pedestrian and vehicular access.

1.06 QUALITY CONTROL

- A. **Manufacturer Qualifications:** Company specializing in manufacturing products specified in this section. The Turf Manufacturer:
 - 1. Must be experienced in the manufacturing of synthetic grass systems with the same fiber as specified.
 - 2. Must have at least 30 fields of 16,000 sq. ft. or more of the specified material, fiber, infill material and backing, or similar system, in play in the United States.
 - 3. Manufacturer must be a member in good standing with the STC.
 - 4. Manufacturer must utilize best practices as certified by ISO-9001 and ISO-14001.
 - 5. Manufacturer must be owned and operated in the U.S.A.
 - 6. Manufacturer must have no periods of insolvency over the last 25 years.
- B. **Installer Qualifications:** Company specializing in performing the work of this section.

1. The Synthetic Turf Installer must provide competent workmen skilled in this type of synthetic grass installation. All technicians must have installed tall pile synthetic turf.
 2. 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.
 3. Installer to follow CRI (Carpet and Rug Institute) guidelines.
- C. Prior to the beginning of installation, the Synthetic Turf Installer shall inspect the sub-floor. The installer will accept the sub-floor in writing when the general contractor provides test results that are in compliance with the synthetic turf manufacturer's recommendations and as stated herein.
- D. The Synthetic Turf Installer shall provide the necessary testing data to the Owner that the finished field meets the required initial shock attenuation, as per ASTM F1936.
- E. Remove defective Work, whether the result of poor workmanship, defective products or damage, which has been rejected by the Engineer as unacceptable. Replace defective work in conformance with the Contract Documents.

1.07 SUBMITTALS

A. **Submit the following:**

1. Submit the exact product name/description as well as the name and location of the manufacturers and suppliers of each component. Manufacturers and suppliers must not be changed after the contract is awarded unless approved by the Owner in writing.
2. Submit two (2) samples, 12"x12" minimum size, illustrating details of finished product as bid, turf, and infill material if required.
3. Product Literature: Submit two (2) copies of manufacturer's recommended installation and maintenance information, including any technical criteria for evaluation of the installed product. Descriptions of all equipment recommended for the maintenance and repair of turf product, as well as a list of any activities not recommended relative to the warranty.
4. Submit a 1-lb sample of the selected bid infill material(s) if required.
5. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.
6. Certified copies of independent (third-party) laboratory reports on ASTM tests as follows:
 - a. Pile Height, Face Width & Total Fabric Weight, ASTM D418 or D5848
 - b. Primary & Secondary Backing Weights, ASTM D418 or D5848
 - c. Tuft Bind, ASTM D1335
 - d. Grab Tear Strength, ASTM D1682 or D5034

- e. Verification that product meets Pill test minimums for ASTM D-2859 for life of installation.
 7. ASTM test submittals may vary by no more than ¼” and 6 oz. of the specified product to bid. Bid winner must show NEW ASTM TESTS with contract submittals.
 8. Name and experience of the designated supervisory personnel assigned to this project shall be submitted with the proposal. Changes to this assignment after contract can only be made if approved in writing by the Owner. Include a listing of other on-site personnel and their experience.
 9. The Synthetic Turf Installer and Turf Manufacturer shall provide evidence that the turf system does not violate any other manufacturer’s patents, patents allowed or patents pending.
 10. The Synthetic Turf Installer and the Turf Manufacturer shall provide complete information on its warranty/insurance policy and coverage, as noted in Section 1.08. Provide a complete sample copy of all warranty documentation.
- B. Prior to ordering of materials:**
1. The Contractor shall submit Shop Drawings indicating:
 - a. Field Layout.
 - b. Field Marking Plan and details for Soccer, Men’s Lacrosse, and Women’s Lacrosse if required.
 - c. Mid-field emblem layout with color samples.
 - d. Roll/Seaming Layout.
 - e. Methods of attachment, field openings and perimeter conditions.
 2. The Turf Manufacturer must submit the fiber manufacturer’s name, type of fiber and composition of fiber.
 3. **Shop Drawings:** Shop drawings are to be submitted for review by the Engineer prior to manufacture of product and are to contain information regarding locations of seams, anchorage details, goal post/insert details, line and event marking locations and dimensions, turf roll widths and dimensions.
- C. Prior to Final Acceptance, the Contractor shall submit to the Owner:**
1. Two (2) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and markings. Also address remedial measures for graffiti removal.
 2. Written verification of a suitable training session for the Owner’s maintenance staff on how to maintain the completed installation.
 3. Project Record Documents: Record actual locations of seams, drains or other pertinent information.
 4. **Submit to the Owner a maintenance contract proposal to provide annual operations and maintenance assistance for two (2) years. Provide contract, contact information and maintenance schedule.** Quarterly each year provide operations and maintenance that includes:
 - a. On-site inspection analysis of seams, infill, inlay, edge, and field inserts.
 - b. The contractor shall sweep and groom the field at each quarterly visit.

- c. Synthetic turf report with results of inspection analysis, photos, results of cleaning process, recommendations for future cleaning/maintenance.
 - d. The acceptance of any maintenance contract proposal is at the owner's discretion and is NOT a part of this bid proposal.**
5. Test Results: Test certifications issued by an independent testing agency that the synthetic surface meets with the requirements of the ASTM tests noted herein are to be submitted.

Sub-floor Conditions Acceptance: Prior to installation of the synthetic turf system, the Contractor is to submit in writing an acceptance of the sub-floor as being acceptable by the turf manufacturer and suitable for the successful installation of the proprietary synthetic turf system.

1.08 WARRANTY

- A. The Contractor shall provide a minimum five (5) year warranty policy by the manufacturer, against defects in materials and workmanship. Defects shall include, but not be limited to ultraviolet ray fading, degradation, or excessive wear of fiber.
- B. Warranty must be backed by a surety licensed to do business in the State of Georgia.
- C. Submit information listing the owner on the COI (Certificate of Liability Insurance).
- D. Limited Warranty shall be for replacement of any damaged product within the warranty period. Warranty shall be comprehensive and sufficient to replace entire field if necessary.
- E. Warranty shall become effective from the date of substantial completion.
- F. The Warranty shall contain no usage limits for warranted field.
- G. Submit Manufacturer Warranty and ensure that forms have been completed in Owner's name and registered with Manufacturer.
- H. Supply Insurance Certificate with complete information on contacting the Insurance Carrier should a claim need to be made. Product/Warranty insurance policy shall have the Owner listed as insured.
- I. See Warranty at end of this specification section.

PART 2 PRODUCTS

2.01 Manufacturer: Company specializing in manufacturing products specified in this section.
The Turf Manufacturer:

- 1. Synthetic Turf:
 - a. Basis of design shall be **Fast Grass AT740** synthetic turf system (19mm thickness) as provided by Sporturf™. (800) 562-4492, www.sporturf.com
 - b. **PLAE**; www.plae.us/; 404.645.7900
- 2. Shockpad:
 - a. Basis of design shall be **ECORE BL41 Shockpad** (10mm thickness) prefabricated, recycled rubber pad for installation underneath artificial turf systems. 866.795.2732, www.ecoreathletic.com

3. Materials other than those listed must be approved Ten (10) days prior to bid date and shall be acknowledged by written addendum. Materials from non-approved manufacturers will not be accepted.

SUPPLIER QUALIFICATIONS

- A. The Owner has conducted an extensive review of synthetic turf products, including visiting installed sites and review of other agencies' review criteria. Based upon their research, they have established the following criteria for acceptance of a synthetic turf product. No variation from these criteria shall be allowed. The Owner's review is considered final.
- B. The Synthetic Turf Installer shall have been in business for at least 5 years, actively selling, installing and maintaining sports flooring.
- C. The Synthetic Turf Installer must provide a list of references based on previous installations.
- D. The Respondent must be a member in good standing with the ASBA (Athletic Sports Builders Association).
- E. Installation team shall be established, insured installation firm experienced as a premium turf installer with suitable equipment and supervisory personnel, with a minimum of 5 years' experience.
- F. Installation team shall be trained and certified, in writing, by the turf manufacturer, as competent in the installation of the specified material, including seaming and proper installation of the infill mixture.

2.02 TURF SYSTEM

A. Turf Fiber:

1. The turf fiber must be tufted to the ArmorLoc™ 3L and coated with SilverBack™ with a minimum tuft bind of 8 pounds.
2. The tufted fiber weight shall be a minimum of 40 ounces per square yard.
3. The turf fiber shall be polyethylene slit film and texturized nylon.
4. The turf fiber shall be non-abrasive and a minimum of 100 microns thick.
5. The turf fiber must contain less than 100 ppm of lead in all colors.
6. The turf fibers must be from the same dye lots.
7. The turf fibers must be guaranteed for a period of Eight Years not to fade or fail (as distinguished from a change in texture) or have a pile height decrease to 50% of pile height as result of UV degradation.
8. The infill must be within ¼" of the tips of the fibers upon completion of the install if required.
9. The turf fiber must retain a minimum of 75% of its original fibril width after 10,000 cycles on the Lisport Studded Roll Test Machine.
10. The pile fiber shall possess the following characteristics:

Characteristic	Value	Test
Linear Density (Denier)	9,000 Combined	ASTM D 1577
Yarn Thickness	100 Microns (slit); 100 Microns (mono)	ASTM D 3218
Pile Weight*	40 oz./yd ²	ASTM D 5848
Fiber manufacturer must be from the same source		
The above specifications are nominal. *Values are +/- 5%.		

11. The pile fabric shall possess the following physical characteristics:

Characteristic	Value	Test
Finished Pile Height*	3/4" (19mm)	ASTM D 5823
Product Weight (total)*	125 oz./yd ²	ASTM D 3218
Primary Backing Weight*	7.4 oz./yd ²	ASTM D 2256
Secondary coating Weight**	78 oz./yd ²	ASTM D 5848
Fabric Width	12' (3.6m)	ASTM D 5793
Tuft Gauge	1/4"	ASTM D 5793
Grab Tear Strength	200-1b-F	ASTM D 5034
Tuft Bind	>8-1b-F	ASTM D 1335
Infill (Sand)*optional	2 lbs Silica Sand	None
Except where noted as a minimum, the above specifications are nominal.		
* Values are +/- 5%. **All values are +/- 3 oz./yd ² .		

B. Backing Material

a. Primary Backing:

- i. Primary backing must be a dual layered woven polypropylene material, ArmorLoc™3L.
- ii. Primary backing system weight must be a minimum of 7.0 ounces/square yard.

b. Secondary Backing:

- i. Secondary backing SilverBack™ system weight must be a minimum of 75 ounces/ square yard.

C. Turf roll seams: to be glued on site so that no openings larger than the porous backing mat openings are created. Roll width to coincide with tufted-in sports line markings where possible. All turf fabric edges to be securely bound as per the perimeter detail design. Adhesives for joining seams of turf together shall be Nordot 34G, Mapei 2K, Turf Claw or equivalent. No substitutions.

D. Fabric surface: shall be constructed and installed in minimum widths of 12 feet with no longitudinal or transverse seams, except for inlaid lines with a finish roll assembly. Seams shall be 12'-0" apart. Rolls that do not comply with the proper length or conform to the seaming diagram, as approved prior to installation, shall be rejected from the site. No fitted pieces shall be allowed to true alignment. Parallel seams only are acceptable in the main playing areas.

- E. The entire system shall be resistant to weather, including ultra-violet light and heat degradation; insects, rot, mildew and fungus growth and be non-allergenic and non-toxic.
- F. **Fiber Colors:** Submit samples of the full available color palette for owner approval prior to placing order for turf including at a minimum the below listed colors: (Specify or Delete)
 - Color 1: Grass, green in standard color, as selected by the Owner
 - Color 2: White for soccer lines and markings
 - Additional colors as needed.
- G. The Mid-field Center Logo shall be provided by the owner in a standard PDF or EPS file to the selected contractor. Contractor shall submit a shop drawing of Logo to include colors and dimensions for approval by the owner prior to ordering.
- H. The turf material shall be non-combustible and pass the DIN standard Pill Burn test or ASTM D 2859.

2.03 LINES, MARKINGS AND IN-LAID TURF (LOGO)

- A. All line material is to be identical dimensionally and of the same material to that used for the main playing field fiber system.
- B. Inlaid material as indicated on the drawings to be identical, except for fiber color, as the main turf field.
- C. All lines and markings shall be accurately set and surveyed to within 1/2" tolerance of the location shown on the drawings and in conformance with specified field marking standards.

2.04 SYNTHETIC GLUE MATERIAL

- A. Adhesive products shall be Nordot 34G, Mapei 2K, Turf Claw or equivalent as approved by the engineer/architect.
- B. Any adhesive products required for the installation of a proposed turf system shall be purpose-suited to the system. The material and application methods shall be as recommended by the adhesive manufacturer.
- C. Disposal of adhesive containers and unused adhesives as well as any fees resulting from such disposal shall be the responsibility of the Contractor.

2.05 INFILL MATERIAL IF REQUIRED

- A. The synthetic infill material shall consist of silica sand.
 - 1. Sand: specially-graded, dust-free silica sand shall be placed on the turf in a minimum quantity of 1.5 pounds/ square foot and shall include test results that demonstrate the following minimum properties:
 - a. Color – tan
 - b. Sand shall be round non-angular in shape
 - c. Roundness – 0.6+
 - d. Hardness - 0.6-0.8 on the Mohs Scale
 - e. Size – 1.00 mm ± 0.15 mm

- f. Density – 90 – 95 lbs/ cu ft.
- g. Dust - < 0.001 %
- h. Angle of Repose - < 30°
- i. Sand shall be heavy metal safe

2.06 ATHLETIC RUBBER PERFORMANCE SHOCKPAD

A. The **ECORE BL41** performance shockpad shall be installed underneath the Synthetic Tuff as follows:

B. PROPERTIES

Shockpad must demonstrate the following minimum properties:

Product Dimensions		
	Thickness	Weight (lbs/sq f)
48" width	10mm(0.39)	1.3

Absorption (EN14808/ASTM F2569)

48" width	10mm(0.39)	nominal 32%	
Physical Data Test			
	ASTM	BL41	
Density	D297	37lb./cu. ft. min	
Tensile Strength	D412, Die C	44 psi min	
Elongation at Break	D412, Die C	35% min	
Compression/Recovery @ 50 psi @ 100 psi @ 200 psi	F36	Compression	Recovery
		nominal 30%	90% min
		nominal 45%	90% min
		nominal 60%	90% min
Flexibility	F137	0-1 Factor	
Temperature Stability		-40° to +115°C (-40° to +240°F)	
Post Consumer Recycled Content		93%	
Water Permeability	DIN18035/6	0.9cm/s	
Fire Resistance	DIN 4102	Class B2	

C. JOB SITE CONDITIONS

1. Installation should not begin until after all other trades are finished in the area. If the job requires other trades to work in the area after the installation of the floor, the floor should be protected with an appropriate cover. Kraft paper or plastic works well.

2. Areas to receive flooring should be weather tight and maintained at a minimum uniform temperature of 65°F (18°C) for 48 hours before, during, and after the installation.

D. SUBFLOORS

1. Ecore Athletics fully adhered BL41 may be installed over concrete and approved Portland-based patching and leveling materials, such as Ardex K-15 or equivalent.
 - a. Ardex Engineered Cements 400 Ardex Park Drive Aliquippa, PA 15001
(724) 203-5000
 - b. NOTE: Gypsum-based patching and leveling compounds are not acceptable.
2. Concrete Floors – Concrete shall have a minimum compressive strength of 3000 psi. New concrete slabs should cure for a minimum of 28 days before installing BL41. It must be fully cured and permanently dried.

E. SUBFLOOR REQUIREMENTS AND PREPARATION

1. Subfloors shall be dry, clean, smooth, level, and structurally sound. They should be free of dust, solvent, paint, wax, oil, grease, asphalt, sealers, curing and hardening compounds, alkaline salts, old adhesive residue, and other extraneous materials, according to ASTM F710.
2. Subfloors should be smooth to prevent irregularities, roughness, or other defects from telegraphing through the new flooring. The surface should be flat to the equivalent of 3/16" (4.8 mm) in 10' (3.0 m).
3. Mechanically remove all traces of old adhesives, paint, or other debris by scraping, sanding, or scarifying the substrate. Do not use solvents. All high spots shall be ground level and low spots filled with an approved Portland-based patching compound.
4. All saw cuts (control joints), cracks, indentations, and other non-moving joints in the concrete must be filled with an approved Portland-based patching compound.
5. Expansion joints in the concrete are designed to allow for expansion and contraction of the concrete. If a floor covering is installed over an expansion joint, it will likely fail in that area. Use expansion joint covers designed for resilient flooring.
6. Always allow patching materials to dry thoroughly and install according to the manufacturer's instructions. Excessive moisture in patching material may cause bonding problems or a bubbling reaction with the E- Grip III adhesive.

7. Maximum moisture vapor emission of the concrete must not exceed 5.5 lbs. per 1,000 sq.ft. in a 24 hour period as measured by the calcium chloride moisture emission test conducted in accordance to ASTM F1869. Moisture can also be measured using the Relative Humidity (RH) test method per ASTM F2170 standard. Moisture content should not exceed 85% RH. If levels are high using either test method, then one of Ecore's recommended vapor retardants must be used. If the emissions exceed the limitations, the installation should not proceed until the situation has been corrected.
8. It is essential that pH tests be taken on all concrete floors. If the pH is greater than 9, it must be neutralized prior to beginning the installation.
9. Adhesive bond tests should be conducted in several locations throughout the area. Glue down 3' x 3' test pieces of the flooring with the recommended adhesive and trowel. Allow to set for 72 hours before attempting to remove. A sufficient amount of force should be required to remove the flooring and, when removed, there should be adhesive residue on the subfloor and on the back of the test pieces.

F. MATERIAL STORAGE AND HANDLING

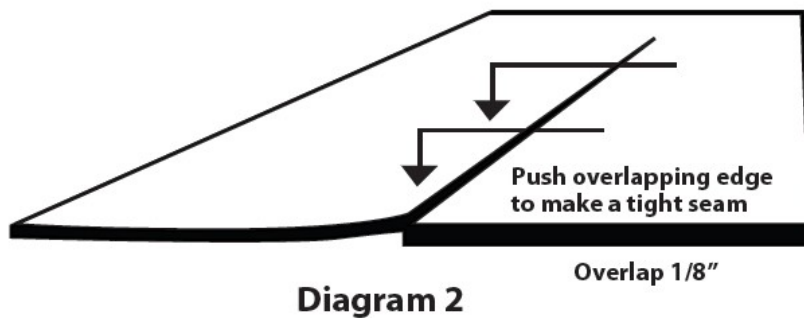
1. Material should be delivered to the job site in its original, unopened packaging with all labels intact.
2. Roll material should always be stored laying down. Storing rubber on end will curl the edges, resulting in permanent memory of the material. All edges with memory curl must be straight edge cut before installation. Do not store rolls higher than 4 rolls or for more than six months. Material should only be stored on a clean, dry, smooth surface.
3. The material and adhesive must be acclimated at room temperature for a minimum of 48 hours before starting installation.
4. Roll material is stretched slightly during the manufacturing process. At the job site, the installer should unroll all rolls and allow too relax overnight. A bare minimum of two hours is required. Shaking the material once it is unrolled can help it to relax.

G. INSTALLATION – ROLL SHOCKPAD MATERIAL

1. Make the assumption that the walls are not straight or square. Using a chalk line, make a starting point for an edge of the flooring to follow. The chalk line should be set where the first seam will be located.

2. Remove BL41 from the shrink wrap and unroll it onto the floor. Cut all rolls at the required length, including enough to allow for shrinkage during acclimation. A few inches is recommended.
3. After proper acclimation and rough cuts are made, you may begin the installation.
4. Align the first edge to the chalk line.
Note: it is very important that the first seam is perfectly straight.
5. Position the second roll with no more than a 1/8" overlap over the first roll at the
6. seam. After adhesive is applied to substrate, the material will be worked back to eliminate the overlap. This procedure will leave tight seams and eliminate any gaps. Care should be taken to not over compress the seam. Over compressed seams will cause peaking.

H.



1. It may be necessary to trim the edge of the second lineal drop if the rolls do not extend the length or width of the room or field area. Rolls laid end to end with a variance in roll width greater than 1/4" could result in peaked seams.
2. Repeat for each consecutive sheet necessary to complete the area or those rolls that will be installed that day.

I. FULLY ADHERING BL41 – FULL SPREAD ADHESIVE

1. After performing the above procedures, begin the application of the adhesive. We recommend E-Grip III, a one-component moisture-cured polyurethane adhesive. E-Grip III should not be mixed. It is specially formulated for use right out of the pail. Apply E-Grip III to the substrate using a 1/16" square-notched trowel.
2. Fold over the first drop along the wall (half the width of the roll).

3. Spread the adhesive using the proper size square-notched trowel. Take care not to spread more E-Grip III than can be covered with flooring within 30 minutes. The open time of the adhesive is 30–40 minutes at 70°F and 50% relative humidity.

NOTE: Temperature and humidity affect the open time of the adhesive. Temperatures above 70°F and/or relative humidity above 50% will cause the adhesive to set up more quickly. Temperatures below 70°F and/or relative humidity below 50% will cause the adhesive to set up more slowly. The installer should monitor the on-site conditions and adjust the open time accordingly.

4. Lay the flooring into the wet adhesive. Do not allow the material to “flop” into place; this may cause air entrapment and bubbles beneath the flooring.
5. Immediately roll the floor with a 75–100 lb. roller to ensure proper adhesive transfer. Overlap each pass of the roller by 50% of the previous pass to ensure the floor is properly rolled. Roll the width first and then the length.
6. Fold over the second half of the first roll and half of the second roll. Spread the adhesive at right angles to the seam and then roll the flooring with a 100 pound flooring roller.
7. Continue the process for each consecutive drop. Work at a pace so that you are always folding material back into wet adhesive.
8. Hand roll all seams after the entire floor has been rolled.
9. In some instances, it may be necessary to weigh down the seam until the adhesive develops a firm set. Boxes of cove base or tile work well. Keep traffic off the floor for a minimum of 24 hours. Floor should be free from rolling loads for a minimum of 48-72 hours. Foot traffic and rolling loads can cause permanent indentations or debonding in the uncured adhesive.

PART 3 EXECUTION

3.01 GENERAL

- A. Installation of the synthetic turf system is to comply with the manufacturer’s recommendations, requirements and the reviewed and approved shop drawings.
- B. Perform all work in strict accordance with the Contract Documents and the manufacturer’s specifications and instructions. Only those skilled technicians proposed in the bid phase are to be assigned to this project by the Contractor.

- C. The designated Supervisor for the Synthetic Turf Installer must be present during any and all construction activity associated with the field installation, including testing, cleanup and training.
- D. All products and equipment are to be from sources approved by the authorized turf manufacturer and conform to the specifications.

3.02 PRODUCT DELIVERY, STORAGE & HANDLING

- A. Deliver products to site in original containers and wrappers as agreed between the Engineer and Contractor. Inspect products upon delivery for damage.
- B. Store products in a location and in a position that protects them from crush damage or any other defects.
- C. Handle and store (on and off site) all materials safely to ensure their physical properties are not adversely affected and that they are not subject to vandalism or damage.
- D. Sand infill shall arrive dry and loose
- E. Adhesives shall arrive in dry, sealed containers.

3.03 PLUGS AND FITTINGS

- A. All permanent field fittings penetrating the turf indicated on the drawings shall be securely sealed to the turf surface.

3.04 TURF INSTALLATION

- A. Install synthetic turf system in accordance with the manufacturer's written installation instructions.
- B. All inlaid areas shall have full fastenings and no loose areas. At no time can pulling on the section separate the material.
- C. Turf shall be attached to the perimeter edge as shown in the construction plans and as per the manufacturer.
- D. All terminations shall be as detailed and approved in the shop drawings.

3.05 INFILL INSTALLATION IF REQUIRED

- A. The synthetic turf shall be thoroughly brushed prior to installation of infill materials to remove wrinkles.
- B. The infill materials shall be installed in layers, in accordance with the turf manufacturer's installation instructions. Any mix of materials shall be uniform and even in thickness.
- C. Turf shall remain free draining at all times before, during and after the infill materials are installed.

3.06 FIELD MARKINGS

- A. Sports field lines and event markings as per the Contract Documents shall be accurately positioned and marked in accordance with the current rules of the governing body. All lines shall be straight and true along the length of the marked boundary to within ½" along the length of any such boundary.

- B. All markings shall be accurately measured and applied in widths and colors as required by the governing body and selected from the manufacturer's range of standard colors, or not more than one custom color if the manufacturer's standard colors do not meet the Owner's requirements.

3.07 CLEANING AND COMPLETION

- A. Protect all installed work from other construction activities as installation progresses.
- B. The Contractor shall keep the area clean throughout the construction period and free from the installation process.
- C. Upon completion of the installation, thoroughly clean surfaces and site of all refuse resulting from the installation process.
- D. Any damage to existing fixtures or facilities resulting from the installation of the synthetic turf system shall be repaired to original condition at the Contractor's expense prior to Substantial Completion and commencement of the Warranty Period.
- E. A deficiency list will be produced by the Engineer at the conclusion of the project. All installation project deficiencies not in dispute must be remedied by the Contractor prior to the issuance of a certificate of Substantial Completion.
- F. Contractor to provide a written acceptance by the Turf Manufacturer that the turf and base system is installed in accordance with their recommendations prior to final completion.

END OF SECTION