

SECTION 02790  
SYNTHETIC TURF

PART 1 - GENERAL

1.01 SUMMARY:

- A. Section Includes under BASE BID and ADD ALTERNATE #1 requirements for the furnishment of all labor, materials, tools, and equipment necessary for the installation of new Synthetic Turf surfacing at the main practice field (BASE BID) and the lacrosse court (ADD ALTERNATE #1) as indicated on the plans and specified herein. The installation of all new materials shall be performed in strict accordance with the manufacturer's written installation instructions and in accordance with all approved shop drawings.
- B. Related Sections
  - 1. Section 02200 – Site Preparation
  - 2. Section 02300 – Earthwork
  - 3. Section 02820 – Fencing
  - 4. Section 03300 – Cast-in-Place Concrete

1.02 SUBMITTALS:

- A. Submit in accordance with SECTION 01300 for the following:
  - 1. Product Data for Synthetic Turf System, including all components such as fiber, backing, and infill materials.
  - 2. Independent lab results for all testing, including GMAX ratings.
  - 3. Installation details.
  - 4. Sample warranty.
  - 5. Field layout and striping plans.
  - 6. Details on construction, especially any details that may deviate from the plans and specifications.
  - 7. Manufacturer/Installer shall provide each a list of all relevant projects as specified herein (see 1.04 QUALITY ASSURANCE) with contact information completed within the last five (5) years to ensure competence and experience.
  - 8. Installation team shall have documentation of similar experience of five (5) years minimum – provide list of projects team members have worked on in conjunction with reference contact information if different from projects provided above.
- B. Submit Samples in accordance with SECTION 01300 for the following:
  - 1. Synthetic Turf System, including backing, fiber – field and color samples, infill materials, and any other components specified herein.
- C. Prior to beginning of installation, the manufacturer/installer of the synthetic turf shall inspect the subbase and supply a Certificate of Subbase Acceptance for the purpose of obtaining a manufacturer's warranty for the finished surface.
- D. Prior to Final Acceptance, the Contractor shall submit to the Town three (3) copies of Maintenance Manuals, which shall include necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.

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- E. Upon Final Acceptance, the Contractor shall provide the Town with five (5) packages of infill materials for maintenance.
- F. Turf Contractor shall provide Town with Maintenance and use manuals for Turf Sweeper or similar tool for cleaning surface of field from debris. See item 3.04, F. below for more information.

#### 1.03 SHOP DRAWINGS

- A. Shop drawings shall be prepared at scale and contain all pertinent information regarding installation. Shop drawings shall be submitted to the Engineer/Town for approval prior to the manufacturing and shipment of materials.
- B. Additional Shop Drawings are required for approval are as follows:
  - 1. Installation details; edge detail, goal post detail, other inserts and covers, etc.
  - 2. Striping Plan; layouts showing any field lines, markings and boundaries, and field logos per project drawings. shall be submitted to the Engineer/Town for approval prior to manufacturing. Town shall have final approval of all colors and graphics.

#### 1.04 QUALITY ASSURANCE:

- A. Manufacturer's/Installers Experience:
  - 1. The synthetic turf manufacturer/installer shall have manufactured and installed at least fifty (50) acceptable installations of full-sized football or soccer fields (minimum of 70,000 SF) in the United States within the past five (5) years with tufted, monofilament fiber synthetic turf infilled with a layered system of pea gravel and rubber. Provide experience per section 1.02 SUBMITTALS.
  - 2. Turf Contractor shall employ only qualified, experienced supervisors and technicians skilled in the installation of the specified system.
- B. Turf contractor shall meet the following criteria:
  - 1. Turf contractor shall have proper contractor's license, authority to do business in the state of bidding, in good standing, and have never had revocation of the same.
  - 2. Turf contractor shall have been in business for ten (10) years under the same name and corporate organization.
  - 3. Turf contractor must have NOT had a Surety or Bonding Company finish work on any contract within the last ten (10) years.
  - 4. Turf contractor shall not have been disqualified or barred from performing work for any public Town or other contracting entity in the last ten (10) years.
  - 5. Turf contractor must not have any fields replaced under warranty.
  - 6. Turf contractor must not be currently involved with any patent or trademark litigation, specifically being sued or suing for patent infringement.
  - 7. Turf contractor shall be a member of American Sports Builders Association (A.S.B.A.) for more than ten (10) years and be in good standing with the

association and must have a Certified Builder on staff during the bidding and construction process.

8. Any turf contractor which has been in business for less than ten (10) years, had a name change within that time period, had a legal structure change or any business that has had a 35% change in ownership in the last ten (10) years, will not be considered as a contractor or supplier.
9. Turf contractor must be a single source contractor. The contractor must install the synthetic turf and the base construction or repair with its own employees (not subcontractors) and must self-perform 100% of the total scope of work.
10. Manufacturer/Turf Installer meeting or surpassing specifications herein may be considered in this non-proprietary public project.
11. Turf contractor shall manufacture its own monofilament fiber and synthetic turf, two-step distribution is not acceptable. Turf contractors who do not manufacture their own monofilament fiber and synthetic turf system shall be disqualified.
12. Turf contractor shall have manufactured its own synthetic turf for at least ten (10) years.
13. Turf foreman must currently be employed by Turf Contractor and have been employed, and not a subcontractor, of the Turf Contractor for at least five (5) years.
14. Turf Contractor must be a member of the Synthetic Turf Council.
15. Turf Contractor shall self-perform the laser grading of the stone, curb work, drainage work, and all other site work associated with the construction of the synthetic turf field.
16. Turf Contractor must provide liability insurance policy with aggregate umbrella liability coverage of \$10,000,000.

1.05 WARRANTY

- A. The Turf Contractor shall submit the synthetic turf manufacturer's warranty. The warranty shall guarantee the playability of the synthetic turf system for its intended uses for an eight (8) year period commencing with the date of Substantial Completion.
  1. The warranty submitted shall have the following characteristics:
    - a. Must provide coverage for eight (8) years minimum from the date of Substantial Completion.
    - b. Must warrant materials and workmanship.
    - c. Must verify through a third party that the materials installed meet or exceed the product specifications.
    - d. Must have a provision to either make a cash refund or repair or replace such portions of the installed materials that are no longer serviceable to maintain a serviceable and playable surface.
    - e. Must be a manufacturer's warranty from a single source covering workmanship and all self-manufactured or procured materials.
    - f. Turf Contractor must provide a full eight-year third party insured warranty on the synthetic turf with an aggregate coverage of \$1,000,000.

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1.06 EXISTING CONDITIONS

- A. If the surface on which the new synthetic turf system is to be placed is an existing asphaltic/concrete base, the Turf Contractor will be responsible for any damage to the concrete during removal/installation of the synthetic turf system. The football goal posts are to be removed and reinstalled by the Town or Prime Contractor to facilitate the installation of the new synthetic turf system.
- B. If the surface on which the new synthetic turf system is to be placed is a new asphaltic base or a new base of porous aggregate, the Synthetic Turf Contractor shall be responsible for any damage to the subbase during removal/installation of the synthetic turf system after the deficiencies (if any) have been corrected as noted in the Certificate of Subbase Acceptability. Prime Contractor shall not conduct any work in or around synthetic turf system until after the new synthetic turf system is completed.
- C. The existing synthetic turf field has an existing concrete curb that has been deemed in acceptable condition and is to be reused in the installation of the new synthetic turf system. The Synthetic Turf Contractor shall be responsible for any damage to the concrete curbing during removal/installation of the synthetic turf system and shall have the deficiencies corrected prior to final completion of the synthetic turf system.
- D. **See SECTION 02200 for reference to utilities on site, specifically an underground gas line alongside the synthetic turf field between the field and parking lot. Turf Contractor shall coordinate with Town/Prime Contractor to ensure all safety precautions are met while working on site.**

1.07 SCHEDULE:

- A. Turf Contractor shall complete all work on the synthetic turf system in accordance with the published project schedule.
- B. The Turf Contractor will require unencumbered use of an area within 30 feet of the synthetic turf area(s) being installed in order to complete the work. Turf Contractor shall be afforded unencumbered access through the construction site to reach the turf field area being installed.

1.08 SURFACE AREA:

- A. The Turf Contractor is to verify all measurements.

1.09 UTILITIES:

- A. Town/Prime Contractor will supply necessary water, adequate lighting, and electricity for installation. Town/Prime Contractor shall permit the use of toilet and wash up facility.
- B. The Turf Contractor will require unencumbered use of an area within 30 feet of the synthetic turf area(s) being installed in order to complete the work. Turf Contractor shall be afforded unencumbered access through the construction site to reach the turf field area being installed.

PART 2 – PRODUCTS

2.01 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Turf Contractor shall coordinate with manufacturer for delivery to site in safe and manageable way that does not conflict with school activities or other work on site.
- B. Turf Contractor shall coordinate with Prime Contractor for the location of a material storage area that will be protected and secure. Turf Contractor shall coordinate with Prime Contractor on specific size of stockpile and needs.

2.02 MATERIALS:

- A. Synthetic Turf shall be a tufted blend of monofilament and slit film fibers, grass-like fabric coated with a secondary backing of high-grade polyurethane. The monofilament synthetic turf yarn shall be comprised of a C8-based linear low-density polyethylene polymer (LLDPE) with a 10,000 PPM UV Stabilizer. The fibers shall be tufted to a finished pile height of approximately 2 ¼” – 2 ½”. The turf fabric shall be filled with a layered system of pea gravel and rubber.
- B. All components and their installation method shall be designed and manufactured for use on outdoor athletic fields. The materials as hereinafter specified, should be able to withstand full climatic exposure in all climates, be resistant to insect infestation, rot, fungus, and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow through drainage allowing free movement of surface run-off through the turf fabric where such water may flow to the existing subbase and into the field drainage system.
- C. The finished playing surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic shoes of all types. The finished surface shall resist abrasion and cutting from normal use. The installed system shall be suitable for football, soccer, lacrosse, baseball, softball, PE classes, intramurals, and recreational use.
- D. Pile yard (Polyethylene) shall be a proven athletic caliber yard designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants.
- E. Infill material shall be layered system of pea gravel and rubber in accordance with the manufacturer’s recommendations and the Town’s preference and shall be constructed in accordance with the United States Patent #6,800,339 B. No other infill will be accepted.
- F. Perimeter and interior edge details, underground storm sewer piping and connections, and goal post foundations required for the system shall be as detailed and recommended by the manufacturer, and as approved by the Town.
- G. Basis of Design: Fusion™ as manufactured by Hellas Construction Inc.
  - 1. Manufacturer/Turf Installer meeting or surpassing specifications herein may be considered in this non-proprietary public project.

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<u>G.H. Standard</u>	<u>Property</u>	<u>Specification</u>
ASTM D418/D5848	Pile Weight	36-50 oz./Sq. Yd.
ASTM D5848	Primary & Secondary Backing Weight	7.9 oz./Sq. Yd.

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ASTM D5848	Secondary Coating Weight	22 oz./Sq. Yd.
ASTM D5848	Total Weight	65.9-79.9 oz./Sq. Yd.
ASTM D1907	Yarn Denier (Mono/Slit-Film)	12,400 / 8,000
ASTM D418/D5848	Pile Height	Finished 2 ¼" – 2 ½" (+/- 1/8") ½"
ASTM D5793	Tufting Gauge	
<b>Standard</b>	<b>Property</b>	<b>Specification</b>
ASTM D418/D5848	Pile Weight	36-50 oz./Sq. Yd
ASTM D5848	Primary Backing	Tri-layer woven Polypropylene Polyurethane
ASTM D5848	Secondary Backing	Polyurethane
ASTM D1335	Tuft Bind without Infill	>10 lbs.
ASTM D1682/D5034	Grab Tear (length)	>250 lbs. force
ASTM D1682/D5034	Grab Tear (width)	>350 lbs. force
ASTM D4991	Carpet Permeability	>40 inches/hour
ASTM D2859	Flammability (Pill Burn)	Pass
ASTM F355	G-Max (Impact Attenuation)	<130 at installation <190 over warranty life
ASTM E-11	Infill	4.5-6 lbs. +/- per Sq. Ft.
	Fabric Width	15'
	Perforation	3/16" holes 4"x 4"
ASTM D3218	Yarn (Slit Film/Mono)	Mono: Average Thickness 170 microns C8 LLDPE Resin 10,000 PPM UV Stabilizer Slit Film: 120 microns

All Characteristics listed above are nominal +/- 5%

Infill is filled with a pea gravel (2-3 lbs.) And cuboidal rubber (2.5-3.5 lbs.) infill.

Infill will be a minimum of 75% of synthetic turf pile height.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. The installation shall be performed in full compliance with approved shop drawings.
- B. Only factory-trained technicians, skilled in the installation of athletic caliber synthetic turf systems working under the direct supervision of the synthetic turf manufacturer's installation supervisors shall undertake the placement of the system.
- C. The surface to receive the synthetic turf shall be inspected and certified by the turf manufacturer as ready for the installation of the synthetic turf system and must be perfectly clean as installation commences and shall be maintained in that condition throughout the process.

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3.02 INSTALLATION

- A. The subbase and curbs shall be inspected by the Engineer or Sitework Contractor by means of a laser level and plotted on a 10-foot grid. Based upon the Turf Contractor's inspection of the topographical survey, the Sitework Contractor shall fine grade the subbase suitably – including properly rolling and compacting the base to achieve a surface planarity within ¼" in 10 feet (+0, -1/4"0). **Town, Engineer, or Prime Contractor shall not approve the subbase for tolerance to grade without obtaining the topographical survey.**
- B. The Turf Project Superintendent shall thoroughly inspect all materials delivered to the site both for quality and quantity to assure that the entire installation shall have sufficient materials to maintain the schedule and proper mixing ratios.
- C. Synthetic turf shall be loose laid across the field and attached to the perimeter edge detail. Turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed, except as required for inlaid fabric striping or to accommodate programmed cut-outs.
- D. All seams shall be flat, tight, and permanent with no separation or fraying. All seams and markings shall be adhered to a special tape with a single component, high strength polyurethane adhesive applied per the Turf Supplier's standard procedures for outdoor applications.
- E. Infill materials shall be properly applied in numerous thin lifts using special broadcasting equipment to produce a layered system of pea gravel and SBR rubber particles. The turf shall be raked and brushed properly as the mixture is applied. The rubber infill materials can only be applied when the turf fabric is dry.
- F. Weather/climatic conditions may be a factor in delay of installation but shall not warrant the accrual of additional liquidated damages. Should the ambient outdoor temperature fall below 45 degrees Fahrenheit, the Turf Contractor and Town will discuss available options and/or stoppage of work. However, the final decision shall be at the Turf Contractor's discretion.

3.03 FIELD MARKINGS AND DECORATIONS

- A. Field markings and decorations shall be installed in accordance with the approved project shop drawings.

3.04 CLEAN UP

- A. Turf Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.
- B. All usable remnants of new material shall become the property of the Town.
- C. The Turf Contractor shall keep the area clean throughout the project and clear of debris.
- D. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Town.
- E. Turf Contractor shall provide the Town with five (5) packages of infill materials for maintenance.
- F. Turf Contractor shall provide one (1) towed, non-powered Turf Sweeper (or similar equal tool) with hitch, excluding prime mover vehicle. The sweeper attachment shall be of sufficient size to cover a 36" wide swath in a single pass. The sweeper attachment shall be

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fitted with synthetic bristle brushes as recommended by the synthetic turf manufacturer and shall be used primarily to collect surface debris.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. SYNTHETIC TURF shall be measured as a Lump Sum for all labor, materials, and incidentals related to the installation of the synthetic turf practice field..
- B. SYNTHETIC TURF FOR LACROSSE COURT – ADD ALTERNATE #1 shall be measured as a Lump Sum for all labor, materials, and incidentals related to the installation of the Synthetic Turf at the Lacrosse Court.

4.02 PAYMENT

- A. SYNTHETIC TURF shall be paid at the Contract Unit Price per Lump Sum, as specified above and as specified herein to consist of all labor, and other incidentals.
- B. SYNTHETIC TURF FOR LACROSSE COURT – ADD ALTERNATE #1 shall be paid at the Contract Unit Price per Lump Sum, as specified above and as specified herein to consist of all labor, and other incidentals.
- C. Gravel Borrow and Excavation shall be paid for separately as noted under Gravel Borrow, or Excavation in SECTION 02300 Earthwork or under their respective item as noted in the specifications.

4.03 PAYMENT ITEMS

ITEM	DESCRIPTION	UNIT
02790-1	Synthetic Turf at Practice Field - BASE BID	LS
02790-2	Synthetic Turf at Lacrosse Court - ADD ALTERNATE #1	LS

END OF SECTION