
A D D E N D U M N O . 0 2

**SCOTTS RIDGE AND TIGER HOLLOW
SYNTHETIC TURF AND TRACK
REPLACEMENTS
Ridgefield Bid # 2021-20
Ridgefield, CT**

KBA #21001.00

Date: 05/20/2021

Page: 1 of 2

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

NOTE TO BIDDERS: *use of plan rooms for obtaining bid plans and specifications for bidding is not recommended. Plan room information is notoriously incomplete or dated. Bidders are responsible for obtaining latest bidding updates from the town website. <https://www.ridgefieldct.org/purchasing/pages/bid-notice>*

REVISED BID DATES / BID PERIOD

No Changes at this time.

CLARIFICATIONS & QUESTIONS

Q: [for the Synthetic Turf Specification] “Will you accept a 2.25” product in lieu of the 2.5” option for the synthetic turf?”

A. *Refer to specification Section 32 18 13 Synthetic Grass Surfacing – Addendum #2 dated May 20, 2021 for product requirements.*

Q: “Please revise the bid form. Scotts Ridge Field alternates conflict – bid form states it is a deduct to add a shockpad?”

A. *See revised bid form and alternate description included in this addendum for clarification and revisions to the alternate scope and description.*

Q: “Alt 1 says DEDUCT for padded system at the MS, for clarity, should this be an add?”

A. *See revised bid form and alternate description attached to this addendum.
Note: scope of this alternate has changed.*

Q: “Is ChillFill [coated crumb rubber] acceptable [in lieu of plain SBR Crumb Rubber]?”

A. *Note that bidding documents state that pre-bid requests for substitution and approval of materials will not be considered during bidding.
All products shall comply with all the requirements as outlined in specification Section 32 18 13 Synthetic Grass Surfacing – Addendum #2 dated May 20, 2021.*

Q: “We have included specification for our ‘Classic elastic track surfacing SP’ track surfacing system, can you approve it for use in lieu of the specified track surfacing system.?”

A. *Note that bidding documents state that pre-bid requests for substitution will not be considered.
This proposed track surfacing system includes a ‘sheet good’ surface which would not be acceptable.
To be accepted as equal, the track surfacing system shall meet, or exceed, the requirements in specification Sections 32 18 23.31 POLYURETHANE RUNNING TRACK SURFACING – STRUCTURAL SPRAY and 32 12 23.33 POLYURETHANE RUNNING TRACK SURFACING – EMBEDDED SANDWICH SYSTEM.*

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Date: 05/20/2021

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CLARIFICATIONS & QUESTIONS

Q: “Is the thatch required in the 2.5” turf system as well as the 2.0” with pad?”

A. Yes, refer to specification Section 32 18 13 Synthetic Grass Surfacing – Addendum #2 dated May 20, 2021.

CHANGES TO SPECIFICATIONS

1. Changes to specification Section 00 00 00.11 Form of Proposal, replace with the specification of the same name dated May 20, 2021-Addendum #2
2. Changes to specification Section 01 23 00 Alternates, replace with the specification of the same name dated May 20, 2021-Addendum #2
3. Changes to specification Section 32 18 13 Synthetic Grass Surfacing System, replace with the specification of the same name dated May 20, 2021-Addendum #2
4. Changes to specification Section 32 18 13.10 Synthetic Grass Surfacing System Warranty, replace with the specification of the same name dated May 20, 2021-Addendum #2

CHANGES TO DRAWINGS

No Changes at this time.

ATTACHMENTS

Non-Mandatory Pre-Bid Site Meeting (2021-05-13) Sign Up Sheet
Section 00 00 00.11 Form of Proposal dated May 20, 2021 Addendum #2
Section 01 23 00 Alternates dated May 20, 2021 Addendum #2
Section 32 18 13 Synthetic Grass Surfacing System dated May 20, 2021 Addendum #2
Section 32 18 13.10 Synthetic Grass Surfacing System Warranty dated May 20, 2021 Addendum #2

END ADDENDUM #2

P R E - B I D M E E T I N G S I G N - I N

**SCOTTS RIDGE AND TIGER HOLLOW
SYNTHETIC TURF AND TRACK
REPLACEMENTS
Ridgefield Bid # 2021-20
Ridgefield, CT**

Meeting Date: 05/13/2021

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KBA #21001.00

Representative Name	Company Name	Phone	Email
Tim Renkowsky	Waters Construction	(203) 913-4823	trenkowsky@watersconst.com
Ryan Matthews	AstroTurf Corp.	(315) 439-6288	rmatthews@astroturf.com
Steve Vieira	Landscape Unlimited	(814) 232-5623	Mzcui3@gmail.com
Ray Pendagost	Giordano Construction	(475) 414-0049	rp@giordano.build
Jim Kilmeade	A-Turf	(516) 732-1552	jkilmeade@aturf.com
Tony Cunningham	ATT Sports, Inc.	(856) 767-3088	tcunningham@attsports.com
Serge Silva	AstroTurf Corp.	(315) 436-8892	ssilva@astroturf.com
Bob Lord	AstroTurf Corp.	(774) 513-0020	blord@astroturf.com
Steve Corrigan	Mountain View Landscape	(413) 536-7555	amandas@mountainviewinc.com

FORM OF PROPOSAL

BID #2021-20

TIGER HOLLOW STADIUM AND SCOTTS RIDGE FIELD AND TRACK REPLACEMENTS

RIDGEFIELD, CT

**TO: Town of Ridgefield, Purchasing Department
Mr. Jacob Muller, Director of Facilities and Purchasing
PURCHASING@RIDGEFIELDCT.ORG**

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

(Name of Firm)

having visited the site and carefully examined the Drawings, Bidding Documents and complete Specifications **dated May 5 2021** together with all Addenda issued and received prior to scheduled closing time for recipient of Bids as prepared by the Architects, KAESTLE BOOS ASSOCIATES, INC., 416 Slater Road, New Britain, Connecticut, hereby offers and agrees as follows:

To provide all labor, materials, and all else whatsoever necessary to erect and properly finish all work in connection with the Tiger Hollow Stadium and Scotts Ridge Field and Track Replacement Project to the satisfaction of the Architect and Owner.

QUALIFICATIONS:

By submitting this proposal, the bidder certifies that he/she meets or exceeds the required qualifications. Bidders must have prior experience consisting of the successful construction and/or replacement of no less than five (5) synthetic turf athletic fields that are 65,000 sf or greater and two (2) tracks within the past five (5) years. Synthetic turf field construction and/or replacement shall have consisted of laser grading of the field base stone, concrete anchor curbing, and synthetic turf field underdrain systems. Track construction experience shall consist of construction of asphalt base, long/triple jump runways and pits, high jump, and concrete edge curbing. Bidders must provide verification of experience with this Form of Proposal and include a completed Bidders Qualification Statement with this proposal.

BID
TIGER HOLLOW AND SCOTTS RIDGE FIELD AND TRACK REPLACEMENTS
RIDGEFIELD HIGH SCHOOL
RIDGEFIELD, CT

Bid Item A - Scotts Ridge Middle School Field Replacement

	(\$)	
<i>written amount</i>				<i>numerals</i>

Bid Item B – Tiger Hollow Stadium Field Replacement

	(\$)	
<i>written amount</i>				<i>numerals</i>

Bid Item C – Tiger Hollow Stadium Track Replacement

	(\$)	
<i>written amount</i>				<i>numerals</i>

Bid Item D – Tiger Hollow Stadium Miscellaneous Improvements

	(\$)	
<i>written amount</i>				<i>numerals</i>

BASE BID TOTAL (*Bid Items A, B, C, D, and all allowances under Section 010000-Summary*)

	(\$)	
<i>written amount</i>				<i>numerals</i>

to provide all labor, materials, and all else whatsoever necessary to construct all base bid improvements described in the specifications.

Turf Manufacturer/Installer carried in Bid: _____

Track Surfacing Manufacturer/Installer carried in Bid: _____

If awarded this Contract, we will execute a Contract with the **Town of Ridgefield**.

The Undersigned Also Agrees as Follows:

First: To do any extra work not covered by the above schedule of prices, which may be ordered by the Engineer and to accept as full compensation therefor such prices as may be agreed upon in writing by the Engineer and the Contractor in accordance with Article 5, “General Conditions”.

Second: Within seven (7) days from the date of the “Notice to Proceed”, to execute the Contract and to furnish to the Owner a satisfactory performance and payment bond in the sum of the full amount of the contract.

ALTERNATES

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

Scotts Ridge Middle School Field Replacement

Alternate No. 1: ADD: Synthetic Turf System without Pad: Add \$ _____

Alternate No. 2: ADD: Fencing Repairs and Mesh Replacement: Add \$ _____

Alternate No. 3: ADD: Ball Netting System: Add \$ _____

Alternate No. 4: ADD: Field Top Stone: Add \$ _____

Alternate No. 5: ADD: Field Perimeter Collector Drain: Add \$ _____

Tiger Hollow Stadium Field Replacement

Alternate No. 6: DEDUCT: Synthetic Turf System without Pad: Deduct \$ _____ *(net change)*

Alternate No. 7: ADD: Field Top Stone: Add \$ _____

Alternate No. 8: ADD: Field Perimeter Collector Drain: Add \$ _____

Tiger Hollow Stadium Track Replacement

Alternate No. 9: ADD: Track and Field Equipment: Add \$ _____

Alternate No. 10: DEDUCT: Structural Spray Track System: Deduct \$ _____ *(net change)*

Alternate No. 11: DEDUCT: Track Color Change: Red Polyurethane Bound Layered Impermeable

Running Track Surface with Embedded EPDM Finish

(sandwich system): Deduct \$ _____ *(net change)*

UNIT PRICES

Should the amount of improvements required be increased or decreased due to special considerations found at the site or because of a request of the Town of Ridgefield, the undersigned agrees that the following supplemental UNIT PRICES will be the basic price in place for computing the EXTRA or CREDIT. Each UNIT PRICE shall include all equipment, tools, labor, permits, fees, etc., incidental to the installation and completion of the work involved. Refer to specification section 01 22 00 Unit Costs for detailed information for the scope of each Unit Cost Item.

The amounts shown are net changes to the Contract for the quantity of additional work and include the Contractor's and any Subcontractor's amounts for overhead and profit. For deleted work, the net credit to the Contract shall be 10% less. All work is to be accomplished in accordance with applicable Sections of the Specifications.

C.Y. = cubic yard

S.F. = square foot

S.Y. = square yard

S.F.F.= square foot face of exposed wall

L.F. = linear foot

EA = Each

ITEMS

1. Mass Earth Excavation	\$_____ (CY)
2. Granular Fill	\$_____ (CY)
3. Processed Aggregate	\$_____ (CY)
4. Collector Pipe Stone	\$_____ (CY)
5. Field Base, Bottom Stone	\$_____ (CY)
6. Field Base, Top Stone	\$_____ (CY)
7. Concrete Anchor Curbing	\$_____ (LF)
8. Track Slot Drain and Anchor Curbing	\$_____ (LF)
9. Flat Panel Drain	\$_____ (LF)
10. Geotextile Filter Fabric	\$_____ (SF)
11. 4' High Black Vinyl Coated Chain-Link Fencing	\$_____ (LF)
12. 6' High Black Vinyl Coated Chain-Link Fencing	\$_____ (LF)
13. Full Depth Track Base	\$_____ (SY)
14. Walkway Asphalt Pavement	\$_____ (SY)

CONTRACT TIME

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

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

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

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

Addendum No. # _____ Dated _____

SIGNATURE

Contractor Firm

Printed Name and Title

Authorized Signature

Business Address

City, State, and Zip code

Office Telephone Number

Mobile Telephone Number

Email

SECTION 01 23 00 – ALTERNATES – Addendum #2

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

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

1.3 DEFINITIONS

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

1.4 PROCEDURES

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1: SCOTTS RIDGE FIELD: Synthetic Turf System without pad (Over Stone Base):
Contractor shall provide the (NET) cost for the materials, labor, and other items necessary for providing and installing a 2.5" synthetic grass surfacing system over the existing prepared stone base in lieu of the base bid 2.0" synthetic grass surfacing system with resilient underlayment pad. Include all adjustments to infill and grading volumes as well as adjustments to the existing anchor curb. Refer to the Specifications and Details #7 and #8 Sheet L4.03.
- B. Alternate No. 2 ADD: SCOTTS RIDGE FIELD: Fencing Repairs & Mesh Replacement:
Contractor shall provide the NET addition cost for the materials, labor, and other items necessary for removal of existing chain link fabric, bent posts and rails and replacement with new 6 gauge black PVC coated fence fabric and rails for all field perimeter fence (various heights) at Scotts Ridge Field. New fence fabric, rails and accessories shall be per the specifications and fencing details shown on sheets L4.04 and L4.05.
- C. Alternate No. 3 ADD: SCOTTS RIDGE FIELD: Ball Netting System
Contractor shall provide the addition cost for the materials, labor, and other items necessary for a complete, installed and fully functional 30' height ball netting system as shown on the site drawings, detailed on sheet L4.06 and as Specified.
- D. Alternate No. 4 ADD: SCOTTS RIDGE FIELD: Field Tops Stone: Contractor shall provide the additional cost for the materials, labor, and other items necessary for the placement of an additional ½" depth of field top stone as described in section 33 46 16 and shown on the project drawings for the entire field area at the Scotts Ridge field.
- E. Alternate No. 5 ADD: SCOTTS RIDGE FIELD: Field Collector Drain Remediation: Contractor shall provide the additional cost for the materials, labor, installation, grading, testing and other items necessary for the remediation of the drainage stone over the existing collector pipe per the Specifications and as shown on detail #6 sheet L4.05.
-
- F. Alternate No. 6: (DEDUCT): TIGER HOLLOW STADIUM FIELD: Synthetic Turf System without pad (Over Stone Base): Contractor shall provide the NET credit cost for the materials, labor, and other items necessary for providing and installing a 2.5" synthetic turf installed directly on base stone (without resilient underlayment pad) in lieu of the base bid turf, pad, curbing shims and infill. Include all adjustments to infill and grading volumes as well as adjustments to the existing anchor curb. Refer to the Specifications and Details #7 and #8 Sheet L4.03.

- G. Alternate No. 7 ADD: TIGER HOLLOW STADIUM FIELD: Field Tops Stone: Contractor shall provide the additional cost for the materials, labor, and other items necessary for the placement of an additional ½" depth of field top stone as described in section 33 46 16 and shown on the project drawings for the entire field area of at the Tiger Hollow Stadium field.
- H. Alternate No. 8 ADD: TIGER HOLLOW STADIUM FIELD: Field Collector Drain Remediation: Contractor shall provide the additional cost for the materials, labor, installation, grading, testing and other items necessary for the remediation of the drainage stone over the existing collector pipe per the Specifications and as shown on detail #6 sheet L4.05.
-
- I. Alternate No. 9: ADD: TIGER HOLLOW STADIUM TRACK: Track and Field Equipment: Contractor shall provide the cost for the materials, assembly, labor, and other items necessary for providing and installing equipment noted as 'alternate' in specification sections 32 86 00 Athletic Field Equipment and 32 86 10 Track and Field Equipment.
- J. Alternate No. 10: (DEDUCT): TIGER HOLLOW STADIUM TRACK: Structural Spray Track Surfacing: Contractor shall provide the NET credit cost for the materials, assembly, labor, and other items necessary for providing and installing a structural spray type track surfacing as specified in section 32 18 23.31 Polyurethane Running track Surfacing – Structural Spray (color: red) in lieu of the Polyurethane Sandwich type system specified as Base Bid.
- K. Alternate No. 11: (DEDUCT): TIGER HOLLOW STADIUM TRACK: Track Surfacing Colors: Contractor shall provide the NET credit cost for the materials, labor, and other items necessary for providing and installing a solid Red colored track in lieu of the Grey and Orange Track specified in Section 32 18 23.33 Polyurethane Running track Surfacing – Embedded Sandwich System.

END OF SECTION 01 23 00

SECTION 32 18 13 – SYNTHETIC GRASS SURFACING SYSTEM – Addendum #2

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes: Generally, installation of a synthetic grass carpet over a resilient shock pad with an infill consisting of a mix of a performance infill material and a stabilizing infill material.
 - 1. Procurement and installation of synthetic grass carpet surfacing.
 - 2. Procurement and installation of infill materials.
 - 3. Procurement and installation of a resilient shock pad.
 - 4. Pre and post installation testing of the synthetic grass surfacing system.
 - 5. Warranty and maintenance requirements for the synthetic grass surfacing system.
 - 6. All incidental work items required to complete the work as shown on the Drawings and as called-for in the Specifications.
- B. Contractor shall coordinate work between all Contractors, sections, and trades required for the proper completion of the work. Carefully examine all of the Contract Documents for requirements which affect the work of this Section. The exact scope of work of this section cannot be determined without a thorough review of all Specification Sections and other Contract Documents.
- C. In all cases when conflicts exist between information contained in this Section and in other parts of the Contract Documents, Contractor shall assume that the more stringent and highest-performing solution is required.
- D. Contractor is responsible for all health and safety .
- E. It is the Owner intent to meet the performance, safety, and durability requirements for the synthetic turf system as specified herein for the life of the synthetic turf surfacing system warranty period (8-years).

1.3 REFERENCES

- A. Reference herein to any technical society, organization, group or regulation are made in accordance with the following abbreviations and, unless otherwise noted or specified, all work under this Section shall conform to the latest edition as applicable.
- B. American Society for Testing and Materials (ASTM)

1. ASTM D 789 - Yarn Melting Point
2. ASTM D 1335 - Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
3. ASTM D 1577 - Standard Test Methods for Linear Density of Textile Fibers (Fiber Denier)
4. ASTM D5034 – Standard Testing Method for Breaking Strength and Elongation of Textile Fabrics (Grab Test)
5. ASTM D5035 – Standard Testing Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
6. ASTM D 2256 - Standard Test Method for Tensile Properties of Yarns by the Single-Strand Method (Breaking Strength and Elongation)
7. ASTM D 2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials (Flammability)
8. ASTM D 3218 – Standard Test for Fiber Thickness (Microns)
9. ASTM D422 Particle-Size Analysis
10. ASTM D 4491 - Water Permeability of Geotextiles by Permittivity.
11. ASTM F 355 - Standard Test Method for Impact Attenuation of Playing Surface Systems and Materials.
12. ASTM F 1551 - Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials (for those not covered above)
13. ASTM F 1632 - Particle Size Analysis and Sand Shape Grading of Golf Course Putting Green and Sports Field Rootzone Mixes
14. ASTM F 1936 - Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field
15. ASTM F2157 - Standard Test Method for Base Material Evenness
16. ASTM F 2765 - Standard Specification for Total Lead Content in Synthetic Grass Fibers.

- C. European Standards (EN)
- D. National Federation of State High Schools (NFHS)
- E. Synthetic Turf Council Guidelines (STC)
- F. Connecticut Interscholastic Athletic Conference (CIAC)
- G. American Sports Builders Association (ASBA)

1.4 DEFINITIONS

- A. Most terms used within the documents are industry standard. Certain words or phrases shall be understood to have specific meanings as follows:
 1. Provide: Furnish and install a complete and fully operational system.
 2. Furnish: Purchase and deliver to a specific location within the building or site.

3. Install: With respect to equipment furnished by others, install means to receive, unpack, erect or construct, move into position, mount, and connect, including removal of packaging materials.
4. Synthetic Turf Testing Agency (Testing Agency): Agency to perform testing on the synthetic turf system. Testing shall be done by a third-party testing agency. Performance testing and on-site testing shall be performed by an Agency currently holding certification by FIFA, World Rugby, and FIH.

1.5 SUBMITTALS

A. Bid Submittals

1. Non-compliance with the bid submittal requirements as specified herein may result in rejection of the bid.
2. The following letters, on the synthetic grass surfacing manufacturer/vendor's letterhead and signed by an officer of the company, shall be submitted with the bid.
 - a. A letter shall confirm their intent to conform to all requirements set forth in the Bid Documents for the Synthetic Grass Surfacing System and provide a qualified installation crew. Conformance includes, but is not limited to, the Bid Drawings, Specifications, Addendum, and RFI Clarifications.
 - b. Manufacturer's Review of Synthetic Grass Surfacing: A letter confirming that the Bid Documents for the Synthetic Grass Surfacing System have been completely reviewed by qualified representatives of the materials manufacturer and that they are in agreement that the materials and system to be used for the synthetic grass field surfacing are proper and adequate for the applications shown and in no way impact the system warranty.
 - c. Sample manufacturer's warranty and maintenance requirements for the synthetic turf system proposed for this project.
 - d. Synthetic Turf Testing Third-Party Agency: The agencies contact information and current certifications from FIFA, World Rugby, and FIH. Certifications shall be provided from each sports regulatory body, not the testing agency.
3. The following letters, on the resilient shock pad manufacturer/vendor's letterhead and signed by an officer of the company, shall be submitted with the bid.
 - a. A letter shall confirm their intent to conform to all requirements set forth in the Bid Documents for the resilient shock pad and qualified installation crew. Including, but not limited to, the Bid Drawings, Specifications, Addendum, and RFI Clarifications. Letter shall specifically confirm the ability to meet the resilient shock pad performance and warranty requirements set forth in this specification.

- b. Manufacturer's Review of Synthetic Grass System A letter confirming that the Bid Documents for the synthetic turf system have been completely reviewed by qualified representatives of the materials manufacturer and that they are in agreement that the materials and system to be used are proper and adequate for the applications shown and in no way impact the pad warranty.
 - c. Sample manufacturer's warranty for the resilient pad proposed for this project.
- 4. The following letters, on the infill manufacturer/vendor's letterhead and signed by an officer of the company, shall be submitted with the bid.
 - a. A letter shall confirm their intent to conform to all requirements set forth in the Bid Documents for the performance infill material, including, but not limited to, the Bid Drawings, Specifications, Addendum, and RFI Clarifications. Letter shall specifically confirm the ability of the performance infill to meet the performance and warranty requirements set forth in this specification.
 - b. Manufacturer's Review of Synthetic Grass System A letter confirming that the Bid Documents for the synthetic turf system have been completely reviewed by qualified representatives of the materials manufacturer and that they are in agreement that the materials and system to be used are proper and adequate for the applications shown and in no way impact the performance infill warranty.
 - c. Sample manufacturer's warranty for the performance infill proposed for this project.

B. Pre-Manufacturing Submittals

- 1. The intent of the pre-manufacturing submittal is for the synthetic turf manufacturer to provide the required documentation listed below for the ***manufacturers standard system that most closely resembles the system specified*** and has been previously tested for conformance to the requirements below. The intend of this section is for manufactures to provide a system that has been previously tested, ***not to require a manufacturer to manufacture and conduct the required pre-manufacturing submittal testing on a non-standard system. Systems of similar materials that are currently certified by FIFA should meet the requirements of this specification, with the possible exception of the infill material and the resilient shock pad.***
- 2. Material Testing: Submit for approval test results for all material testing performed under "Quality Control Testing, Pre-Manufacturing" herein. Provide copies of all Testing Agency reports. **Testing shall be no more than 24 months old from date of submittal.**
- 3. Product Data: Submit manufacturer's general specifications and installation instructions for all products in the Synthetic Grass Surfacing System, including certifications and other data as may be required, to show compliance with the Contract Documents.
 - a. Material Safety Data Sheets (MSDS) sheets for all products and product components, as necessary. This shall include solvents and other products required as part of clean-up.

- b. Certified Statement of the presences of toxic and or hazardous materials. Any toxic and/or hazardous material exceeding 100 parts per million (ppm) shall be identified in list form. The list shall reference the standard in name and threshold if applicable, and the test results. This requirement is above and beyond the requirements for MSDS.
 - c. Submit manufacturer's product data for the resilient shock pad demonstrating compliance with this specification. Include manufacturer's written instructions and procedures for each product.
4. Material Samples: Submit two (2) samples for approval for all materials under 2.1 Materials including, but not limited to, the following:
- a. Synthetic Grass Carpet Fiber: Provide samples for each color used for the field, markings, and logos.
 - b. Synthetic Grass Carpet Samples: Twelve-inch (12") square samples of un-filled synthetic grass carpet (rag) for each field and each color used for the field. The samples shall be the manufacturers standard product that most closely resembles the specified system and is to be reviewed as the general product intended for use on the field. Manufacturer shall note any discrepancies between the standard product sample submitted and the product to be manufactured for this project.
 - c. Seaming Materials: Twelve-inch (12") long samples of all materials to be used for seaming of the synthetic grass turf system including, but not limited to, glue and seaming tape.
 - d. Synthetic Grass Surfacing Infill: One-pound samples of each, in separate containers:
 - 1) Performance infill material
 - 2) Stabilizing infill material
 - e. Resilient Shock Pad Sample: Twelve-inch (12") square samples of resilient shock pad.
5. Shop Drawings: Submit for approval the following:
- a. Seaming plan; Seams of the field shall not coincide with the subsurface drain system nor seams of pad.
 - b. Field Marking Layout, including logos. Layouts for all sports shown on the Drawings showing any field lines, markings, boundaries on the appropriate field(s) and all specified colors. All markings shall be tufted in the factory or inlaid. Provide certification that field layouts meet all NFHS and CIAC sport marking requirements as installed in the field.
 - c. Details on field construction, making special note of any details that may deviate from the Drawings or Specifications. Include: edge detail, goal post detail, covers for access to subsurface structures, other inserts, etc.

6. Warranties: Submit a draft copy of the warranties in Owner's name for all products furnished under this section for review and approval.
7. Testing Agency: Submit qualification of testing agency(s) for review and approval.
8. Synthetic grass surfacing manufacturer/vendor and installer qualifications:
 - a. Installer Qualifications: Synthetic Grass Installation Sub-Contractor shall certify in writing the designated supervisory personnel on the project are competent in the installation of the synthetic grass surfacing system materials, including gluing or sewing seams and proper installation of the infill mixture. The synthetic grass surfacing installer shall have a full-time representative on-site during installation to oversee and certify the installation and warranty compliance. Provide experience to show that installation crew is competent to complete the level of work outlined in this project. Synthetic Grass Installation Sub-Contractor's superintendent shall demonstrate experience that the superintendent is competent to oversee and complete the level of work outlined in this project.
 - b. At a minimum, provide the following documentation: Fifteen (15) reference projects consisting of Synthetic Grass Multi-Sport Grass Fields of 75,000 square-feet or larger within the past five (5) years completed by the proposed on-site full-time installation superintendent.
 - c. Project Information: At a minimum, provide the following information for each reference project:
 - 1) Project Name
 - 2) Project Location
 - 3) Project scope
 - 4) Construction timeline
 - 5) Construction cost
 - 6) Reference name, title, affiliation, and contact information.
9. Resilient Shock Pad:
 - a. Resilient shock pad manufacturer/vendor and installer qualifications:
 - 1) Installer Qualifications: Resilient Shock Pad Installation Sub-Contractor shall certify in writing the designated supervisory personnel on the project are competent in the installation of the Resilient pad material. The Resilient pad installer shall have a representative on-site to certify the installation and warranty compliance. Provide experience to show that installation crew is competent to complete the level of work outlined in this project. Resilient pad Installation Sub-Contractor's superintendent shall experience to demonstrate that the superintendent is competent to oversee and complete the level of work outlined in this project.
 - 2) At a minimum, provide the following documentation: Fifteen (15) reference projects consisting of Resilient pads of 75,000 square-feet or larger within the past five (5) years completed by the proposed on-site full time installation superintendent.

- 3) Project Information: At a minimum, provide the following information for each reference project:
 - a) Project Name
 - b) Project Location
 - c) Project scope
 - d) Construction timeline
 - e) Construction cost
 - f) Reference name, title, affiliation, and contact information.
 10. Field Maintenance Equipment:
 - a. 2.1 Materials, H. Field Maintenance Equipment
 11. Field Attic Stock
 - a. 2.1 Materials, G. Attic Stock
 12. Surveyor: Submit name and qualifications of Professional Land Surveyor who will be responsible for layout and verification of the work of this Section and Section 01 73 00 Execution.
- C. Post Manufacturing/Pre-Installation Submittals
1. Material Testing: Submit for approval test results for all material testing performed under “1.8 Quality Control Testing, Post-Manufacturing/Pre-Installation” herein. Provide copies of all testing agency reports.
 2. Material Samples: Submit two (2) samples, with required testing data, for approval for all materials under 2.1 Materials including, but not limited to, the following:
 - a. Synthetic Grass Carpet Sample: Twelve-inch (12") square samples of un-filled synthetic grass for each color manufactured for the project. Samples shall be the same as samples send to the testing agency for conformance of the product declaration.
 - b. Synthetic Grass System Sample: Sample box of synthetic grass system, including infill material.
 3. Acceptance of Prior Work: Refer to section 3.2 Examination.
- D. Post-Installation Submittals
1. Material Testing: Submit for approval test results for all material testing performed under “1.8 Quality Control Testing, Post-Installation” herein. Provide copies of all testing agency reports.
 2. Warranty: Submit for approval final, executed warranty.
- E. Warranty Quality Control Submittals
1. Material Testing: Submit for approval test results for all material testing performed under “Quality Control Testing, Warranty” herein. Provide copies of all testing agency reports to the Owner and Landscape Architect for review and approval for the entire warranty period.

1.6 QUALITY ASSURANCE

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

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Contractor is required to coordinate material deliveries and storage on-site with Owner. Deliveries and storage of materials on-site shall not impact the function of the adject schools and facilities.
- B. Schedule delivery to minimize on-site storage. Segregate differing materials and prevent contamination between materials.
- C. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturers' identification. All materials shall be stored in a dry place out of the direct sunlight.
- D. Areas for loose material deliver and storage shall be adequately cleared, cleaned, and prepared to ensure new material is not contaminated by existing foreign materials and existing materials are not damaged.
- E. Contractor is responsible for the protection, relocation, and other activities related to Owner supplied materials once a Contract is executed.
- F. Resilient shock pad
 - 1. Follow manufacturer's recommendations for packaging, transportation, and delivery to ensure materials are not damaged. Furnish materials in wrapping that protects the material from ultraviolet radiation and from abrasion due to shipping and hauling.
 - 2. Materials shall be stored on a prepared surface. Protect materials from puncture, dirt, grease, water, moisture, mud, mechanical abrasions, excessive heat or cold, or other damaging circumstances.
 - 3. Contractor is responsible for the protection, relocation, and other activities related to Owner supplied materials once a Contract is executed.

Addendum #2

- G. Prior to the installation of any materials and immediately upon delivery of the synthetic grass system and components to the project site, the Contractor shall inspect materials as follows:
1. For damaged or defective items.
 2. Measure synthetic grass roll lengths, perforations, and uniformity.
 3. Adhesives and seaming tape shall arrive in sealed dry containers and be kept in adequate temperature per manufacturer's requirements.
 4. Performance infill shall arrive in large sacks or bags without tears and loose material. Material shall be dry and loose within packaging. No performance infill shall be accepted that is bulked or solid.
 5. Stabilizing infill may arrive loose or in large sacks, depending on the site conditions. Contractor is responsible for reviewing the site conditions and determining the method for delivery of the stabilizing infill based on the available material storage area provided by the Owner. Material shall arrive dry and shall not be accepted if bulked or solid.
 6. Infill materials shall be free of exposed metal particles.
 7. Infill shall remain free from contamination of site materials.
- H. Bulk Materials: Deliver materials in clean, washed, and covered trucks to eliminate contamination during transportation. On site stockpiling locations to be coordinated with the Owner. Stockpile only in areas free of debris and away from drainage routes. Cover all materials with plastic or geotextile if materials are to be stockpiled more than 48 hours or a rain event is forecasted.

1.8 QUALITY CONTROL TESTING

- A. All sampling/testing shall be the responsibility of Contractor. Contractor shall retain and pay for the services of a Synthetic Turf Testing Third-Party Agency to perform all sampling/testing in accordance with applicable standards.
- B. All testing shall be completed by an independent Synthetic Turf Testing Third-Party Agency as approved by Landscape Architect, unless otherwise noted. Testing must be for current materials with current date from independent testing laboratory as described herein.
- C. Certified copies of laboratory reports shall be submitted for all testing.
- D. Pre-Manufacturing Testing
1. The intent of the pre-manufacturing testing is for manufacturers to submit the required testing for a previously tested **standard system and materials** that most closely resembles the specified system. Manufacturer shall note any discrepancies between the standard materials and systems previously tested and the system proposed for this project, if any.
 - a. *IT IS NOT THE INTENT OF PRE-MANUFACTURING TESTING SECTION TO REQUIRE MANUFACTURERS TO ENGAGE IN TESTING OF MATERIALS OR SYSTEMS NOT PREVIOUSLY TESTED AFTER BIDS HAVE BEEN RECEIVED.*
 - 1) *PREVIOUS TESTING SHALL NOT BE DATED OVER TWO (2) YEARS FROM DATE OF BIDDING.*
 - 2) *MANUFACTURERS WITHOUT A PREVIOUSLY TESTED SYSTEM CLOSELY RESEMBLING THE SPECIFICATION SHALL NOT BE CONSIDERED FOR THIS PROJECT.*

2. Timing: Contractor shall submit to Landscape Architect a copy of all test results certified by the Synthetic Turf Testing Third-Party Agency prior to manufacturing of the Synthetic Grass Surfacing for the Project. Provide testing data for the following:

TESTING METHOD	CHARACTERISTIC	DECLARATION
SYNTHETIC GRASS YARN (include results for each yarn color separately)		
(provide previous results for testing of product that closely meets specification)		
ASTM D1907/ FIFA Test Method 23	Fiber Denier (Dtex)	< +/- 10%
ASTM D3218/ FIFA Test Method 25	Fiber Microns	< +/- 10%
FIFA Method 22	Pile Yarn Characteristic	Same Polymer
ASTM D 789	Melting Point	> 235 degrees F
ASTM D 5034	Breaking Strength (length)	> 283 lbs./ ft.
ASTM D 5034	Breaking Strength (width)	> 200 lbs./ft
ASTM F 2765-09	Lead Content	< 50 ppm
Artificial Weathering (FIFA 10)		
EN ISO 20105-A02	Artificial Weathering (5,000 hours UVA) Turf Color Change	> Gray Scale 3
EN 13864	Artificial Weathering (5,000 hours UVA) Pile Yarn Tensile Strength	<50% reduction
SYNTHETIC GRASS INFILL MATERIALS		
(include results for each infill material separately)		
(provide previous results for testing of product that closely meets specification)		
EN 71-3	Safety of Toys Part 3	Pass
ASTM F3188	Safety of Synthetic Turf Infill	Pass
EN 933/ FIFA Test Method 20	Particle Size	Max. 1 sieve difference
EN 14955	Particle Shape	Same Shape
EN 1097-3	Bulk Density	± 15% of specification
EN ISO 20105-A02	Artificial Weathering (5,000 hours UVA) Polymetric Infill Color Change	> Grey Scale 3, no change in shape

TESTING METHOD	CHARACTERISTIC	DECLARATION
RESILIENT SHOCK PAD – Tiger Hollow Stadium Field		
(provide results for resilient shock pad tested over concrete only)		
EN 1969	Thickness	≥ 17 mm
ASTM F355-A/F1936	Impact Attenuation(g-max)	< 120 G's
EN 1177	Impact Attenuation, Head Injury Criteria (HIC)	< 1000 @ 0.6 m
ASTM F3189 (EN 14809)	Vertical Deformation	< 8.0 mm (< 4.0 mm)
ASTM F3189 (EN 14808)	Force Reduction	> 55% (> 55%)
ASTM F1551/EN 12616 (FIFA Method 24)	Water Infiltration Rate	> 100 in./hr. vertically
ASTM D696-03	Thermal Expansion (per 1°C)	< 0.1 mm/M
ASTM D3575	Compression Strength	> 25 psi @ 25% > 40 psi @ 50%
ISO 1856C	Compression Set – Static Load (35psi for 30 min at 23°C after 24 hrs)	< 7%
ASTM G22-76 ASTM G21-96 ASTM F925	Microbiological Analysis, Bacteria Resistance, Fungal Resistance, Chemical resistance	No growth or detrimental effects
DIN 53428	Water Absorption (after 24 hr immersion)	< 10% after 120 days @ 85C < 5% after 120 days at 85C

TESTING METHOD	CHARACTERISTIC	DECLARATION
RESILIENT SHOCK PAD – Scotts Ridge Middle School Field		
(provide results for resilient shock pad tested over concrete only)		
EN 1969	Thickness	≥ 24 mm (.96")
	Size	62" x 48" per panel
	Weight	4.96 lbs./panel
ASTM F355-A/F1936	Impact Attenuation(g-max)	< 120 G's
EN 1177	Impact Attenuation, Head Injury Criteria (HIC)	< 1000 @ 0.6 m
ASTM F3189 (EN 14809)	Vertical Deformation	< 8.0 mm (< 4.0 mm)
ASTM F3189 (EN 14808)	Force Reduction	> 55% (> 55%)
ASTM F1551/EN 12616 (FIFA Method 24)	Water Infiltration Rate	> 100 in./hr. vertically
ASTM D696-03	Thermal Expansion (per 1°C)	< 0.1 mm/M
ASTM D3575	Compression Strength	> 25 psi @ 25% > 40 psi @ 50%
ISO 1856C	Compression Set – Static Load (35psi for 30 min at 23°C after 24 hrs)	< 7%
ASTM G22-76 ASTM G21-96 ASTM F925	Microbiological Analysis, Bacteria Resistance, Fungal Resistance, Chemical resistance	No growth or detrimental effects
DIN 53428	Water Absorption (after 24 hr immersion)	< 10% after 120 days @ 85C < 5% after 120 days at 85C

SYNTHETIC GRASS SURFACING SYSTEM		
(provide previous results for testing of product that closely meets specification)		
ASTM D5848/ISO 2549	Pile Height (Pile Length Above Backing)	< 5%
ASTM D5793	Stitch Gauge	< 3/8"
ISO 1763	Tufts per Unit Area/Knots per Woven Area	
ASTM D5848/ISO 8543	Pile Weight	< +/- 5% of product declaration
ASTM D5848	Total Weight	
ASTM D1335/ISO 4919	Turf Bind (withdrawal)	.30N (unaged)
EN 13744 & ASTM D1335/ISO 4919	Turf Bind (withdrawal)	.30N (after immersion in hot water)
EN 1969/ FIFA Test Method 18	Free Pile Height	< 1/2" Fiber Reveal
EN 13746	Dimensional Stability	> 0.5% After Each Stage
EN 1969/ FIFA Test Method 21	Infill Depth	< 1/2" Fiber Reveal
EN 12228 Method 1	Joint Strength – unaged	1000N/100mm (bonded)
EN 13744 & EN 12228 Method 1	Joint Strength – after immersion in hot water	1000N/100mm (bonded)
EN 13672	Lisport XL Simulated Wear (can be equivalent yarn on similar system)	> 6,000 passes without splitting
ASTM F1551/EN 12616 (FIFA Method 24)	Water Infiltration Rate	>16 in./hr. (>180mm/h2)
ASTM F355-A/F1936	Impact Attenuation(g-max)	< 100 G's
EN 1177	Impact Attenuation, Head Injury Criteria (HIC)	< 900 @ 1.4 m
EN 14808/ FIFA 04&09	Force Reduction	55% to 70%
EN 14809/ FIFA 05a&15	Vertical Deformation	4 mm to 11 mm
EN 15301/ FIFA 06&15	Rotational Resistance	27 n to 48 n

3. Any system material previously tested and found not in compliance with the contract may be rejected and Contractor shall submit a material found to be acceptable.
4. The Owner, or Architect on the Owner behalf, reserves the right to independently test any material. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for the cost of all testing that fails. Contractor will bear the cost of all retesting as required by the Owner.
5. The approved testing results shall be referred to as the 'manufacturers declaration' for the remainder of this section.

E. Post Manufacturing/Pre-Installation Material Identification Testing

1. Testing for this section may be performed by the synthetic grass surfacing manufacturers in-house laboratory. In-house laboratories shall, at a minimum, hold an ISO-9000

certification and provide documentation that the laboratory has conducted equipment quality control verification within the past twelve (12) months.

2. If the manufacture is unable to meet the requirements for their in-house laboratory or chooses to use a Synthetic Turf Testing Third-Party Agency, samples, as required to perform the testing below, of the materials manufactured for this project shall be submitted to the independent Testing Agency.
3. Timing: Contractor shall submit to Architect a copy of all test results prior to shipping of the Synthetic Grass System materials to the Project. Provide testing data for the following:

PRODUCT IDENTIFICATION - SYNTHETIC GRASS SURFACING CARPET		
ISO 8543	Total Mass Per Unit Area	< 5%
ISO 1763	Tufts per Unit Area/Knots per Woven Area	< 10% manufacturers declaration
ISO 4919	Turf Withdrawal Force	> 95% of manufacturers declaration
ASTM D5848/ISO 2549	Pile Height (Pile Length Above Backing)	< 5%
ASTM D5848/ISO 8543	Pile Weight	> 95%
ASTM D 1335	Tuft Bind (w/out infill)	> 6.8 lbs. or 30N
ASTM D 5848	Primary Backing Weight	± 2 oz./yd ² of manufacturers declaration
ASTM D 5848	Secondary Backing Weight	± 2 oz./yd ² of manufacturers declaration
Visual	Perforations	> 3/16" dia. holes, spaced 4" on center
PRODUCT IDENTIFICATION – PILE YARN		
ASTM D 1907/FIFA Test Method 23	Denier (Dtex)	± 5% of manufacturers declaration
ASTM D 3218/FIFA Test Method 25	Microns	± 5% of manufacturers declaration

4. Any material tested and found not in compliance with the contract may be rejected and Contractor shall submit a material found to be acceptable.
5. The Owner, or Architect on the Owner behalf, reserves the right to independently test any material. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for the cost of all testing that fails. Contractor will bear the cost of all re-testing as required by the Owner

F. Post Manufacturing/Pre-Installation Performance Testing

1. The following testing is required if the manufacturer has not performed the testing listed on the synthetic grass surfacing system (resilient shock pad, carpet, and infill) being utilized for this project within the past 24 hours. Test is required if the manufacturing cannot provide such testing and understanding of the installation parameters (i.e. stabilizing

and performance infill ratio, fiber reveal) to meet the field performance criteria under this section.

2. Samples, as required to perform the testing below, of the synthetic grass carpet, infill material, and resilient shock pad system shall be submitted to the Synthetic Turf Testing Third-Party Agency.
3. Timing: Contractor shall submit to Landscape Architect a copy of all test results certified by the Independent Testing Agency prior to shipping of the Synthetic Grass System materials to the Project. Provide testing data for the following:

SYNTHETIC GRASS SURFACING SYSTEM (carpet, infill, and resilient pad)		
EN 1969/ FIFA Test Method 18	Free Pile Height	< ½" Fiber Reveal
	Infill Ratio	
ASTM F1551/EN 12616	Water Infiltration Rate	>16 in./hr.
ASTM F 1936	Impact Attenuation(g-max)	< 100 G's
EN 1177	Impact Attenuation, Head Injury Criteria (HIC)	< 900 @ 1.4 m
EN 14808/ FIFA 04&09	Force Reduction	55% to 70%
EN 14809/ FIFA 05a&15	Vertical Deformation	4 mm to 11 mm
EN 15301/ FIFA 06&15	Rotational Resistance	27 n to 48 n
EN 12235/ FIFA 01&15	Vertical Ball Rebound	60 cm to 100 cm
EN 12234/ FIFA 17 & 15	Reduced Ball Roll	4 m to 10 m
FIFA 02	Angle Ball Rebound	45% - 70%
FIFA 04a & 15	Shock Absorption	57% - 68%

4. Any material tested and found not in compliance with the contract may be rejected and Contractor shall submit a material found to be acceptable.
5. The Owner, or Landscape Architect on the Owner behalf, reserves the right to independently test any material. Any testing performed by the Owner will be at the Owner's expense. The Contractor is responsible for the cost of all testing that fails. Contractor will bear the cost of all retesting as required by the Owner.

G. Drainage Testing, Pre-Construction

1. Refer to Specification Section 33 46 16 Field Subdrainage System for testing and approval requirements of the synthetic turf field base.
2. Synthetic turf system installer shall submit pre-installation base acceptance letter.

H. Post-Installation Testing

1. Timing: Testing shall be completed on-site once the field is complete and the infill has had adequate time to settle, but no later than forty-five (45) days of the completion of installation.
2. Contractor shall submit to Architect a copy of all test results certified by the Synthetic Turf Testing Third-Party Agency. Provide testing data for the following:

DRAINAGE STONE (installed on-site, prior to installation of resilient pad)		
SEE SPECIFICATION SECTION 33 46 16 'FIELD SUBDRAINAGE SYSTEM'		
SYNTHETIC GRASS SURFACING SYSTEM (installed on-site, after installation of the resilient pad (if applicable), synthetic grass surfacing, inlays, and infill)		
ASTM F1551/EN 12616	Water Infiltration Rate	>16 in./hr. (1 test per 20,000 s.f.)
EN 1969/ FIFA 21	Infill Depth Measurement (minimum 50 locations)	± 10% of specification (1/2" exposed fiber) (individual locations, not average field results)
EN 13036/FIFA 12	Planarity/Surface Regularity	<10 mm
ASTM F 1936	Impact Attenuation(g-max) (minimum 10 locations)	< 95 G's (individual locations, not average field results)
EN 1177	Impact Attenuation, Head Injury Criteria (HIC) (minimum 10 locations)	< 900 @ 1.4 m (individual locations, not average field results)
EN 14808/ FIFA 04a	Shock Absorption	55% to 70%
EN 14809/ FIFA 05a	Vertical Deformation	4 mm to 11 mm
EN 15301/ FIFA 06	Rotational Resistance	25 n to 50 n
EN 12235/ FIFA 01	Vertical Ball Rebound	60 cm to 100 cm
EN 12234/ FIFA 03	Ball Roll	4 m to 10 m
EN 71-3	Safety of Toys Part 3	Pass (minimum of 3 samples)
ASTM F3188	Safety of Synthetic Turf Infill	Pass (minimum of 3 samples)

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

I. Warranty Testing

1. Timing: Testing shall be completed on-site and annually for the warranty period. Testing shall be scheduled with the Owner and Architect each year prior to start of the fall athletic season.

Contractor shall submit to the Architect and Owner a copy of all test results certified by the independent Synthetic Turf Testing Third-Party Agency. Provide testing data for the following:

SYNTHETIC GRASS SURFACING SYSTEM (annually)		
EN 13036	Planarity/Surface Regularity	<10 mm
EN 1969	Infill Depth Measurement (minimum 50 locations)	± 10% of specification (1/2" exposed fiber) (all locations, not average)
ASTM F 1936	Impact Attenuation(g-max) (minimum 10 locations)	< 100 G's (individual locations, not average field results)
EN 1177	Impact Attenuation, Head Injury Criteria (HIC) (minimum 10 locations)	< 900 @ 1.4 m (individual locations, not average field results)
EN 71-3	Safety of Toys Part 3	Pass (minimum of 3 samples)
ASTM F3188	Safety of Synthetic Turf Infill	Pass (minimum of 3 samples)

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

1.9 PATENT RIGHTS AND INFRINGEMENT

- A. The Drawings and Specifications are not indented to be proprietary or in violation of any current or pending patents. The Contractor and subcontractors are responsible to provide the Owner and Landscape Architect with any violations contained here in prior to bidding. By bidding on the project, the Contractor and subcontractors shall hold the Owner, Construction Manager, and Design Consultants harmless from infringement of any current or future patent issued for the synthetic grass surfacing system.
- B. Contractor and subcontractors shall hold the Owner, Construction Manager, and Design Consultants harmless from infringement of any current or future patent issued for the synthetic grass surfacing system, fibers, backings, including resilient shock pad, installation methods and vertical draining characteristics. The successful bidder will be required to submit a letter for consent from their surety. The Surety shall indemnify the requirements.

- C. There are various established performance criteria throughout this request for products and services. There may exist patent coverage for some means and methods of achieving those performance criteria. Bidders are responsible for ascertaining that means and methods of the products and services which they are providing are not being provided in violation of any such patent rights. Bidder's responsibilities are as follows:
1. To hold harmless, the Owner, Construction Manager, and Design Consultants, as to any violation to include dollar amounts that could be owed as a result of damages for infringement including potential treble damages as provided for under U.S. Patent Law.
 2. All costs that the Owner, Construction Manager, and Design Consultants, would incur in replacing materials and services which are determined to infringe patent rights.
 3. All administrative, legal, and other costs that would be incurred as a result of an infringement.

1.10 WARRANTY

- A. Synthetic Grass Surfacing Warranty – Sports Fields: See Specification Section 32 18 13.10 Synthetic Grass Surfacing Warranty.
- B. Synthetic Grass Infill Warranty
1. Synthetic Turf Surfacing System A & C: The Infill Material Manufacturer shall provide a non-prorated Manufacturer/Installer Warranty/Guarantee (also referred to herein as the Warranty) for the synthetic grass performance infill materials and installation as specified herein, for a minimum period of eight (8) years to the Owner from the date of Certificate of Substantial Completion.
 2. Infill material shall be warrantied against breakdown of material outside of project specifications, deterioration of infill coatings, and failure to adhere to EN 71-3 and ASTM F3188 testing.

C. Resilient Shock Pad Warranty's

1. The Resilient Pad Manufacturer shall provide a non-prorated resilient shock pad Manufacturer/Installer Warranty/Guarantee (also referred to herein as the Warranty) for the resilient shock pad materials and installation as specified herein, for a minimum period as herein to the Owner from the date of Certificate of Substantial Completion.
 - a. Tiger Hollow Stadium Field: Sixteen (16) years
 - b. Scotts Ridge Middle School Field: Eight (8) years

Addendum #2

2. Warranty shall include coverage for the following:
 - a. Drainage issues or failure to drain at rate of 50" per hour or greater.
 - b. Undulations or heaving repair for any base or surfacing undulation caused by the resilient shock pad material apparent in the synthetic turf surfacing over 10mm vertical height, whether periodic (due to weather) or persistent.
 - c. Persistent depressions, or deformation of the pad material 10 mm or greater caused by the resilient pad materials.
 - d. Any failure in the physical properties of the resilient pad that negatively affect the aesthetics, playability, G-Max rating, HIC rating, or longevity of the synthetic turf surfacing system.
 - e. Costs for repair or replacement of the synthetic turf and infill materials above the resilient pad in affected areas in the event of product failure.
 - f. Resilient shock pad warranty shall guarantee the ability of the synthetic grass surfacing system to meet the warranty criteria under 1.8 Quality Control Testing, I. Warranty Testing for the term of the resilient shock pad warranty.
- D. The Warranties shall cover, in general, the usability of the Synthetic Grass System: accessories, use, characteristics, and suitability, of the installation to the minimums specified in this Section.
- E. All items covered by the warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting material manufacturer/supplier over the life of the Warranty.
- F. Sports Field Synthetic Grass System Use: The materials utilized in the sports field synthetic grass system (carpet, infill, resilient pad, seaming, logo's, inlays, etc.) shall be guaranteed for the designated uses as follows:
 1. Football, Rugby, Soccer, Baseball, Softball, Field Hockey, Lacrosse
 2. Marching Band
 3. Graduations and Ceremonies
 4. Physical Education and Intramural Sports Programs
 5. Physical Education exercises and activities
 6. Pedestrian traffic and other similar uses
 7. Pneumatic rubber-tired maintenance and service equipment, designed for use on athletic fields and golf courses.
- G. Warranty documents and terms of Warranty shall be in accordance with this Specification.
 1. The use of the Manufacturers' standard or modified form of Warranty shall in no circumstance supersede the conditions set forth in this Specification Section, which shall be considered part of the Warranty.

2. This Warranty shall constitute a contract made in the State of where the project is located and shall be governed by the laws of that State.

H. All Warranties shall include coverage for the following:

1. Drainage issues, or failure to drain at the specified rate.
2. Any failure in the physical properties that negatively affect the aesthetics, playability, G-Max rating, HIC rating, or longevity of the synthetic grass.

I. Test results, field repairs, and field concerns shall be submitted to the Owner and the Architect in a Field Inspection Report and Testing Results for review.

J. Adhesive Materials

1. The adhesive shall have the same warranty period as the synthetic grass system, eight (8) years. Warranty from the adhesive material manufacturer/supplier shall be submitted with the synthetic grass surfacing warranty for review and approval.

1.11 WARRANTY AND MAINTENANCE OBLIGATIONS

1. The Synthetic Grass Manufacture/Supplier shall be required to provide testing, as described under G. Warranty Testing, and inspection plan for the lifespan of the warranty as part of this Contract and shall submit a schedule of visits at the time of completion.
 - a. Contractor shall make corrections as necessary to meet all testing requirements.
2. The Synthetic Grass Manufacture/Supplier to return to the site once (1) per year for the duration of the warranty, no less than 8 visits.
3. The Synthetic Grass Manufacture/Supplier shall inspect any areas of concern and make repairs as necessary under warranty during each visit including, but not limited to, the following:
 - a. Nailer Board/Concrete Anchor Cub Repairs (general contractor)
 - b. Inlays, Numbers, Logo, and Seam Conditions
 - c. Fiber Conditions
 - d. Fiber Height
 - e. Infill Condition
 - f. Infill Height/ Compaction
 - 1) Sports Fields: Additional infill may be required by the Contractor to maintain the G-Max, HIC levels and required infill depths. Materials shall be provided and installed at no cost to the Owner to achieve acceptable performance and safety requirements under the warranty requirements.
4. Test results, field repairs, and field concerns shall be submitted to the Owner and the Landscape Architect in a Field Inspection Report and Testing Results for review.

PART 2 - PRODUCTS

Addendum #2

2.1 MATERIALS

A. Resilient Shock Pad

1. Commercially available panelized/modular resilient pad system designed for multi-sport uses. Resilient shock pad shall consist of prefabricated, interlocking units configured for installation beneath a synthetic turf surfacing system.
 - a. Tiger Hollow Stadium Field: Resilient pad system shall consist of new and unused panels.
 - b. Scotts Ridge Middle School Field: Resilient pad system shall consist of the re-purposed resilient pad panels, model: Brock PowerBase product number: PB2000A (on-site, provided by Owner) and new panels of sufficient quantity to cover the entire field. New panels shall match the re-purposed panels in size, performance criteria, material composition, installation procedures, warranty, and in no way negatively impact the overall synthetic turf system requirements or the resilient pad requirements.
 - 1) On-site material provided by Owner: 54 pallets, 70 panels per pallet \pm 73,861.2 sq. ft.
 - 2) New material provided by Contractor: \pm 30,016 sq. ft.
 - 3) Contractor is responsible for reviewing and confirmation of all quantities provided.
 - c. Rolled sheet good shall not be accepted.
2. Compatibility: Resilient shock pad shall be compatible with the submitted synthetic grass surfacing and the infill material. The synthetic grass surfacing and resilient shock pad shall provide an acceptable system. The resilient shock pad shall be in all ways compatible with the specified synthetic grass surfacing and infill, and shall not affect the synthetic grass surfacing warranty, as well as the synthetic grass surfacing system shall not affect the resilient shock pad warranty.
3. The resilient shock pad shall be intended for installation on a gravel base and suitable for use in New England without the use of adhesives, seaming, or separation fabric.
4. Load Capacity: No permanent deformation under periodic loading (i.e., grooming equipment or ambulance).
5. Connectors, couplers, adhesive, and other fittings shall not be required to connect resilient shock pad panels. Material of construction and configuration shall be in accordance with the resilient pad manufacture's requirements or recommendations, whichever is more stringent.
6. Warranty: Refer to 1.10 Warranty.
7. Resilient shock pad performance requirements: Refer to Section 1.8 Quality Control Testing, D. Pre-Manufacturing Testing – Resilient Shock Pad

Addendum #2

8. Manufacturer shall provide documentations that the resilient shock pad meets the following:
 - a. Product meets human health and total threshold limit concentrations using EPA method 3052
 - b. Product meets human health and total threshold limit concentrations for Title 22 (CAM 17) metals using EPA 6010B/7471A and hexavalent chromium using EPA method 7196A.

B. Synthetic Grass Surfacing Carpet

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

- c. *IT IS NOT THE INTENT OF THE PRE-MANUFACTURING TESTING SECTION TO REQUIRE MANUFACTURERS TO ENGAGE IN TESTING OF SYSTEM NOT PREVIOUSLY TESTED BETWEEN THE TIME OF BID AND MANUFACTURING.*

1) *MANUFACTURERS WITHOUT A PREVIOUSLY TESTED SYSTEM CLOSELY RESEMBLING THE SPECIFICATION SHALL NOT BE CONSIDERED FOR THIS PROJECT.*

Synthetic Turf Carpet Properties:

Synthetic Turf System over a Resilient Pad

Denier	9,000 (mono & slit-film) 5,000 (thatch/rootzone/spikezone)
Microns	> 300 microns (mono) > 100 microns (slit-film)
Pile Height	2 inches
Pile Weight (Total)	58 oz.
Stitch Gauge	< 3/8"

Synthetic Turf System over a Stone Base

Denier	9,000 (mono & slit-film) 5,000 (thatch/rootzone/spikezone)
Microns	> 300 microns (mono) > 100 microns (slit-film)
Pile Height	2.5 inches
Pile Weight (Total)	65 oz.
Stitch Gauge	< 3/8"

C. Perforations

1. Synthetic grass carpeting shall be perforated to provide vertical drainage as specified herein.
2. Size and spacing of perforations shall be as specified herein. Spacing of perforations shall be uniform in both directions.
3. Perforations shall be complete and full diameter for a minimum of 95% of each roll.
4. Perforations shall be tested by passing a 3/8" drill bit through the holes with no more than 7 lbs. pressure.

D. Markings and Logos

1. All field lining, marking, field boundary system with team area limits, logos, etc. shall be same material (yarn, infill, and backing) as playing field system.
2. Lines, logos, and graphics to be installed in the synthetic grass surface carpet are to be tufted in the factory to the maximum extent practical. Those not tufted in the factory shall be inlaid in the field (**shaving is not permitted**).

3. A complete field lining, marking, and field boundary system with team area limits, etc. shall be provided with the initial installation. Layouts shall be accurately surveyed and marked prior to installation. Layouts shall include all incidental markings required by the NFHS or state athletic organization, whichever is applicable.
4. All markings shall be uniform in color, providing a sharp contrast with the synthetic grass field color and shall have sharp and distinct edging.
5. Logos and lines shall be true and shall not vary more than 1/2" from specified width and location. Lines and logos shall be confirmed on the as-built survey.
6. Turf Graphics (other than field lining)
 - a. Base Bid Field Graphics: (See drawings for detail and location)

E. Adhesive Materials and Seaming Tape

1. Seaming requirements: Refer to Section 1.8 Quality Control Testing, D. Pre-Manufacturing Testing.
2. If a hot melt welding method is used, the glue shall have an application temperature of 325 degrees F. with a melting point of 180 degrees F. Material shall be National Adhesive #34-5372 or equal. Submission of all hot melts shall be 10 calendar days prior to installation.
 - a. **Hot melt shall not be used to adhere synthetic turf carpet to concrete anchor curbing.**
3. Bonding surfaces shall be clean, dry, and free from grease, oil, wax, weak oxide films, mold release agents, and other surface contaminants.
4. The adhesive shall be applied at the rate specified by the manufacturer.
5. The adhesive shall have the same warranty period as the synthetic grass system. Warranty from the adhesive material manufacturer/supplier shall be submitted with the synthetic grass surfacing warranty for review and approval.
6. Seaming tape shall be a 12" wide polypropylene or polyethylene fabric acceptable for use with the synthetic turf carpet system and the adhesive material.
7. Seaming tape shall meet FIFA Joint Strength >25N/100mm

F. Infill

1. Infill materials shall be uniformly filled to a depth which leaves no more than 1/2" of exposed pile after settlement. Infill quantities shall not be determined by weight per unit area.
 - a. Infill materials shall be installed at a ratio as to meet the requirements set forth under Section 1.8 Quality Control Testing, F. Post Manufacturing/Pre-Installation Performance Testing
 - b. Infill materials shall consist of a mixture a performance infill material and a stabilizing infill material.

2. Performance Infill: Acrylic Coated SBR Infill
 - a. Shall be free of all metal and produced of 100% recycled automobile or truck tires. The material shall have a size not to exceed 10 mesh nor smaller than 20 mesh.
 - 1) The fine particles shall not exceed 10% by volume. Rubber shall have no visible evidence of steel particles present in the final synthetic grass surfacing in-fill. The bulk density of the rubber materials shall not be less than 29.75 lbs/cubic feet.
 - a) Coating color: **GREEN**
 - b) Coated SBR infill shall be UV stable and resistant to heat degradation.
3. Stabilizing Infill: Sand Infill
 - a. Sand shall comprise 100% passing the #16 sieve, no more than 80% passing the #30 sieve and no more than 0.5% passing the #50 sieve per ASTM E-1.
4. A combination of the performance infill and the stabilizing infill materials are to be used as the in-fill system
 - a. System over a resilient pad: The performance infill material shall be between approximately 30-40% by weight and the stabilizing infill material shall be between 60-70% by weight. Manufacturer to provide infill ration based on pre-installation testing.
 - b. System over a stone base: The performance infill material shall be between approximately 40-60% by weight and the stabilizing infill material shall be between 40-60% by weight. Manufacturer to provide infill ration based on pre-installation testing.

Addendum #2

G. Additional Field Materials (Attic Stock)

1. Sports Field (per field):
 - a. The Contractor shall supply and deliver an additional 15 lineal feet of full width (15') material, plus 2 linear feet of full width (15') material of each color used. Scraps left from the installation process are not acceptable, unless they are no less than the full material width (15') and greater than 5' in length.
 - b. The Contractor shall supply and deliver an additional full set of lacrosse creases for each, men's and women's lacrosse. Each set shall include two (2) full creases suitable for replacement of the installed creases at a later date.
 - c. The Contractor shall furnish additional performance infill material as specified for the sports field synthetic grass surfacing system sufficient to fill two (2) fifty (50) gallon containers. The additional infill materials shall be placed in fifty (50) gallon containers with lockable covers and wheels and clearly labeled "FIELD INFILL".
 - d. The Contractor shall supply and deliver an additional eight (8) new and unused resilient pad panels. Panels shall be wrapped and protected from the elements for storage by the Owner.
2. Seaming Repair Kit: Provide a seam repair kit suitable for use by the Owner. Material shall be administered using a caulking gun or similar mechanism. Buckets with a trowel applicator are not acceptable.

Addendum #2

- H. Field Maintenance Equipment (for each field)
1. Contractor shall provide the following grooming equipment to the Owner.
 - a. Synthetic Grass Magnet:
 - 1) One (1) new and unused GreensGroomer Sportsfield Magnet® SFM or approved equal for each field. Synthetic grass magnet shall be a towable unit with a 72" draw bar situated on a frame that rides on 2 pneumatic 280/250-4 ribbed 4-ply tires with bearings. Measuring 72" wide x 5" long x 2" in height, the magnet provides 360 sq. inches of surface. Strength of the magnet is 670lbs Pull. The weight of the complete unit is 102lbs.
 - 2) All attachments and adaptors necessary for the connection of the magnet to the Owner's grooming vehicles.
 - b. GreensGroomer Replacement Brushes:
 - 1) One (1) new and unused GreensGroomer set of replacement brushes for each field. Replacement brushes shall be compatible with the Owners existing GreensGroomer field groomers.
 - c. Synthetic Grass Hand Equipment (for each field):
 - 1) Hand Brushes: The Contractor shall supply at the end of the Project one (1) new and unused push broom for each field.
 - 2) Hand Shovel: The Contractor shall supply at the end of the Project one (1) new and unused 27-inch aluminum scoop shovel with fiberglass handle for each field.
 - 3) Two (2) Gallon Bucket: The Contractor shall supply at the end of the Project two (2) new and unused five (5) gallon bucket with handle and lid for each field.
 - 4) Single-Prong Infill Depth Gauges: The contractor shall supply at the end of the Project two (2) new and unused single-prong depth gauge supplied by The Synthetic Turf Council www.syntheticurfCouncil.org, contact: Melanie Taylor, melanie@syntheticurfCouncil.org for each field.
 - 5) Three-Prong Infill Depth Gauge: The contractor shall supply at the end of the Project one (1) new and unused three-prong depth gauge supplied by Sports Laboratories, contact John McLuckie John@sportslabs.co.uk or Kieran O'Donnell kieran@sportslabs.com for each field.

PART 3 - EXECUTION

3.1 GENERAL

- A. Verify site conditions before proceeding with demolition work. Field check the accuracy of the Drawings and inspect structures, utilities, and other site features prior to start of work and notify Engineer in writing, of any hazardous conditions and/or discrepancies.

- B. Weather Permitted Conditions: The Contractor shall not perform any work if the conditions for working are:
 - 1. Ambient air temperatures are below 45 degrees F.
 - 2. Material temperature falls below 45 degrees F.
 - 3. Rain is forecast or falling
 - 4. Conditions exist or are pending that will be unsuitable to the installation of the system.
- C. Drawings / Specifications: The Contractor shall perform all work in strict accordance to the Contract Drawings / Plans, Shop Drawings and manufacturer's specifications and instructions.
- D. Verification: The Contractor shall be responsible for the inspecting, verifying, and completing all installed work of this section.

3.2 EXAMINATION

- A. **Installer is responsible to review the planarity, pitch (slope), drainage capabilities, and conditions of the prepared stone base by means of string lines, testing provided by the General Contractor, and other methods as they deem necessary.**
- B. Acceptance of Prior Work-Field Base Stone: Upon completion of the base and drainage work, the Site General Contractor shall submit a letter, addressed to the Owner, signed by the Site General Contractor, Resilient pad Installer, and the Synthetic Grass Surfacing Installer. The letter shall confirm Field Base Stone has been reviewed, including all testing data, and is acceptable for installation of the synthetic grass surfacing system. Any discrepancies, problems, and/or conflicts shall be addressed prior to issuance of the letter.
 - 1. Continuing with the installation of the resilient shock pad over the field base stone without issuance of such letter shall be considered as an approval of the base by the resilient shock pad and Synthetic Grass Surfacing Installer.

3.3 PREPARATION

- A. The Contractor shall take special care to protect all field structures and utilities. Any damage shall be repair or replaced at the cost of the Contractor
- B. Layout: The Contractor shall be responsible for furnishing, setting and marking all lines, seams and markings for the field. The Contractor shall at all times maintain all necessary benchmarks and control points to locate all events and markings.
- C. Slope: The field shall be installed with a minimum 0.5% and maximum 0.75% slope unless otherwise noted in the Drawings, from the center crown to the sideline.
 - 1. The finish profile of the crown of the field may not exceed grade shown on the Drawings. This will be maintained throughout the length of the crown.
 - 2. Contractor shall excavate at trench drain/anchor curb at field perimeter so top of resilient pad can be installed flush with top of concrete notch at trench drains. See Detail.

3. All field base stone shall be touched up and laser graded prior to testing and installation of new turf.

3.4 INSTALLATION

A. Resilient shock pad

1. Prior to pad installation pad installer /manufacturer shall provide written acceptance of the prepared subgrade material and surface. Acceptance shall, at a minimum, include the following:
 - a. Permeability
 - b. Planarity
 - c. Suitability for synthetic turf system.
2. Installer shall minimize disturbance and contact with the accepted field base to the greatest extent possible. Unnecessary storage of materials, foot, vehicular traffic, or other activities on the accepted field base is to be avoided. Installer shall prepare a detailed installation plan that shall include the process by which the pad is to be installed while minimizing disturbance of the base.
 - a. Failure to comply with these requirements will result in removal of the installed material and retesting of the base material for approval.
3. Install pad loose laid on gravel base in accordance with manufacturer's requirements.
4. Protect panels from damage or movement during the installation process. Damaged panels shall be rejected. Install panels and cover with turf promptly. Do not leave panels exposed overnight without ballasting. Contractor is responsible for material stability during construction and shall take all measures necessary to avoid shifting or displacement due to construction, weather, or temperature changes.
 - a. Damaged re-purposed panels on-site, provided by Owner, shall not be utilized in the installation and disposed of by Contractor.
5. An interlocking panel design shall be used to hold adjacent panels in place.
6. Pads shall be cut and fit tightly to the edges of the field and all objects within the field. No gaps in the pad over 1/4" are acceptable. Use largest size possible. Filler strips or piecemeal work are not acceptable.
7. Grade and planarity of installed Pad system shall comply Surface Regularity of this specification. Care shall be taken to fix any disturbances of the stone base while installing the resilient pad.

B. Synthetic Grass Surfacing Installation

1. The synthetic grass carpet shall be staged and unrolled as necessary for a daily installation. No material will be allowed to be unrolled 24 hours prior to installation.
2. Installer shall minimize disturbance and contact with the accepted field base to the greatest extent possible. Unnecessary storage of materials, foot or vehicular traffic, or other activities on the accepted field base is to be avoided. Installer shall prepare a detailed installation plan that shall include the process by which the synthetic grass surfacing is to be installed over the resilient shock pad while minimizing disturbance of the base.
 - a. Failure to comply with these requirements will result in removal of the installed material and retesting of the base material for approval.
3. Synthetic grass surfacing shall be installed over the resilient pad. Care shall be taken so as not to damage installed resilient pad.

C. Seams

1. All panel seams spacing is to be held to a minimum of 15 feet unless prior approval of seaming diagram indicates a lesser panel.
2. Fabric surface shall be constructed and installed in minimum widths of 15 feet with no longitudinal or transverse seams, except for inlaid lines with a finished roll assembly. The seams shall be 15'-0" apart. No fitted pieces shall be allowed to true alignment.
3. All panel seams shall be securely sewn or glued and lay flat. Minimum of 5" of seaming tape and glue shall be on either side of the seam.
 - a. Ridges or tenting of seams is not acceptable.
 - b. Gaps greater than 1/8" are not acceptable.
4. Sewn seams shall be sewn with high strength polyester fiber cord. Sewn seams shall be a butt-sewn with double loop lock stitch in such a manner as each loop is wide enough to extend outside of the nearest tufted row. Bagger type seam stitching is not permitted.
5. Seams shall lay flat after infill.
6. All seams shall be brushed thoroughly before infill materials are installed.
7. All seams shall be fully fastened with no loose areas. The Owner reserves the right to submit a seaming sample from the installed field for testing at any time. Failure of a seam to meet the requirements of this document shall be Contractor's responsibility to remove, replace, and re-test to the Owner and Architects satisfaction. Any testing that fails to comply with the project requirements shall become the Contractor's responsibility for cost.
8. Installer shall exercise caution to prevent gluing or adhesion of turf to resilient shock pad. Glue shall not be applied directly to pad in any instance.
9. The synthetic grass surfacing system shall always remain free draining before, during, and after the infill materials are installed.

D. Synthetic Grass System Edges and Termination

1. **All edges and ends of the synthetic grass system shall be secured to the anchor curb by 100% adhesive.**
 - a. **Hot melt or nailing is not acceptable.**
 - b. **Final infill level shall be flush with adjacent anchor curb or track surfacing unless noted otherwise on plan.**
2. Edge termination and securing shall take place after all inlays and infill has been installed and the field as been adequately groomed.

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

1. Lines and markings shall be tufted in the factory to the greatest extent possible during manufacturing.
2. All lines, numbers, and field markings are to be tufted or in-laid with the specific-colored synthetic grass surfacing.
 - a. Shaving of the synthetic turf carpet fibers and adhering of the inlaid carpet to the field backing material shall not be permitted,
3. All lines and markings shall be accurately set and surveyed to within 1/2" tolerance on the as-built survey.
4. All lines and markings shall be installed and verified prior to any installation of in-fill material.
5. All glued inlays shall have a 12" wide seaming tape, fully coated with adhesive. All inlays shall not have any adhesive applied to any exposed fibers.
6. All in-laid areas shall be brushed thoroughly before infill materials are installed.
7. All inlays shall be fully fastened with no loose areas. The Owner reserves the right to submit an inlay sample from the installed field for testing at any time. Failure of inlays to meet the requirements of this document shall be Contractor's responsibility to remove, replace, and re-test to the Owner and Architects satisfaction. Any testing that fails to comply with the project requirements shall become the Contractors responsibility for cost.
8. Installer shall exercise caution to prevent gluing or adhesion of turf to resilient shock pad. Glue shall not be applied directly to pad in any instance.

F. Synthetic Grass Surfacing Infill

1. No in-fill materials shall be installed until the synthetic grass surfacing is fully installed with all lines and markings.
2. The synthetic grass surfacing shall be thoroughly brushed prior to any in-fill materials to remove any wrinkles and defibrillate the slit film.
3. Infill shall not leave more than 1/2" of exposed fiber on sports fields.
4. The in-fill materials shall be installed in layers not to exceed 0.30 lbs per sq ft per layer.

5. Infill material shall be 'worked into' the thatch/rootzone/spikezone layer. Contractor shall allow time and proper machinery to do so.

3.5 PROTECTION

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

3.6 TRAINING INSTRUCTION AND OWNERS' MANUALS

- A. Provide a 4 hour, at a minimum, on-site training instructional program for the Owner for each field. Prior to conducting maintenance training the Contractor shall put together and test all maintenance equipment. Equipment shall be fully functional and ready to use at the time of the training. The training shall include review and demonstration generally of the following, but not be limited to:
 1. Daily/Weekly fiber, infill, and seam inspections.
 2. Low infill hand grooming and infill placement.
 3. Seam repair.
 4. Field sweeping, grooming, and decompaction (with tines groomer if applicable). Including demonstration of hock-up, detachment, and use of all equipment with the Owner's equipment.
 5. Field plowing (if applicable).
 6. Protection for events.
 7. Procedure for Warranty claims.
- B. The training instruction will be summarized on a DVD included in the Owner's Manual and close-out documents.
- C. Training shall take place no later than fourteen (14) days after Substantial Completion is executed.

3.7 AS-BUILT FIELD LAYOUT DRAWING

- A. Provide As-Built Field Layout Drawing including verification of all field markings and layout dimensions, by licensed surveyor, to the Architect for review and approval.
 1. Provide as-built survey in AutoCAD and .pdf format as described under Section 01 73 00 Execution.

3.8 CLEAN UP

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

3.9 Acceptance

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

END OF SECTION 32 18 13

SECTION 32 18 13.10 – SYNTHETIC GRASS SURFACING WARRANTY – Addendum #2

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Synthetic Grass Sports Surfacing Warranty and Guarantee.

1.3 SIGNATORIES TO THE WARRANTY

- A. The Synthetic Grass System Warranty shall be signed by:
 - 1. An officer of the applicable party or agency duly authorized to sign contracts. The term “Contractor” specified herein shall refer to the party or agency that is furnishing the warranty.
 - 2. If the grass Manufacturer and/or Installation Contractor of the Synthetic Grass System (referred to herein as the Sub-contractor) is not the same entity as the Contractor, the warranty shall be co-signed by the Manufacturer and the Sub-contractor.
 - 3. The “Owner” is **TOWN OF RIDGFIELD, CT.**

1.4 GENERAL WARRANTY CONDITIONS

- A. Warranty Period: The Contractor shall provide a **non-prorated** Synthetic Grass Surfacing Manufacturer/Installer Warranty/Guarantee (also referred to herein as the Warranty) for the synthetic grass as specified herein, for a minimum period of eight (8) years, to the Owner from the date of the executed Certificate of Substantial Completion.
 - 1. The Warranty shall cover, in general, the usability of the Synthetic Grass System (and pad if required); accessories, use, characteristics, and suitability, of the installation.
 - 2. All items covered by the warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting manufacturer/surface supplier over the life of the Warranty.

3. Field Use: The materials shall be guaranteed for the designated uses as follows:
 - a. Football / Rugby / Soccer
 - b. Baseball / Softball (including metal cleats)
 - c. Field Hockey
 - d. Lacrosse
 - e. Marching Band
 - f. Graduations and Ceremonies
 - g. Physical Education exercises and activities
 - h. Pedestrian traffic and other similar uses
 - i. Plowing of snow
 - j. Pneumatic rubber-tired maintenance and service equipment, designed for use on athletic fields and golf courses.

- B. Warranty documents and terms of Warranty shall be in accordance with this Specification Section.

1. The use of the Manufacturers' standard or modified form of Warranty shall in no circumstance supersede the conditions set forth in this Specification Section, which shall be considered part of the Warranty.
2. This Warranty shall constitute a contract made in the state of Connecticut and shall be governed by the laws of that State.

1.5 BID SUBMITTALS

- A. Contractor shall submit a draft of the standard warranty of the proposed Synthetic Turf System, as required by this specification with the bid.

1.6 PRE-COMPLETION SUBMITTALS

- A. *Provide prior to Substantial Completion, the following documents:*
 1. *Manufacturer's Sample Warranty: shall be a minimum eight (8) year-sports fields non-prorated Synthetic Turf Warranty, as specified herein, for the specific type of synthetic grass that the Contractor intends to install on this Project.*
 2. *Manufacturer's Warranty Certificate, noting compliance with all the conditions of this Specification.*

1.7 CONTRACTOR'S LIABILITY

- A. General: Failure to service the requirements of the Warranty will be charged to the Contractor.
- B. Repair and Replacement: Any defects caused by delaminating, peeling, normal abrasion or raveling that is not in original conformance with the testing specifications shall be repaired or replaced at no cost to the Owner during this Warranty period.

- C. The Contractor will be responsible for all remedies, including replacement if required, required for failed testing, as specified herein, that fail the requirements of the Synthetic Grass System Warranty/Guarantee. All re-testing shall be paid for by the Contractor until such time as the system passes the requirements.
- D. Limited Liability: This warranty does not cover excessive wear of the surface caused by misuse. The Owner will be given instructions and care-taking procedures before final acceptance. The Owner is to follow the maintenance guidelines as specified by the surfacing manufacturer.

1.8 GENERAL FORM OF WARRANTY OF THE SYNTHETIC GRASS SYSTEM

- A. Warranty form: Sample form of warranty herein set forth is a suggested for use for the work under this section. Manufacturers' standard form of warranty may be used or modified provided conditions specified herein are incorporated.
- B. Contractor hereby warrants to the Owner, subject to the limitations and conditions set forth below, that its synthetic grass system consisting of the synthetic grass described as _____, the resilient shock pad (if required in project documents) described as _____, and the adhesives used in the installation, are free from defects in material and workmanship and shall, for a minimum period of eight (8) years from the date of acceptance by the Owner, remain serviceable for the activities as listed above.
- C. Contractor warrants to the Owner that its synthetic grass materials shall not fade, fail, shrink, wrinkle or reflect excessive wear. Contractor shall, at their sole expense and cost, replace such areas of the synthetic grass system not performing to these standards for the life of the warranty.
 - 1. The term "not fade" in the context of this warranty shall mean that the synthetic grass material remain a uniform shade of green or the other colors installed with no significant loss of color as defined by not greater than 20% loss or shade reduction.
 - 2. The term "not fail" or "excessive wear" as used in the context of this warranty shall mean that the length and weight of the face yarn or pile material in the synthetic grass surface shall not have been decreased by more than 6% per year according to ASTM D418, nor exceed 20% during the warranty period.
- D. In the event that the synthetic grass materials do not retain its fiber height or shock absorbency and is consequently no longer serviceable during the warranty period, the Contractor shall, at their sole expense, replace such portions of the system that are no longer serviceable.

1. The term “serviceable” in the context of this warranty shall mean that the synthetic grass material shall meet the following minimal requirements annually:

SYNTHETIC GRASS SURFACING SYSTEM (annually)		
EN 13036	Planarity/Surface Regularity	<10 mm
EN 1969	Infill Depth Measurement (minimum 50 locations)	± 10% of specification (1/2” exposed fiber) (all locations, not average)
ASTM F 1936	Impact Attenuation(g-max) (minimum 10 locations)	< 100 G’s (individual locations, not average field results)
EN 1177	Impact Attenuation, Head Injury Criteria (HIC) (minimum 10 locations)	<900 @ 1.4 m (individual locations, not average field results)
EN 71-3	Safety of Toys Part 3	Pass (minimum of 3 samples)
ASTM F3188	Safety of Synthetic Turf Infill	Pass (minimum of 3 samples)

2. Prior to any G-Max testing on the field, the testing machine shall be calibrated in the field with a test pad to verify accuracy of the testing unit. Calibration and testing shall be witnessed by the Owner or Owner’s representative. The Contractor is required to perform the necessary testing during a scheduled time at least one time per year during the Warranty period. The results of the testing shall be submitted to the Owner within 30 days of each test. Failure to submit the results shall serve as notice to perform such testing by Owner to determine the extent of the needs under this Warranty.
3. Any material tested and found not in compliance with the contract may be rejected and Contractor shall rectify the issue to be acceptable. Any area/item not within conformance shall be retested at the Contractors expense after remedy is implemented until satisfactory results are achieved.
- E. Where applicable, the fabric shall adhere firmly and completely to the seaming tape and anchor tape over the entire warranty period.
- F. Contractor warrants to the Owner that the synthetic grass system shall drain vertically a minimum of 16 inches precipitation per hour for a maximum of 24 hours continuously, without visible surface ponding.
- G. Contractor shall replace with new materials, at their sole expense, any damage to the synthetic grass system, which extends more than one meter beyond the location of foreign combustibles, which may ignite, and fire-damage the synthetic grass system. These warranties and the Contractor’s obligations here-under are expressly conditioned upon;
1. The Owner making all minor repairs to the synthetic grass system upon the discovery of the need for such repairs.

2. The Owner maintaining and properly caring for the synthetic grass system in accordance with the Contractor's maintenance manual and instructions.
 3. The Owner complying with the dynamic and static load specifications established by the Contractor.
- H. The warranty is not to cover any defect, failure, damage or undue wear in or to the synthetic grass system caused by or connected with abuse, neglect, deliberate acts, acts of God, casualty, static or dynamic loads exceeding Contractor's recommendations.

1.9 WARRANTY INSPECTIONS AND TESTING

- A. Scheduled Inspection and Testing: Contractor shall examine the synthetic grass surfacing system and conduct testing and maintenance on the synthetic grass surface as a part of a warranty maintenance plan, see paragraph 1.10 "Warranty" in Specification Section 32 18 13 – Synthetic Grass Surfacing and paragraph 1.11 "Warranty and Maintenance Obligations" in Specification Section 32 18 13 – Synthetic Grass Surfacing.
1. The Testing Results and Field Inspection Report shall be delivered to the Owner and Engineer within thirty (30) days of the testing.
- B. Other Inspections: Contractor shall examine the synthetic grass system in regards to any claim that the Owner makes to be present at any time, to analyze the results of all tests conducted by the Owner or Owner's Authorized Representative(s), and to conduct such tests of his own on the synthetic grass surface.
1. The Owner reserves the right to submit on the synthetic grass surface to the above tests at any time during the length of the Warranty. Consideration will be given to the age and intensity of use of the surface.
- C. Cost of Inspections: The Contractor shall pay for costs of scheduled inspections, testing, and analysis.

1.10 REMEDIAL WORK

- A. Notice: The Owner will notify the Contractor in writing of any issues that require remedial work on the field area.
1. The Contractor shall respond to the notification within forty-eight (48) hours of receipt and schedule any major defect or repair within seventy-two (72) hours or as weather permits.
 2. In the event the Contractor does not respond to the Owner's written notice within ten (10) days of receipt of the notice or does not submit, schedule and execute corrective work

within sixty (60) days, weather permitting, the Owner has the option of having the work performed at the expense of the Contractor.

3. The Contractor will be given seven (7) days' notice in the form of a certified letter notifying the Contractor of the end of the sixty (60) day period.
- B. Repairs: The Warranty requires that the Contractor shall be required to perform all required repairs in a permanent and suitable manner as deemed necessary to maintain a safe playing condition at all times.
 1. Any replacement or repair area shall match (as close as possible) the appearance and requirements of section 32 18 13 of the existing surface.
- C. Schedule of Repairs: The Warranty requires that in case of any major repair or replacement, the Contractor is to schedule such work as to not interfere with the Owner's primary use or schedule.

1.11 CLAIMS

- A. All claims by the Owner under this Warranty must be made in writing to the Contractor's address, within 30 days after the Owner learns of the defect, giving rise to the claim.

END OF SECTION 32 18 13.10