SECTION - 02535 - SYNTHETIC TURF SPECIFICATION PART 1 - GENERAL

1.01 Summary

A. Related Sections:

1. Synthetic Turf Field Earthworks: Section 02310
2. Synthetic Field Sub drainage System: Section 02635

SCOPE OF WORK

The work shall be comprised of the removing the current infill and turf system for reuse and/or recycling, minor re-grade of the sand leveling course and porous aggregate base and installation of new synthetic turf surface as specified herein, as well as the installation of edgers/nailers and other related work to accommodate the new playing field system for the field.

The sand leveling course and porous aggregate base located beneath the new infill synthetic surface is a vertically draining system utilizing a subsurface drainage collection system that connects to a storm sewer system as shown on the plans. The Playing Field Contractor will coordinate the installation of the new synthetic turf surface with the other field elements to ensure proper drainage of the overall playing field system.

The synthetic turf surfacing system for the playing field proper shall include a 100% crumb rubber infill material and/or a sand crumb rubber mixture. The synthetic turf surfacing system shall be GREEN and suitable for NCAA regulated lacrosse play. Playing Field Contractor shall submit shop drawings indicating all logos, lines and lettering for approval by the Owner’s representative prior to the manufacture and delivery of the infill synthetic turf. Owner will provide original artwork for logo and university identification.

STANDARD SPECIFICATIONS FOR RULES A. NCAA Lacrosse and Soccer

1.01 FIELD GRADING

The final finished grade of the new field will be based upon the “reference dwg.” final grading plans. Finished grade elevations are based upon a general thickness of the synthetic turf at a 2 ½” height at the top of the grass fibers. Refer to the “reference” Grading Plans for the final field grading plan and finished grade elevations. See Spec. 02310

1.02 FIELD SYSTEM DRAINAGE

The existing field subsurface drainage system is comprised of an engineered vertically draining piping system. The installed synthetic turf must meet the drainage requirements of the current system.

PROJECT & DESIGN SUBMITTALS

Key Personnel: Submit a listing of the key members of the Playing Field Contractor’s team. This shall include the project manager, project construction superintendent, quality control representative, testing agency, and any other important project participants. The list shall include phone and fax numbers for each team member and 24-hour emergency telephone number for contacting job responsible personnel in an emergency. Playing field superintendent shall have installed a minimum of five (5) synthetic turf fields in the past three years.

Shop Drawing Submittal: Submit six (6) sets of shop drawing submittal plans to Owner’s representative for review and approval. The submittal shall include an electronic copy, on CD, of the submittal plans for the synthetic infill material. The submittal plans shall include inlaid lines detail (as required) and dimensioning, edging details, insert
details, seam details, seam layout, gluing patterns and edge anchoring details (if different than specified).

Product Data Submittal: Submit six (6) copies of the manufacturer's specifications and technical data for all of the proposed materials pertaining to the synthetic field surfacing. The synthetic turf product manufacturer shall provide evidence of a minimum of 20 monofilament installations (worldwide), in the past three years with each in excess of $250,000 which comply with these specifications.

A. CONSTRUCTION SUBMITTALS

Submit a written sequencing plan to the Owner’s representative for approval prior to commencing with any activity. The plan must be coordinated with the Owner’s representative's construction schedule and shall reflect and address the historical weather conditions during the proposed scheduling of the work. The plan shall also include:

Sequencing of all activities, Proposed equipment to be utilized, Surface water diversion and control, Proposed protection methods for stockpiled materials, Soil drying procedures, and Any other information pertinent to the manner in which the work will be performed.

Submit the following information for the field base to the Owner’s representative for approval prior to commencing with the field construction:

Equipment and procedures to be utilized for the installation of the entire field, including the required laser grading equipment.

Submit the following synthetic turf samples to the Owner’s representative for approval prior to commencing with the field construction:

Two 24" x 24" samples of green infill turf
Two 24" x 24" samples each of turf showing method of seam makeup. Two 2 pound samples of the proposed in-fill material.

Submit the synthetic turf warranty package and operation and maintenance manual to the Owner’s representative for approval prior to commencing with the field construction. Provide descriptions of any equipment recommended for maintenance and repair, citing specific vendors for each unit. Provide a separate page stating approved activity usage for the turf and activities not recommended relative to warranty. Include maintenance recommendations including recommended coverings for special events, small repair procedures, minor seam repair, discussion of precautions to be practiced, general maintenance, and uses to avoid to protect turf surface and to maintain installation's warranty.

Synthetic Turf Testing and Quality Control: Submit to the Owner’s representative results certified by an independent testing laboratory experienced in synthetic turf testing for the following tests performed on the synthetic field surfacing system:

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Yarn Type</td>
<td></td>
</tr>
<tr>
<td>Yarn Denier</td>
<td>ASTM D1577</td>
</tr>
<tr>
<td>Yarn Breaking Strength</td>
<td>ASTM D2256</td>
</tr>
<tr>
<td>Yarn Melting Point</td>
<td>ASTM D789</td>
</tr>
<tr>
<td>Pile Height</td>
<td>ASTM D418</td>
</tr>
<tr>
<td>Pile Weight</td>
<td>ASTM D418</td>
</tr>
<tr>
<td>Total Weight</td>
<td>ASTM D418</td>
</tr>
<tr>
<td>Backing Perforations</td>
<td></td>
</tr>
<tr>
<td>Tuft Bind (without infill)</td>
<td>ASTM D1335</td>
</tr>
<tr>
<td>Grab Tear Strength</td>
<td>ASTM D1682</td>
</tr>
<tr>
<td>Impact Attenuation</td>
<td>ASTM D355</td>
</tr>
<tr>
<td>Pill Burn Test</td>
<td>ASTM D2859</td>
</tr>
</tbody>
</table>

Site Acceptance: Playing Field Contractor shall perform a site inspection prior to work commencement noting all discrepancies, problems, and conflicts. If none are found, this shall be so indicated. When appropriate during the
construction process, the Owner, at the Owner’s discretion, may perform survey and testing of the sub-grade compaction and grade control as well as acceptance of the drainage and utility connections. See specification 02310 and 02625. Notify the Owner’s representative of any discrepancies.

1.02 PRE-INSTALLATION CONFERENCE

The Owner’s representative to conduct conference at Project Site. The following issues shall be discussed at this meeting:

Schedule.
Submittal and approval of materials. Stockpiling of materials.
Testing and inspection of materials and installation. Method of assuring elevation and grade of field. Coordination with turf supplier.
Field protection during and upon completion of surface installation. Turnover to Owner.

1.03 QUALITY CONTROL

Submit to the Owner’s representative for approval a quality control plan. The plan shall designate a quality control representative for the team. The plan shall also clearly specify the testing procedures for the field materials.

1.04 CONSTRUCTION SUPERINTENDENCE

The Playing Field Contractor shall at all times employ personnel who are skilled in their respective lines. In-competent, careless or negligent employees or agents shall be forthwith discharged upon written request of the Owner’s representative.

All work under the Contract shall be performed under the continuous on-site supervision of competent superintendent thoroughly experienced in the class of work specified. Playing Field Superintendent shall have installed a minimum of five (15) synthetic turf fields in the past three years. Resume will be required by the Owner’s representative prior to work commencement. There shall be on site at all times work is being performed a Designated Superintendent in the employ of the Playing Field Contractor, approved by the Owner’s representative, in responsible charge, managing the project construction. The Superintendent shall have the authority to make decisions for the Playing Field Contractor.

The superintendent shall be satisfactory to the Owner’s representative in all respects, and Owner’s representative shall have the right to require Playing Field Contractor to dismiss from the project any superintendent whose performance is not satisfactory to Owner’s representative, and to replace such superintendent with a superintendent satisfactory to Owner’s representative. The lack of proper supervision by the Playing Field Contractor or supervisory personnel shall be just cause for suspension of the work or termination of the Contract.

1.05 DELIVERY, STORAGE, AND HANDLING

Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.

Storage and Protection: Comply with manufacturer's recommendations. Store in dry place out of direct sunlight. Protect from damage by the elements and construction procedures.

Bulk Materials: Deliver materials in clean, washed and covered trucks to eliminate contamination during transportation. On site stockpiling location to be coordinated with Owner’s representative. Stockpile only in areas free of debris and away from drainage routes. Cover with plastic or geotextile if material is to be stockpiled more than 24 hours.

1.06 FIELD SYSTEM HOLD HARMLESS

The Playing Field Contractor and all synthetic turf suppliers shall hold the Owner and the Owner’s representative...
harmless from infringement of any current or future patent issued for the synthetic field surfacing system, installation methods and vertical draining characteristics.

1.07 FIELD DIMENSIONS AND LAYOUT

The Playing Field Contractor will be responsible for furnishing, setting and marking of all line, grade and location stakes, including offsets and general construction staking.

The Playing Field Contractor shall have on site at all times when work requiring control is being performed all necessary equipment supplies and instruments related thereto. A qualified technician must be assigned to the crew for this work. This equipment and technician must be available, at no additional cost, to the Owner’s representative for checking, verifying and certifying construction control on site.

1.08 PROTECTION OF UTILITIES AND STRUCTURES

The Playing Field Contractor shall take special care to protect the existing site features, i.e. Rugby Goals, Bleachers, fencing, site lighting, existing features, etc.

1.09 CONSTRUCTION RECORD "AS-BUILT" DRAWINGS AND SPECIFICATIONS

Accurately marked construction record set of drawings and specifications shall be kept on site as the job progresses. All changes or deviations from the original Contract Documents recorded thereon for work under the Contract.

The record set shall be kept up-to-date at all times and shall be submitted periodically to the Owner’s representative covering all work for which progress payment is being requested.

Failure to have the record set up-to-date shall, at the discretion of the Construction Management, be reason to withhold payment until such information is recorded or submitted.

Upon completion of the project and prior to final payment, the Playing Field Contractor shall forward a complete record set of CAD .dwg and PDF drawings and specifications showing the as-built notations to the Owner’s representative.

1.10 WARRANTY OF SYNTHETIC TURF SYSTEM

Warranty shall cover, in general, the usability of the turf surface, accessories use characteristics, and suitability of the installation. All items covered by warranty are to be replaced or repaired with new materials, including installation at the sole expense of the warranting Playing Field Contractor for the period of eight (8) years to the Owner, for the designated uses enumerated as follows:

NCAA Lacrosse, Soccer, Rugby, Field Hockey and General Recreation
Pneumatic rubber-tired maintenance and service vehicles
Pedestrian traffic and other similar uses

The turf vendor warranty shall be signed by a principal of the applicable firm, duly-authorized to make contracts. The term "Playing Field Contractor" contained herein means the firm furnishing warranty. Warranty period shall be a minimum of eight years from date of acceptance by the Owner of the installed system.

If the turf manufacturer of the synthetic turf surfacing system is not the same entity as the turf vendor, the warranty shall be co-signed by the turf manufacturer.

1.11 FORM OF WARRANTY OF SYNTHETIC TURF SYSTEM

Playing Field Contractor hereby warrants to Owner, subject to the limitations and conditions set forth below, that its synthetic turf system consisting of synthetic turf described as, described as , and the adhesives used in the installation, is free from defects in material and workmanship and shall, for a period
of eight years from the date of acceptance by the Owner, remain serviceable for lacrosse and activities listed in 1.15 A.

Playing Field Contractor warrants to the Owner that its synthetic turf materials shall not fade, fail, shrink, wrinkle, or reflect excessive wear. Playing Field Contractor shall, at their sole expense and cost, replace such areas of the synthetic turf system not performing to these standards for the life of the warranty.

Definitions:

The term "not fade" in the context of this warranty shall mean that the synthetic turf material shall remain a uniform shade of green, or other colors installed, with no significant loss of color.

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 turf surface shall not have been decreased by more than 10% per year according to ASTM D418, nor exceed 50% during the warranty period. In the event that the synthetic turf system does not retain its fiber height or shock absorbency and is consequently no longer serviceable during the warranty period, the Playing Field Contractor shall, at their sole expense, replace such portion of the system that is no longer serviceable.

The term "serviceable" in the context of this warranty shall mean that the synthetic turf system shall have a maximum "G" value according to Procedure A,B or C ASTM F355, not to exceed 140G's at any location upon installation and shall not exceed 165G's thereafter throughout life of the warranty period. This shall be determined by conducting dynamic cushioning tests at the six field locations as required per the ASTM F355 procedures. "G" factor values are to be determined at 70° F. Any increase from 140G's to allowable 165G's maximum shall be at a relative uniform rate not to exceed 10 G's in any single yearly period. Fabric seams shall not separate or become unglued or unattached, as applicable.

Playing Field Contractor warrants to the Owner that the permeable synthetic system shall drain vertically a minimum of 5 inches precipitation per hour without visible surface ponding. Playing Field Contractor shall replace with new materials, at their sole expense, any damage to the synthetic turf system which extends more than one meter beyond the location of foreign combustibles which may ignite and fire-damage the synthetic turf system. The Playing Field Contractor shall not be held liable for any incidental or consequential damages. These warranties and the Playing Field Contractor's obligations here-under are expressly conditioned upon:

The Owner making all minor repairs to the synthetic turf system upon the discovery of the need for such repairs; The Owner maintaining and properly caring for the synthetic turf system in accordance with the Playing Field Contractor's maintenance manual and instructions; The Owner complying with the dynamic and static load specifications established by the Playing Field Contractor.

The warranty is not to cover any defect, failure, damage or undue wear in or to the synthetic turf system caused by or connected with abuse, neglect, deliberate acts, act of God, casualty, static or dynamic loads exceeding Playing Field Contractor's recommendations, footwear having metal cleats, spikes, or similar projections other than conventional lacrosse, or soccer shoes.

Playing Field Contractor shall be allowed to examine the synthetic turf system regarding any claim that the Owner makes to be present at any time, to analyze the results of all tests conducted by the Owner or others, and to conduct such tests of their own.

Playing Field Contractor shall not be responsible for any costs or expenses incurred by the Owner or others with respect to such tests, except the Playing Field Contractor shall pay for costs of all tests and analysis conducted or directed by their representative.

In the event the Playing Field Contractor does not respond to the Owner’s written notice within 10 days of receipt of notice or does not submit, schedule and execute corrective work within 30 days, the Owner has the option of having the work performed at the expense of the Playing Field Contractor.
Sample form of warranty herein set forth is a suggested form for use for the work under this section. Manufacturer’s standard form of warranty may be used provided conditions specified are incorporated. All claims by the Owner under this warranty must be made in writing to Playing Field Contractor’s address at____________________within 30 days after the Owner learns of the defect giving rise to the claim. This warranty shall constitute a contract made in the state of Colorado and shall be governed by the laws thereof.

PART 2 - MATERIALS

SAND LEVELING COURSE

SAND - The sand shall be clean and processed and meet the following particle size criteria: Sieve Diameter

<table>
<thead>
<tr>
<th>Mesh</th>
<th>Allowable range (mm)</th>
<th>% retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
<td>&gt;2.00</td>
<td>Less than, equal to 5%</td>
</tr>
<tr>
<td>Very Coarse</td>
<td>1.00-2.00</td>
<td>Less than, equal to 10%</td>
</tr>
<tr>
<td>Coarse</td>
<td>0.50-1.00</td>
<td>at least 60%</td>
</tr>
<tr>
<td>Medium</td>
<td>0.25-0.50</td>
<td>particles in this range</td>
</tr>
<tr>
<td>Fine</td>
<td>0.15-0.25</td>
<td>25% maximum</td>
</tr>
<tr>
<td>Very Fine</td>
<td>0.05-0.15</td>
<td>7% maximum</td>
</tr>
<tr>
<td>Silt</td>
<td>0.002 less than</td>
<td>5% maximum</td>
</tr>
<tr>
<td>Clay</td>
<td>0.002</td>
<td>3% maximum</td>
</tr>
</tbody>
</table>

No more than 13% including 5% fine gravel combined for sieve meshes 10 and 18. Combined fractions no more than 15% for material less than or equal to 0.05 in size.

Submit samples to testing agent for analysis to assure conformance with 1993 USGA protocol and this specification.

PERMEABLE BASE AGGREGATE UNDERLAYERMENT

A. Permeable Aggregate Base: Underlayment material shall be clean and processed and meet the particle size criteria listed below. A uniformly mixed processed stone shall be placed over the entire subbase, which has been covered with the approved filter fabric and the sub drainage piping system (see spec. 02625). The aggregate shall comprise of a minimum 7.5" compacted, stable, permeable, processed stone. Care shall be taken to maintain the grade designed for the subbase. The capability of the processed stone drainage layer to meet the stability and permeability requirement must be determined by a certified laboratory prior to construction of the course.

B. Aggregate shall durable and not exceed 12% loss of materials as determined by a sulfate soundness test (ASTM C88). The processed stone layer shall be compacted to a minimum of 95% of maximum density (per ASTM D698). Nuclear density tests should be performed during aggregate placement and rolling to ensure specified compaction. Typical aggregate or aggregate blends found acceptable, as a processed stone drainage course must conform to the following gradation:

Delivery Moisture Content of Stone Base: Processed stone must contain 90% to 110% of the optimum moisture content to ensure that fines do not migrate in transit or during placement and to facilitate proper compaction.

It is critical that the installation contractor ensure that aggregate leaving the source plant meet this requirement. The Contractor shall apply water to the processed stone on site to attain and maintain this minimum moisture content.
content. Aggregate Permeable Base shall meet the following analysis:

### Sieve Sizes

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Metric (mm)</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2&quot;</td>
<td>38.1</td>
<td>100</td>
</tr>
<tr>
<td>1&quot;</td>
<td>25.4</td>
<td>95 - 100</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>19.0</td>
<td>80 - 100</td>
</tr>
<tr>
<td>1/2 “</td>
<td>12.7</td>
<td>60 - 80</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>9.52</td>
<td>30 - 50</td>
</tr>
<tr>
<td>No. 4</td>
<td>4.75</td>
<td>20 - 40</td>
</tr>
<tr>
<td>No. 8</td>
<td>2.38</td>
<td>10 - 30</td>
</tr>
<tr>
<td>No. 40</td>
<td>0.42</td>
<td>5 - 17</td>
</tr>
<tr>
<td>No. 200</td>
<td>0.075</td>
<td>1 – 4</td>
</tr>
</tbody>
</table>

Final drainage rate in this aggregate layer shall be at least 12-15 inches per hour. Submit testing data indicating infiltration rate as well as testing for sieve analysis in conformance with this specification in 1000 ton lots and prior to delivery to the site.

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### 2.02 SYNTHETIC TURF

A. The synthetic turf and all other components shall have been previously utilized for NCAA Lacrosse, Soccer or equivalent.

B. The Synthetic turf product manufacturer shall provide evidence of a minimum of 15 monofilament installations (worldwide) which comply with these specifications.

C. All components and their installation method shall be designed and manufactured for use on NCAA sanctioned Lacrosse and Soccer Fields. The materials as hereinafter specified, should be resistant to insect infestation, rot, fungus and mildew; to ultra-violet light and heat degradation, and shall have the basic characteristic of flow through-drainage allowing free movement of surface run-off through turf where such water may flow to the subbase and into the field drainage system.

D. 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 system shall be ideal for lacrosse, soccer and recreational use.

E. Monofilament fiber to be a straight, non-fibrillating, single extrusion fiber.

F. The infill synthetic turf for the playing field shall be as specified herein. Synthetic turf shall be twelve (12) to fifteen (15) feet in width and of sufficient length to permit full cross field installation with no cross or head seams.

G. Glue for gluing seams shall be as recommended by the synthetic turf manufacturer.

### 2.03 DYNAMIC CUSHIONING REQUIREMENTS OF THE SYNTHETIC TURF SYSTEM

The dynamic cushioning of the turf shall not exceed a maximum value of 130 G's at 70° F. per ASTM 1936-98, F355, procedure A at any location upon installation.
2.04 PERMEABILITY REQUIREMENTS OF THE SYNTHETIC TURF SYSTEM

The turf system shall drain vertically a minimum of 5 inches of precipitation per hour without visible surface ponding.

2.05 ADHESIVE MATERIAL PROPERTIES

Adhesive material to adhere the synthetic turf shall be polyurethane 34 adhesive and designed specifically for synthetic turf application. Adhesive material shall be resistant to moisture, bacterial and fungus attacks, and resistant to ultraviolet rays. Turf shall be installed in accordance with recommendations and standards to produce a complete installation and to satisfy manufacturer’s warranty requirements.

2.06 SYNTHETIC TURF PILE SURFACE

The pile surface shall provide good traction in all types of weather with the use of conventional "sneaker-type shoes" and composition, molded-sole athletic shoes. The pile surface shall be suitable for permanent line markings.

2.07 SYNTHETIC TURF FABRIC SURFACE

The fabric surface shall be constructed and installed in minimum 12-15 foot widths with no longitudinal or transverse seams within a finished roll assembly. The seams shall be on 12'-0'-15'-0" spacing. Rolls that do not lay evenly and with full dimension width will be rejected. No fitted pieces will be allowed to true alignment. The color shall be uniform with no visible deviations in shade permitted. Rolls which do not meet this requirement will be rejected.

2.08 SYNTHETIC TURF SYSTEM MATERIAL COMPONENTS

Pile fibers for the playing field shall resemble freshly-grown green natural grass in appearance, texture and colors.

Pile surface shall be nominally uniform in length.

All turf seams shall be constructed of reinforced backing material and glued with materials recommended by the synthetic turf manufacturer.

2.09 SYNTHETIC TURF PERFORATIONS

All synthetic turf with tufted fibers and a fully coated backing must include perforations in the backing for vertical drainage.

If a fully coated backing is utilized, perforations must be included in the turf backing with a minimum of 3/16" diameter clear opening and shall be spaced a maximum of 4" uniformly on-center. The turf shall be perforated with a minimum of 95% integrity over entire surface. Holes must be full diameter, completely through the underside of the turf backing with no material residue or fragmented fibers remaining.

If a permeable backing is utilized perforations are not required. Certified independent test results indicating a minimum drainage rate of 40 inches per hour must be provided.

The turf perforations shall be inspected prior to shipment, upon delivery onsite, or during on-site perforating operations as applicable.

2.10 FIELD MARKINGS

A. All lines, numbers and field markings shall be glued. The University will provide a layout or convey direction of all line work for the fields.
B. Contractor shall provide to the University pantone colors for selection of lettering and logos and line work.
   Contractor to submit shop drawings for inlaid markings, logos and lettering for approval by Owner’s
   Representative prior to the manufacture of the materials. Lack of approval of the shop drawings prior to
   manufacture and delivery of the synthetic turf materials may be cause for rejection of the synthetic turf
   materials.

2.11 MINIMUM SPECIFICATIONS FOR SYNTHETIC TURF

The minimum material specifications submitted with the synthetic turf system proposal will be verified and en-
forced and will be the basis for Owner's testing. Material that fails to meet the minimum specifications will be
rejected.

PART 3 – EXECUTION

3.01 EQUIPMENT MOVEMENT

No trucks or equipment will be allowed to drive over the top of the subsurface drainage trenches except track-
equipped machinery utilized in spreading base aggregate materials, or where a 12" minimum depth base aggregate
temporary roadway has been established. In the event non-track traffic is observed or evidenced to cross trenches,
the Playing Field Contractor shall, at their own expense, expose the drainpipe in the area directed for observation by
the Engineer and repair any damage promptly.

3.02 SAND LEVELING COURSE AND PERMEABLE BASE INSTALLATION

SAND LEVELING COURSE PLACEMENT – Sand Leveling Course shall be delivered to the athletic field by
truck and carefully placed over the compacted permeable aggregate mixture utilizing low ground pressure grading
equipment. Final depth of sand leveling course shall be a minimum depth of ½”.

AGGREGATE UNDERLAYMENT PLACEMENT – Aggregate underlayment mixture shall be delivered to
the athletic field by truck and carefully placed over the compacted subgrade and sub drainage piping system utilizing
low ground pressure grading equipment. Final depth of aggregate mixture shall be a minimum compacted depth of 7
½”.
VERIFICATION - Verify finished grade elevation and depth of sand and permeable aggregate mixtures utilizing
laser operated survey instruments.

Final grading of the sand leveling course and aggregate underlayment shall be accomplished utilizing dual plane or
conical laser operated equipment (no exceptions!) capable of the following tolerances:

Finished grade elevations of the field shall be within plus 0.00 or minus 0.075 inch with no variations of more than
0.25 inch in 25 feet of the designed elevations. Provide certified record drawings of final finished grade elevations to
Owner’s representative upon completion of and prior to the installation of the infill synthetic turf. See spec. 02310.

RECORD DOCUMENTS- Keep up to date red-lined record documents, as the job progresses and make available to
Owner’s representative for inspection at all times. Revise drawings as required to indicate field changes made
during installation. Final record documents shall be provided to the Owner upon completion of the project and in
AutoCAD format.

3.03 SYNTHETIC TURF INSTALLATION

Perform all work in strict accordance to the drawings, shop drawings and manufacturer's specifications and
instructions.

Verification: The Playing Field Contractor is responsible for inspecting, verifying, and accepting all installed work
of this section.
Environmental Conditions: **Do not work when**: Ambient air temperature is below 10 degrees C.
Material temperatures are below 10 degrees C.
Conditions exist, or are pending, that will be unsuitable to the installation of the system.

3.04 INSPECTION OF SYNTHETIC TURF MATERIALS

Prior to installation, and immediately upon delivery of synthetic turf system materials to the project site, the Synthetic Turf Surfacing Playing Field Contractor shall inspect material as follows:
For damaged or defective items;
Measure turf pile height and thickness of each roll;

Reject damaged materials and all materials out of tolerance with this specification.

After installation, inspect project area for acceptable seaming, adhesive bonding, and uniformity of color of turf, field lines and markings, insert installations, edge details.

Remove and/or repair deficient workmanship prior to requesting the Owner’s representative’s inspection pursuant to completion and acceptance of the work.

3.05 OWNER'S TEST OF SYNTHETIC TURF MATERIALS

Owner may have samples of the turf submitted and tested for verification of conformance to specifications. Turf system acceptance is subject to the results of these tests.

Any material so tested and found not conforming to specification will be rejected and replaced with material conforming to the specification at Synthetic Turf Surfacing Playing Field Contractor's expense. Resubmittal will be required.

3.06 SYNTHETIC TURF INSTALLATION

Bonding of Material Surfaces: The bonding or fastening of all system material components shall provide a permanent, tight, secure and hazard-free, athletic playing surface.

3.07 SYNTHETIC TURF IN-FILL INSTALLATION

The in-fill material shall be applied in a dry condition and when the synthetic turf is dry.

The in-fill material shall be applied in uniform layers. After application of each layer the synthetic turf shall be dragged to distribute the in-fill material uniformly to the backing.

3.08 FIELD CLEANING

Remove all excess materials of all types, equipment, debris, etc., from the site immediately after completion of the work.

Remove all stains and other blemishes from all finished surfaces.

Leave work in clean, new appearing condition, ready for use by Owner.

3.09 PROTECTION

Adequate protection of materials and work from damage will be the responsibility of the installer during installation and until acceptance of their work. Playing Field Contractor will be responsible for protection after the acceptance of the work until final acceptance of all contract work by the Owner.
All material damaged prior to acceptance by the Owner shall be replaced at no cost to the Owner.

3.12 EXTRA MATERIALS

Deliver to Owner all extra materials herein specified. Receive Owner's written receipt for all materials. Deliver receipt to Engineer.

Turf for future repairs: Material may be roll ends or cutoffs; however, each piece of fabric shall be at least 5’ x 10’. One green turf piece shall be at least 10’ x 30’. The following are minimum areas for the extra synthetic turf materials to be provided by the Synthetic Turf Surfacing Playing Field Contractor to the Owner:

Minimum Quantities:

- Green infill Turf: 1000 sf
- Crumb Rubber infill: five (5) tons

Dragging Equipment: Provide one (1) Synthetic Turf Groomer with GreensSlicer Spring Tine Rake as supplied by GreensGroomer Worldwide, Inc., 1-888-298-8852

END OF SECTION 02635