

SYNTHETIC TURF FIELDS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish and Install synthetic turf suitable for use for high school varsity football, soccer, lacrosse (men's & women's) , and baseball. Work shall be as indicated on the Drawings and as specified herein.

Included in this item shall be the cost to prepare the site for the installation of the synthetic turf fields. This work shall be limited to the following listed herein at the locations shown on the Contract Drawings.

1. A complete Synthetic Turf System
 - a. Two (2) side by side Multi-Purpose Fields. The overall dimension for each field shall be 195'-0" x 360'-0" and shall provide 10'-0" wide turf buffer area on three (3) sides and a 25'-0" wide turf buffer between the two fields.
 - b. Baseball Field – The overall dimensions for the baseball field shall be a 90'-0" infield diamond with outfield limit as measured from the center of home plate of 350'-0" in all directions (left, center, right). There shall be a 10'-0" wide turf buffer along the baselines with an additional 15'-0" wide turf buffer for each dugout.
 - c. Putting Green shall be irregular shaped (100 sq. foot min.).
 - d. Infill of Synthetic Turf.
 - e. Lines and markings for football, soccer, lacrosse, field hockey, baseball field and adaptive field.
 - f. Synthetic turf covers and goalpost foundations as required.

Note: The Manufacturer of the Synthetic Turf Field will be required to provide different pile heights for the Multi-Purpose Field and Baseball Field as specified in Section 2.0.

1.02 REFERENCES

- A. References and industry standards listed in this Section are applicable to the Work. Unless more restrictive criteria or differing requirements are explicitly stated in the Specifications, or mandated by governing codes or regulations, the recommendations, suggestions, and requirements described in the referenced standards shall be deemed mandatory and applicable to the Work.
1. American Society for Testing and Materials (ASTM)
 - a. ASTM F1551 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials

- b. ASTM D5848 Standard Test Method for Mass Per Unit Area of Pile Yarn Floor Coverings.
 - c. ASTM D5823 Standard Test method for Tuft height of Pile Floor Coverings.
 - d. ASTM D789 Standard test Method for Determination of Relative Viscosity and Moisture Content of Polyamide
 - e. ASTM D1577 Standard Test Methods for Linear Density of Textile Fibers.
 - f. ASTM D1335 Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
 - g. ASTM D5034 Standard Test method for Breaking Strength of Textile Fabrics.
 - h. ASTM D3218 Standard Test method for Specification of Polyolefin Monofilaments.
 - i. ASTM F355 Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials.
2. Governing Sport Authorities
- a. Installation shall comply with rules and/or regulations set forth by NFSHSA.

1.03 SUBMITTALS

A. Product Data

- 1. Synthetic turf System:
 - a. Technical data (fabrication and installation) for turf, infill and backing and manufacturer's directions for installation and maintenance.
 - b. Include plans, elevations, sections, details, and attachments to other Work.
 - c. Submit Material Safety Data Sheets on all chemicals that are employed for the installation of the proposed synthetic surfacing system as published by the Turf Manufacturer.
 - d. Provide ASTM Testing data for the proposed artificial turf system from an independent testing laboratory.
 - e. Certificate attesting that the Turf Manufacturer meets the requirements of ISO 9001:2000
 - f. Notarized certificate signed by an authorized representative of the Turf Manufacturer attesting that:

- i. Proposed artificial turf resilient infill granule has no measurable traces of halogens, aromatic amine, formaldehyde, and it is colored with non-toxic pigmentation.
 - ii. Proposed artificial turf infill has no traces of SBR rubber (recycled rubber) or other containments.
 - iii. Proposed turf "carpet" has no measurable traces of lead.
 - 2. Integral line markings and woven into fabric: Manufacturer's literature and Installation directions.
- B. Shop Drawings
 - 1. Field Layout. Provide details of interface with drainage system.
 - 2. Turf covers goalpost foundations
 - 3. Edge connection details.
 - 4. Layouts for lines and markings of game fields.
 - 5. Provide Shop Drawings that delineate any variations from the contract drawings necessitated by requirements of the system to be installed, or by field conditions.
- C. Samples
 - 1. Sample of Synthetic Turf and infill system: 1'-0" by 1'-0" (qty = 3).
 - 2. One (1) sample of the artificial turf system in its final constructed form in an easily transportable case with a removable cover, minimum 8" x 12" in size.
 - 3. Integral line markings woven into fabric: 1'-6" length each color as specified.
 - 4. Sewn Seam – Three samples, each seam length of 12 inches minimum.
- D. Maintenance Manuals
 - 1. Three (3) copies providing a full description of materials, methods and equipment to be used for grooming and maintaining the Synthetic Turf System.
- E. Training
 - 1. Provide Training in accordance with Section 3.
- F. Tests
 - 1. At Commencement of Project:
 - a. The synthetic turf contractor shall provide the necessary testing data by an independent testing laboratory that their system proposed for this project has a G Max of less than 120 at a minimum of 10 test points when tested in accordance with ASTM F1936 (Standard Specifications for Shock-absorbing Properties of North American Football Playing Field Systems as measured in the Field). Testing shall be by Method A of ASTM F355 (Test Method for Shock-Absorbing Properties of Playing System Surfaces and Materials).

b. The synthetic turf contractor shall provide the necessary testing data by an independent testing laboratory that the Average Critical Radiant Flux is 0.95 watts/cm² minimum per ASTM E648 (Standard Test Method for Critical Radiant Flux of Floor-Covering Systems using a Radiant Heat Energy Source).

2. Prior to Commencement of Installation (After Delivery)

a. Test for Heavy Metals Content

i. Infill and carpet shall be tested by the Contractor for any trace amounts of heavy metals by a NYS certified testing lab. No additional payment will be made.

ii. Contractor's lab report shall be signed by the lab manager and shall certify that the material is free of lead, meets the project specifications and is free of containments.

G. Certificates

The Synthetic Turf Manufacturer shall certify that their onsite representative has inspected the installation and that the work conforms to the manufacturer's requirements.

H. Warranties:

1. Form of warranty for synthetic turf system shall be submitted to the Town for approval before start of construction.

1.04 QUALITY ASSURANCE

1. The Synthetic Turf Manufacturer shall be a company specializing in the design and manufacturing of in-filled Synthetic Turf Systems with not less than 5 years documented experience.

2. The Manufacturer shall have an experienced technical services and sales professional who is available during the course of the work to meet personally with the Owner, Contractor, and Engineer.

3. Synthetic Turf Manufacturer's Experience:

a. The Synthetic Turf Manufacturer shall have the experience of at least one hundred (100) acceptable installations of full-size fields (minimum 65,000 sq. ft.) in the United States within the past five (5) years of tufted, polyethylene grass-like fabrics that are filled with either all rubber or a mixture of SBR rubber and sand. Submit a list of all applicable installations with the cost proposal.

b. The Synthetic Turf Manufacturer shall have the experience of twenty-five (25) acceptable installations (minimum 65,000 sq. ft.) of fields that are at least eight years old. Submit a list of all applicable installations with the cost proposal.

- c. The Synthetic Turf Manufacturer shall have the experience of fifty (50) acceptable installations of the specific fiber system specified. Submit a list of all applicable installations with the cost proposal.
- d. The Synthetic Turf Manufacturer shall have the experience (if applicable to this project specification) of one hundred (100) installations with sewn main fabric seams.
- e. The Synthetic Turf Manufacturer must be a certified member of the Synthetic Turf Council in good standing.
- f. The Synthetic Turf Manufacturer must have and operate its own extensive research and development laboratory. This laboratory must include testing devices for the following tests: Yarn Tensile Strength, Yarn Elongation, Tuft Bind, Grab Tear Strength, Seam Strength, g-max, Force Reduction, Vertical Deformation, Ball Roll, Ball Rebound, Rotational Resistance, Linear Traction, Relative Abrasive Index, UV Resistance, Flammability, and Simulated Aging.
- g. The Synthetic Turf Manufacturer must have manufactured and installed fields at every level of competition, including high school, college and professional.
- h. The Synthetic Turf Manufacturer must have at least (1) one current NCAA Division 1 and (1) one current NFL game stadium or NFL practice field installation.
- i. The Synthetic Turf Manufacturer must be a FIFA licensee and have at least (1) one FIFA 2-Star field installed in the North America.
- j. The Synthetic Turf Manufacturer must not have had more than (5) five fields replaced, under warranty, during the past 5 years.
- k. The Synthetic Turf Manufacturer must be vertically integrated including in-house tufting, polyethylene monofilament extrusion, in-house coating, polyurethane compounding, manufacture own primary backing, in-house yarn texturizing, ability and flexibility to tuft various gauge widths and have the ability to recycle used/old fields.
- l. The Synthetic Turf Manufacturer must have a fully integrated quality system, directly based on and compliant with ISO 9000, ISO 14001 and OHSAS 18001 international standards.

1.05 REQUIREMENTS OF REGULATORY AGENCIES

- A. Work in this Section shall be in compliance with the following:
 - 1. The Town of Yorktown
 - 2. New York City Department of Environmental Protection

1.06 PRODUCT HANDLING

- A. Turf system material shall be protected before, during and after installation.
- B. Installed work and materials of other trades also shall also be protected.

1.07 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit synthetic turf work to be performed according to manufacturers' written instructions and warranty requirements. Installation is to occur only when weather is dry. The minimum temperature during actual installation shall be at a minimum of 65°F. If, in the opinion of the Owner, weather and climatic conditions are having or will have an adverse effect on installation, work shall be delayed until the adverse condition has passed.
- B. Field Measurements: Verify the existing conditions. Indicate measurements on Shop Drawings.
- C. Existing Utilities: Do not disturb or interrupt existing utilities unless permitted in writing by the Architect and then only after arranging to provide temporary utility services, if required.

1.08 WARRANTIES

- A. Synthetic Turf Warranty:

The Synthetic Turf Contractor shall submit it Manufacturer's Warranty, which guarantees the usability and 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 must have the following characteristics:
 - a. Must provide full-field coverage for eight (8) years from date of Substantial Completion
 - b. Must warrant materials and workmanship
 - c. Must warrant that the materials installed meet or the product specifications within manufacturing tolerances
 - d. Must have a provision to either repair or replace such portion 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. Must not be limited to the amount of annual usage

- g. Must provide, at the time of bid, a copy of its pre-paid 3rd party insurance policy. This policy must have an annual aggregate amount of no less than \$60 million, and a per incident limit of no less than \$7 million per claim. The third party insurer must have an AM Best rating of A++ or better.
2. The Manufacturer shall warrant that the field will have a G-Max not exceeding one-hundred-twenty (120) at the completion of the field before the first foot goes down, and a G-Max not exceeding one-hundred-seventy-five (175) during the term of the warranty in accordance with ASTM F1936 (Standard Specifications for Shock-absorbing Properties of North American Football Playing Field Systems as measured in the Field). Testing shall be by Method A of ASTM F355 (Test Method for Shock-Absorbing Properties of Playing System Surfaces and Materials) at 70°F. The locations of the tests shall be determined by the Owner. The Owner directs Manufacturer that tests be conducted at 3¹/₂ years' in-service and at 7¹/₂ years' from first date of use, in-service continually during the warranty period. The Owner may require an additional test for each test that fails. If the G-Max exceeds one-hundred-seventy-five (175) at any test point, the manufacturer of the synthetic turf shall be responsible for the cost of the test and cost of replacement of areas of the field in which the G-Max exceeded the stipulated value. The area to be replaced shall be at least half the distance from the test point that failed to the nearest test points where the G-Max was compliant.
3. Shall warrant that the materials will not fade due to Ultra-Violet exposure.
4. Shall state all limitations and exclusions.
5. The manufacturer's warranty shall include general wear and damage caused from UV degradation. The warranty shall specifically exclude vandalism, and acts of God beyond the control of the Owner or the manufacturer.
6. The Contractor shall provide a warranty to the Town that covers defects in the installation and workmanship, and further warrant that the installation was done in accordance with both the manufacturer's recommendations and any written directives of the manufacturer's onsite representative.
7. Warranty shall be for full value, not prorated.

1.09 MAINTENANCE SERVICE

- A. Maintenance Service: Beginning at Substantial Completion and continuing through Warranty Period, the Manufacturer shall provide yearly maintenance service. The service shall be performed by skilled employees of an Installer certified by the Manufacturer. This maintenance service shall include the following:
 1. Testing for shock absorbency. If playing surface does not meet the specified requirements, agitate infill materials and re-test until acceptance.
 2. Check seams and interface points for continuity. Repair as required.

1.10 PERFORMANCE REQUIREMENTS

- A. The Synthetic Turf surfacing system shall be designed based on the performance characteristics of natural grass.
- B. The Synthetic Turf surfacing system shall be designed and constructed to provide a tight, secure, and hazard-free athletic playing surface suitable for the purpose intended.
- C. The Synthetic Turf surfacing system shall be designed and constructed to maximize dimensional stability, to resist damage through normal wear and tear from its designated use, and to minimize degradation through exposure to the local environment.
- D. The installed Synthetic Turf surfacing system, including all components that are employed and become a permanent part of the system, shall be resistant to weather, insects, rot, mildew, fungus, and resist ultraviolet degradation.
- E. The Synthetic Turf surfacing system shall be easily and quickly cleaned by washing, and sweeping as necessary and shall not be damaged by cleaning methods as recommended by the Manufacturer.
- F. The Primary Backing shall consist of a minimum 3-layer fabric.
- G. The Secondary Backing shall consist of a uniform application of heat-activated polyurethane to permanently lock the fiber tufts in place. Non-uniform coatings and/or porous coatings shall be deemed unacceptable.
- H. The fiber shall consist of UV-stabilized polyethylene extruded monofilaments.
- I. The artificial turf surfacing system shall remain usable and playable over the warranty period.
- J. G max per ASTM F355 procedure A shall not exceed 175 over the warranty period.
- K. The installed artificial turf surfacing system shall satisfy the following minimum specifications
 1. Cross slope: Shall not exceed 0.5%.
 2. Surface Flatness: Shall not vary from a true plane by more than 1/4" under a 13' straightedge at any position and in any direction.
 3. Porosity: Minimum 10 inch/hour at any location.

PART 2 – PRODUCTS

The Synthetic Turf installation is to be system provided by one single-source Manufacturer meeting the requirements outlined in this specification; and the warranty is to for the entire synthetic turf system, including, but not limited to: turf carpet (filaments, backing, sewing, adhesives, etc.),infill, and related attachment materials and devices.

2.01 SYNTHETIC TURF REQUIREMENTS

- A. All components and their installation methods shall be designed and manufactured for use on outdoor athletic fields designed for the specified sports. The materials as herein specified, shall be able to withstand full climatic exposure, be resistant to insect infestation, rot, fungus and mildew, to ultra-violet light and heat degradation. The system shall be composed of Non-toxic components. The system shall have the basic characteristic of flow-through drainage allowing free movement of surface run-off through the turf system where such water shall flow directly into the prepared granular base and into the field drainage system indicated on the drawings.
- B. A shock pad is not permitted.
- C. All lines, numbers, markings, etc. shall be integrally woven into the turf as specified below:

Lines
Football (2)
Men's Lacrosse (2)
Women's Lacrosse (2)
Field Hockey (2)
Full Size Soccer (2)
9v9 Soccer (2)
9v9 Soccer (2)
7v7 Soccer (2)
Baseball
Adaptive Field
Softball

2.03 MATERIALS – GENERAL

- A. Shall be tufted, polyethylene, grass-like fabric coated with a secondary backing of high-grade polyurethane. Refer to Table below. The two fibers specified in this grid shall be tufted through the same needle in a grass-like fabric to a finished pile-height also specified in the grid.
- 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 exposure in all climates, be resistant to insect infestation, rot, fungus, mildew, ultraviolet light and heat degradation, and shall have the basic characteristics of flow-through drainage, allowing free movement of surface runoff through the synthetic turf fabric where such water may flow to the existing base and into the field drainage system.

- C. The finished playing surface shall appear as mowed grass and shall resist abrasion and cutting from normal use.
- D. The polyethylene pile yarn 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.
- E. The system shall be tufted at the pile height and gauge listed in specification grid, refer to grid in section 2.1 D.
- F. The Primary Backing must be a multi-layer backing, contain UV stabilizers and must pass 3000 hours of QUV A testing, refer to grid in section 2.1 D.
- G. The Secondary Backing of high-grade polyurethane shall be applied to the Primary Backing. Secondary Backing adds resistance to water degradation and strengthens grip on fibers, refer to grid in 2.1 D.
- H. The entire backing shall be coated with holes perforated throughout the backing at the Synthetic Turf Manufacturer's recommended interval to allow for drainage. Partially coated backings or latex coating materials shall not be acceptable.

2.04 MULTI-PURPOSE FIELDS e noted the above specifications are nominal.

Multi-Purpose Field		
Pile Yarn	Polyethelene Monofilament/Slit Film	METHOD
Linear Density (Denier) Mono/Slit*	10,800/5,000	ASTM D 1577
Yarn Thickness Mono/Slit	300/100 microns	ASTM D 3218
Pile Weight ⁴	50 oz./yd ²	ASTM D 5848
Finished Pile Height ⁴	2.25	ASTM D 5823
Product Weight (total) ³	78 oz./yd ²	ASTM D 5848
Primary Backing Weight ⁴	8 oz./yd ²	ASTM D 5848
Secondary Coating Weight+	20 oz./yd ²	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength Avg.	> 200 lb.-F	ASTM D 5034
Tuft Bind (Avg.)	> 10 lb.-F	ASTM D 1335
Infilltrometer	> 25	ASTM D3885
Notes: 1. Values are +/- 8%. 3. Values are +/- 10 oz. 4. Values are +/- 5%. +Values are +/- 3 oz./yd2.		

Except where noted the above specifications are nominal.

Multi-Purpose Field Infill		
Property	Standard	Specification
Rubber Granule Comp	N/A	All black SBR
Rubber Granule Shape	EN 14955	Spherical, Moderate, Angular
Rubber Sieve Analysis	ASTM D 5644	10/20MESH (2.0mm – 0.85mm)
Sand Granule Shape	ASTM D442	Semi-rounded to rounded angularity
Sand Sieve Analysis	ASTM E11	20/40 MESH (0.85mm - 0.425 mm)
Infill Lbs. of Rubber	N/A	3.30 lbs.
Infill Lbs. of Sand	N/A	2.20 lbs.
Fiber Reveal	N/A	5/8"

2.05 BASEBALL FIELD

Baseball Field		
Pile Yarn	Polyethelene Monofilament/Slit Film	METHOD
Linear Density (Denier) Mono/Slit*	10,800/5,000	ASTM D 1577
Yarn Thickness Mono/Slit	300/100 microns	ASTM D 3218
Pile Weight****	46 oz./yd ²	ASTM D 5848
Finished Pile Height****	2.0	ASTM D 5823
Product Weight (total)***	74 oz./yd ²	ASTM D 5848
Primary Backing Weight****	8 oz./yd ²	ASTM D 5848
Secondary Coating Weight+	20 oz./yd ²	ASTM D 5848
Fabric Width	15' (4.57m)	ASTM D 5793
Tuft Gauge	1/2"	ASTM D 5793
Grab Tear Strength Avg.	> 200 lb.-F	ASTM D 5034
Tuft Bind (Avg.)	> 10 lb.-F	ASTM D 1335
Infilltrometer	> 25	ASTM D3885
Notes: 1. Values are +/- 8%. 3. Values are +/- 10 oz. 4. Values are +/- 5%. +Values are +/- 3 oz./yd ² .		

Except where noted the above specifications are nominal.

Baseball Field Infill		
Property	Standard	Specification
Rubber Granule Comp	N/A	All black SBR
Rubber Granule Shape	EN 14955	Spherical, Moderate, Angular
Rubber Sieve Analysis	ASTM D 5644	10/20MESH (2.0mm – 0.85mm)
Sand Granule Shape	ASTM D442	Semi-rounded to rounded angularity
Sand Sieve Analysis	ASTM E11	20/40 MESH (0.85mm - 0.425 mm)
Infill Lbs. of Rubber	N/A	3.01 lbs.
Infill Lbs. of Sand	N/A	1.29 lbs.

**Granite Knolls Parks & Recreation Complex
Synthetic Turf Fields**

2.06 PUTTING GREEN

The Synthetic Turf Manufacturer shall submit a suitable product for use as a putting green. The putting green shall include a damping matting and playing surface, flag and cup. The layout shall be as shown on the Contract Drawings.

2.07 ADHESIVES

- A. Adhesives for bonding the synthetic turf to the substrate shall be weather-resistant to withstand the climate of the site and shall be compatible with the materials of the turf and substrate.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Before any Synthetic Turf is installed, the Contractor shall have a licensed Surveyor prepare a final to stone course survey / plan with elevations at 10' oc. The synthetic turf installer shall inspect the finished stone base and review the survey, and when satisfied with its condition, shall notify the Authority in writing of acceptance of the base. Submit a Certificate of Subbase Acceptance for the purpose of obtaining a complete manufacturer's warranty for the finished playing surface. The Turf Manufacturer shall also provide a Certificate of Subbase Acceptance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. The surface to receive the synthetic turf shall be inspected and certified by the 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. The final stone base surface shall be surveyed by the contractor by means of a laser level with a minimum 500 shots taken (10-foot grid).
- D. The installation shall be performed in full compliance with approved shop drawings. Only factory-trained technicians skilled in the installation of athletic caliber synthetic turf systems, working under the direct supervision of the manufacturer's supervisors, shall undertake the placement of the system. The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer, as competent in the installation of this material, including sewing seams and proper installation of the infill mixture. The manufacturer shall certify the installation and warranty compliance. The surface to receive the synthetic turf shall be inspected and certified by the 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.

3.02 GENERAL

- A. A manufacturer's representative shall be present at the job site when the synthetic turf is installed. Workmen who are skilled in this type of work shall lay turf in strict accordance with the manufacturer's instructions.

- B. Synthetic turf shall be loose-laid across the field, stretched, and attached to the perimeter edge detail. Synthetic turf shall be of sufficient length to permit full cross-field installation. No head or cross seams will be allowed except as needed for inlaid fabric striping or to accommodate programmed cut-outs.
- C. All seams shall be flat, tight, and permanent with no separation or fraying. Selvage edges of all panels must be cut and discarded prior to being sewn together. A butt-stitch method of seaming must be implemented and a double-lock stitch with cord recommended by the Synthetic Turf Manufacturer shall be utilized. Bagger stitching is prohibited. Seaming tape is to be constructed of high tenacity, coated non-woven fabric. Inlaid markings shall be adhered to seaming tape with a high strength polyurethane adhesive applied per the Synthetic Turf Manufacturer's standard procedures for outdoor applications. All main fabric seams shall be transverse to the field direction (i.e. run perpendicularly across the field).
- D. The Contractor shall keep the area clean throughout the project and clear of debris.

3.03 TURF INSTALLATION

- A. The completed base and adjacent curbs/perimeter nailer (by Site Contractor) shall be inspected by the Engineer or Sitework Contractor by means of a laser and plotted on a 10-foot grid. Based upon the Contractor's inspection of the topographical survey, the Sitework Contractor shall fine grade the base suitably, including properly rolling and compacting the base to achieve a surface planarity within 1/4" in 10-feet (+0, -1/4"). OWNER, ENGINEER, OR PRIME CONTRACTOR SHALL NOT APPROVE THE BASE FOR TOLERANCE TO GRADE WITHOUT OBTAINING THE TOPOGRAPHICAL SURVEY.
- B. Subgrade and base shall be uniformly compacted to a minimum of 95% of maximum dry density. Care must be exercised to minimize segregation. Engineer/Sitework Contractor shall make written records available to Synthetic Turf Contractor's inspector for both drainage/permeability and compaction/planarity as obtained from a minimum 10' x 10' grid.
- C. The Synthetic Turf Project Superintendent shall thoroughly inspect all synthetic turf materials delivered to the site for both mixing and quantity to assure that the entire installation shall have sufficient material to maintain proper mixing ratios.
- D. Infill materials shall be properly applied in numerous lifts using special broadcasting equipment. The synthetic turf shall be raked and brushed properly as the mixture is applied. The infill material shall be installed to a settled depth of approximately 5/8 inches of the fiber exposed. The infill materials can only be applied when the synthetic turf fabric is dry.
- E. G-Max (shock attenuation) must test below 125 at installation.
- F. Field markings and decorations shall be installed in accordance with approved project shop drawings.
- G. Templates for numerals, arrows, and other markings shall be given to the Authority's Representative for future use.

3.04 CLEAN UP

- A. Synthetic Turf Contractor shall provide the labor, supplies, and equipment, as necessary, for final cleaning of the surfaces.
- B. The Synthetic Turf Contractor shall keep the area clean and clear of debris throughout the project.
- C. 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 Owner.

3.05 MAINTENANCE

- A. Manual

Maintenance Manual shall describe the materials, devices and procedures to be followed for use and maintenance of the filled synthetic turf system, including the cleaning, and conversion techniques. Include any precautions required by the warranty.

- B. Training

Give demonstrations and training sessions, devoting a sufficient amount of time to thoroughly instruct the School's personnel in operation, grooming and maintenance for cleaning, removal and replacement of covers over manholes, valve pits, sediment tank and goalpost foundations of the synthetic turf system and maintenance equipment.

3.06 CLOSE-OUT REQUIREMENTS

- A. Prior to Final Acceptance, the Contractor shall submit to the owner three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system, including painting and striping.
- B. The Contractor shall provide evidence that the turf can be plowed with conventional rubber bladed snow removal equipment.
- 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.

3.07 ACCEPTANCE

- A. Before the acceptance of the work, should any imperfect areas or spots develop in the surface, such areas shall be removed and replaced with new materials.
- B. All such repair work shall be done at no additional cost to the Town.
- C. G-Max Test called for in Par. 1.03 shall have been successfully completed

PART 4: MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

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4.02 BASIS OF PAYMENT

Payment for all Work under this item shall be at the **Lump Sum** bid and shall include the cost of all permits, inspections, testing, labor, materials and equipment necessary to complete the work as shown on the Contract Drawings and as specified herein.

The Contractor shall install a complete Synthetic Turf System. Included in this work item shall include the all materials and labor at the locations shown on the Contract Drawings including incidental work required to furnish and install a usable Synthetic Turf Field as specified to the satisfaction of the Engineer.

The Work Included shall be:

1. A complete Synthetic Turf System
 - a. Two (2) side by side Multi-Purpose Fields. The overall dimension for each field shall be 195'-0" x 360'-0" and shall provide 10'-0" wide turf buffer area on three (3) sides and a 25'-0" wide turf buffer between the two fields.
 - b. Baseball Field – The overall dimensions for the baseball field shall be a 90'-0" infield diamond with outfield limit as measured from the center of home plate of 350'-0" in all directions (left, center, right). There shall be a 10'-0" wide turf buffer along the baselines with an additional 15'-0" wide turf buffer for each dugout.
 - c. Putting Green shall be irregular shaped (100 sq. foot min.).
2. Infill of Synthetic Turf.
3. Lines and markings for football, soccer, lacrosse, field hockey, baseball field and adaptive field.
4. Lines and markings for football, soccer, lacrosse, baseball field and adaptive field as shown on the lines and stripping schematic.
5. Synthetic turf covers and goalpost foundations as required.

END OF SECTION