

INFILLED SYNTHETIC TURF SYSTEM SPECIFICATIONS

PART I – GENERAL

1.1 SUMMARY

- A. The work under this section shall consist of furnishing all labor, materials, and equipment necessary to install, in place, all synthetic turf and other materials as indicated on the plans and as specified herein. The installation of all new materials shall be performed in strict accordance with these specifications, the turf provider's instructions and in accordance with all details and shop drawings.
- B. This system is to replace an existing infilled synthetic turf system that was damaged by flooding. It will require repair or replacement of base and subdrainage.

1.2 SUBMITTALS

- A. Substitutions: Products other than "AstroTurf® XPe" are acceptable if in compliance with all requirements of these specifications. Submit alternate products with the bid proposal and provide the following:
 - 1. Provide all specifications, product data, certification and required information for proposed alternate. It is the responsibility of the bidder to prove that the product substitution is equal to or greater than the product specified.
 - 2. Provide a sample copy of insured warranty and insurance policy information
 - 3. Provide a sample (8.5" x 11") of the product substitution
- B. Product Data: For each type of product indicated.
 - 1. Submit catalog cuts, material safety data sheets (MSDS), brochures, specifications, preparation and installation instructions and recommendations.
 - 2. All supplied and installed materials and products will meet or exceed the minimum specifications designated in this section. Sufficient data must be submitted to indicate compliance with the Contract Documents.
 - 3. Submit instructions for installation.
- C. Test Results: The following test results, certified by a licensed independent testing laboratory, shall be submitted as outlined below
 - 1. With the bid – Mandatory and minimum specifications as shown in Part 2. Bids not meeting the minimum specifications will be rejected.
 - 2. Upon completion of the installation of the infill (including anti-static applications)— Installer Supervisor must measure and record infill depth using a three-prong depth tester for Turf and Tracks with analog or digital readout. At ten separate field locations, three data points should be recorded by measuring the infill depth in a

triangular pattern approximately 12" – 18" apart. At each of the ten testing locations, the three data points should be averaged. Any location that does not measure 1.46" in depth or more must be corrected.

3. At completion of project – Dynamic Cushioning Test according to ASTM F-355-95, Procedure A and Standard F-1936-98 only if the finished product is to be used for American Football.
- D. Shop Drawings: Show fabrication and installation details for synthetic turf including, but not limited to:
1. Proposed locations of all seams in fabric surfacing. Show installation methods and construction.
 2. Field lining and marking - Submit a complete scale and dimensional drawing of inlaid or tufted-in field lines and marking boundaries. Include graphics for end zones and center logo artwork for approval as well.
 3. All submittals shall be provided within 14 days after Notice to Proceed
- E. The Turf Provider / Installer shall provide the following samples of the artificial turf selected for this project
1. An 8.5" x 11" minimum sample of the exact synthetic turf and infill system that is specified for this project.
 2. Infill mix in accordance with product specifications
- F. Turf Provider Certificates: Certified list of fifteen (15) existing installations of a synthetic turf and infill system within the last three years, including Owner Representative and telephone number, attesting compliance with quality assurance information. All must be located within the continental United States.
- G. With the bid - Proof that the Turf Provider/Installer is a member, in good standing, of the Synthetic Turf Council
- H. With the bid – Sample Warranty: Provide a sample pre-paid third party insured warranty with the bid. Policy must be in force at the time of the bid.
1. The Contractor shall provide a warranty to the Owner that covers defects in materials and installation workmanship of the turf for a period of eight (8) years from the date of substantial completion. The turf provider must verify that their representative has inspected the installation and that the work conforms to the turf provider's requirements and any written directives. The warranty shall include general wear and damage caused from UV degradation. Other items that must be addressed include the following:
 - a. Acceptable uses for the field
 - b. Fading
 - c. Color match within specifications
 - d. Excessive fiber wear
 - e. Wrinkling and panel movement

- f. Shock absorbency (Gmax)
 - g. Seam integrity
 - h. Drainage (through the turf only)
- 2. Exclusions shall include the following:
 - a. Vandalism
 - b. Acts of God
- 3. The warranty shall be fully third party insured for the entire 8-Year term and be non-prorated. Warranties that include language which pro-rates benefits shall cause the provider's bid to be rejected. Prior to final payment for the synthetic turf, the Contractor shall submit to the Owner, this policy guaranteeing the warranty to the Owner. Insurance must reflect the following values:
 - a. \$5,000,000.00 per each insured warranty
 - b. \$15Million dollar annual aggregate for all warranties issued during each 12 month period of the 8-Year warranty
 - c. Policies that are backed by a Letter of Credit are not acceptable
 - d. Policy must be issued by an A- rated or greater A.M. Best Rating
 - e. Policies that include self-insurance or self retention clauses shall not be considered. Policy can not include any form of deductible amount. Policy must be in force at the time of the bid.
- I. With the bid – Turf provider must attest that their submitted products infringe on no known patents.
- J. Maintenance and Operations Data: At the completion of the project submit 3 complete sets, in manual form, of all the turf provider's recommended procedures and materials for, but not limited to general maintenance, line/marketing installation, small repair procedures, cleaning, etc.
- K. Project Record Documents: Record actual locations of seams, drains, and other pertinent information in accordance with the General Requirements

1.4 QUALITY ASSURANCE

A. Turf Provider Qualifications

1. Shall be experienced in the installation of synthetic infill grass for a minimum of five (5) years.
2. Shall have a minimum of 500 full sized tall fiber infilled type field installations. Field size to be a minimum of 65,000 square feet to qualify. This list is to be provided with the bid.
3. Shall provide third party certification confirming compliance with referenced standards.

B. Installer Qualifications:

1. Installation team shall be an established, insured installation firm experienced as a premium turf installer with suitable equipment and supervisory personnel, with a minimum of five years experience with 15 foot wide tufted materials.
 2. Installation team shall be trained and certified, in writing, by the turf provider, as competent in the installation of the specified material, including seaming and proper installation of the infill mixture.
 3. Site superintendent shall have at least 10 installations similar to this type.
- C. 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, 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 and directly into prepared granular base and into the field drainage system.
- D. The synthetic turf and components shall be of national reputation. The turf fabric shall be installed by factory-authorized distributors directly employing the installation crew.

1.5 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit synthetic turf work to be performed according to Contractor or Turf Provider's written instructions and warranty requirements.
- B. Field Measurements: Indicate measurements on Shop Drawings.

1.6 WARRANTY – Special warranty for American Football: Turf must maintain an ASTM F 355 Gmax of less than 175 for the life of the warranty. This is for the entire warranty period of eight (8) years.

1.7 MAINTENANCE SERVICE – Turf Installation Contractor shall train maintenance staff and/or contracted maintenance staff in the use of the recommended maintenance equipment and provide maintenance guidelines to the facility maintenance staff.

PART TWO – PRODUCTS

2.1 TURF MATERIALS

A. Synthetic Turf System: A complete synthetic turf system consisting of 10,000 denier parallel slit film fibers. Pile height shall be nominal 2.0". Fibers shall be tufted to a primary backing and a mechanically applied adhesive secondary backing.

1. The tufted fiber shall not weigh less than 48 ounces per square yard. The tufted rows of fiber are to be spaced no more than 3/8" apart. ASTM tests proving the fiber meets these qualifications must be provided with the bid. Turf systems that do not meet this specification will be disqualified.
 2. The carpet's primary backing shall be comprised of three layers (18 pic polypropylene, 13 pic polypropylene, reinforced by a non-woven PET cap fiber layer). This backing is to have a minimum weight of 8 oz per square yard. The carpet shall then be coated with a secondary backing of Biocel™ Polyurethane synthetic coating material with a minimum application rate of 20 ounces per square yard and then perforated for adequate drainage. Carpets that are not perforated for adequate drainage shall not be acceptable.
 3. The carpet shall be delivered in 15' wide rolls. The rolls shall be of sufficient length to go from sideline to sideline. Head seams, other than at sidelines, will not be acceptable.
- B. The pile surface shall provide good traction in all types of weather with the use of conventional sneaker type shoes, composition mold sole athletic shoes, baseball spikes and screw-on football spikes.
 - C. The pile surface shall be suitable for both temporary and permanent line markings using acrylic paint, as per the turf provider's recommendations.
 - D. All adhesives used in bonding the seams shall be resistant to moisture, freeze/thaw, bacteria and fungus attacks, and resistant to ultraviolet radiation. The adhesive shall be made especially for the adhesion of synthetic turf seams. E. All panel seams shall be sewn.
 - F. As Alternate #1, the entire turf system shall be protected with a factory-applied antimicrobial treatment.
 - G. Supply field groomer and sweeper or single maintenance apparatus that performs basic maintenance functions.
 - H. Perimeter edge details required for the system shall be as detailed and recommended by the turf provider, and as approved by the turf provider.

2.2 TURF FABRIC SURFACE

- A. The pile surface shall resemble freshly mown natural grass in appearance, texture and color.
- B. The pile surface shall be nominally uniform in length.
- C. The pile fiber angle shall be 90 degrees ± 15 degrees, measured from the horizontal after installation of the infill material.
- D. The entire system shall be resistant to weather, insects, rot, mildew and fungus growth and will be non-allergic and non-toxic.
- E. The synthetic turf system shall have a nominal fiber length of 2.0".

- F. Each roll shall be minimum 15' wide
- G. The entire system shall be constructed for porous standards as specified. Synthetic turf system shall be perforated at 4 – 6" on center. Systems that are not perforated for maximum drainage shall not be acceptable.
- H. All markings shall be tufted in-place, inlaid or glued. It is recommended that the maximum amount of markings be factory-prefabricated into the turf system prior to shipment to site. At a minimum all football markings (with the exception of hash marks) shall be factory prefabricated in white and all soccer markings in yellow..

2.3 PRODUCT SPECIFICATIONS - TURF

A. Face yarns shall be comprised of:

- 1. Proven athletic-quality, outdoor-stabilized 10,000 denier non-texturized parallel slit film polyethylene fibers.

B. The fabric shall possess the following minimum physical characteristics. ASTM testing shall be provided with the bid and any products not meeting the minimum physical characteristics will be rejected:

| | | |
|---------------------------------|-------------|--------------------------------------------------------|
| Average Pile Yarn Weight | ASTM D 5848 | 48 oz/square yard |
| Average Total Weight | ASTM D 5848 | 76 oz/square yard Secondary |
| Backing Weight | ASTM D 5848 | 20 oz/square yard |
| Primary Backing | ASTM D 5848 | 8 oz/square yard |
| Average Tuft Length | ASTM D 5823 | 2.00" |
| Tufting Gauge | ASTM D 5793 | 3/8" maximum |
| Tuft Bind | ASTM D 1335 | > 8 lbs |
| Yarn Denier (slit film fiber) | ASTM D 1577 | 10,000/1 |
| Fiber Thickness | ASTM D 3218 | 100 microns |
| Surface Flammability | ASTM D 2859 | 8 of 8 PASS |
| Permeability | ASTM F 1551 | >30 |
| Melt Point | ASTM D 789 | 248 degrees Fahrenheit |
| Gmax System (American Football) | ASTM F 355 | <125 at installation < 175 over life of warranty |

2.4 Infill Material

A. Infill composition shall consist of a ballast layer of silica sand topped by ambient SBR rubber performance infill in a 70% rubber / 30% sand ratio. B. Silica sand infill:

1. Must be clean, sub-angular silica sand
 2. Must be a 20-40 sieve size.
- C. SBR infill:
1. Must be ambient SBR Rubber
 2. Must be a 10-20 sieve size.
- D. Immediately after infill layers are installed, infill depth must be measured per testing protocol detailed in Section 1.3 C. 2 above to ensure that infill layer is at least 1.46" deep.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for visual installation tolerances. Proceed with installation only after satisfactory conditions have been corrected.
- B. Certification of prior work: The synthetic turf provider and / or installation contractor shall perform a visual inspection of the field base onto which the synthetic turf system is to be installed and to examine the finished surface for required compaction, and grade tolerances(through string line testing). After any discrepancies between the required materials, application and tolerance requirements noted have been corrected, the synthetic turf installer should submit a written certification of VISUAL acceptance of the base for installation of the synthetic turf system. Any tests other than VISUAL tests (string line, water hose, etc...) shall be the responsibility of the General Contractor or Landscape Architect.
- C. Installation of all materials shall be performed in full compliance with approved project shop drawings. Only factory trained technicians skilled in the installation of athletic caliber synthetic turf systems, working under the direct supervision of the turf provider's supervisors, shall undertake the placement of the turf system. The designated Supervisory personnel on the project must be certified, in writing by the turf provider as competent in the installation of these materials, including proper seaming and proper installation of the infill mixture. The turf provider shall certify the installation and warranty compliance.

3.2 PREPARATION

- A. Inspect delivered field surface fabric and components immediately prior to installation. Any damaged or defective items shall be rejected. Installed artificial system shall be inspected for, but not limited to, the following:
 1. Uniformity of product and color
 2. Surface bubbles

3. Field markings
 4. Field Edge installation
 5. Pile height of each roll shall be measured. Any material(s) that does not meet minimum height and thickness specifications shall be rejected. Pile height shall be measured in its finished positions.
- B. Environmental Conditions: Weather conditions are important for the successful installation of the systems. No work under this section will proceed when:
1. Ambient temperatures are below 45 degrees F.
 2. Material temperatures are below 45 degrees F.
 3. Surfaces are wet or damp
 4. Rain is imminent or falling.
 5. Conditions exist or are imminent, which will be unsuitable to installation requirements of the systems specified herein. Humidity levels will be inside the limits recommended by the adhesive manufacturer to obtain optimal bonding characteristics of the surfaces.

3.3 INSTALLATION OF THE SYNTHETIC TURF

- A. The full width rolls shall be laid out across the field. When all of the rolls of the playing surface have been installed, the sideline areas will be installed at right angles to the playing field turf. All work shall be such that the seams shall remain as required for the duration of the warranty period at a minimum. All seam widths are to be held to a minimum and shall be traverse to the field direction. Seams shall be flat, tight and permanent with no separation or fraying.
- B. The perimeter of the field shall be firmly secured to the edge anchors for the life of the warranty and in accordance to project details.
- C. Resilient Infill
1. The sand ballast infill material shall be spot inspected and tested for conformance to sieve specifications.
 2. Sand ballast Infill must be placed in such a way as to minimize fiber entrapment.
 3. The rubber infill must be uniformly applied so as to ensure uniform, predictable surface.
 4. After infill layers are installed, infill depth must be measured to ensure that infill depth is at least 1.46" deep.

3.4 Field Lining and Markings

- A. General: A complete field "Lining, Marking and Field Boundary" system will be provided with the installation of the surfacing system specified herein. All markings shall be installed in accordance with prior approved project Shop Drawings.

- B. Inlays shall conform to the turf provider's specifications, directions and recommendations for the best results.
- C. Striping layouts shall be accurately surveyed by the Contractor before installation of inlaid field markings
- D. Install inlays only when the surface is completely dry. Adhere all inlays securely into place. Never loose-lay and sew an inlay into place.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing and inspecting of completed applications of synthetic turf system shall take place in suggestive states, in areas of extent and using methods that are industry standard. Do not proceed with application of next stages until test results for previously completed applications show compliance.
- C. Remove and replace items where test results indicate that it does not comply with specified requirements.

3.6 FINAL ACCEPTANCE

- 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.

3.7 CLEANING

- A. Contractor shall provide the labor, supplies and equipment as necessary for final cleaning of surfaces and installed items. All usable remnants of new material shall become the property of the Owner. The Contractor shall keep the area clean throughout the project and clear of debris. 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 Owner.