

## SECTION 32 17 23.28 – INFILLED SYNTHETIC TURF SYSTEM

### PART I – GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

#### 1.2 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 manufacturer's instructions and in accordance with all details and shop drawings.

#### 1.3 SUBMITTALS

- A. Substitutions: Products other than "AstroTurf® PureGrass™ 8MM" 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 1' x 1' sample of the product substitution
- B. Product Data: For each type of product indicated.
  - 1. Submit manufacturer's 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. At completion of project – Dynamic Cushioning Test according to ASTM F-355-95, Procedure A and Standard F-1936-98.

- 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 Manufacturer / Installer shall provide the following samples of the artificial turf selected for this project
1. A 12-inch x 12-inch 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. Manufacturer Certificates: Certified list of fifteen (15) existing installations of the synthetic turf and infill system that is specified for this project within the last three years, including Owner Representative and telephone number, attesting compliance with quality assurance information. These fields must comply with the materials section of this specification. All must be located within the continental United States. Turf contractor and manufacturer must be one and the same.
- G. With the bid - Proof that the Manufacturer/Installer is a member, in good standing, of the Synthetic Turf Council
- H. With the bid - Proof that the turf is manufactured in the United States of America. Foreign-made turf products are not allowed. Bids including foreign materials will be rejected.
- I. 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 manufacturer must verify that their representative has inspected the installation and that the work conforms to the manufacturer’s requirements and any written directives. The manufacturer’s 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)
    - i. Flammability
    - j. Response time required for repairs / replacement

2. Exclusions shall include the following:
    - a. Vandalism
    - b. Acts of God beyond the control of the Owner or the Manufacturer
  3. The warranty shall be fully third party insured, pre-paid 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. Policy must be issued by an A- rated or greater A.M. Best Rating
    - d. 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.
- J. Maintenance and Operations Data: At the completion of the project submit 3 complete sets, in manual form, of all the manufacturer's recommended procedures and materials for, but not limited to general maintenance, line/marking 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. Manufacturer Qualifications
1. Shall own and operate its own manufacturing plant in the United States. Plant must be capable of extruding its own nylon fiber for the system.
  2. Shall be experienced in the manufacture and installation of the specified type of synthetic infill grass for a minimum of three (3) years.
  3. Shall have its own, in-house laboratory where samples of turf are retained and analyzed. Tests shall be performed at all levels of production from the extrusion process to the tufting process and through to the final stages before the turf is loaded onto the truck for delivery.
  4. Shall provide third party certification confirming compliance with referenced standards including >8 lbs tuft bind.
- B. Installer Qualifications: An authorized representative of the synthetic turf manufacturer for installation and maintenance is required for this Project.
1. Installation team shall be an established , experienced in the field installer, with a minimum of five years experience with 15 foot wide tufted materials.
  2. Installation team shall be certified, in writing, by the turf manufacturer, 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. Source Limitations: Obtain synthetic turf through one source from a single manufacturer. Any Materials (including the fiber itself) manufactured outside of the United States are not acceptable.
- D. All components and their installation method shall be designed and manufactured for use on indoor or 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.
- E. Prior to the bid and / or Landscape Architect approval of a specified synthetic turf system, the company shall specify in writing that their turf system does not violate any other manufacturer's patents, patents allowed or patents pending.

#### 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/Manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Indicate measurements on Shop Drawings.

1.6 WARRANTY – Special warranty: 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 ACCEPTABLE MANUFACTURERS

- A. Pre-Approved manufacturers:
  1. AstroTurf®, LLC – PureGrass™ 8MM  
2680 Abutment Road, SE  
Dalton, GA 30721  
P: (816) 668-6127
  2. Alternate manufacturer is acceptable and must meet and/or be equivalent to all listed requirements, qualifications and specifications.

## 2.2 MATERIALS

- A. Synthetic Turf System: A complete synthetic turf system consisting of 100% in-house manufactured nylon fibers. Yarn cross-section shall be diamond monofilament. Pile height shall be nominal 1.25". Fibers shall be tufted to a woven primary backing and a mechanically applied BioCel™ Polyurethane 8mm foam coating .
  - 1. The tufted fiber shall not weigh less than 56 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 carpets' primary woven backing shall weigh a minimum of 8.0 ounces per square yard and then coated with an 8mm Biocel™ Polyurethane foam weighing no less than 104 ounces per square yard.
  - 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 manufacturer's recommendations.
- D. All adhesives used in bonding the seams shall be resistant to moisture, bacteria and fungus attacks, and resistant to ultraviolet radiation. The adhesive shall be made especially for the adhesion of synthetic turf seams.
- E. Supply field groomer and sweeper.
- F. Perimeter edge details required for the system shall be as detailed and recommended by the manufacturer, and as approved by the manufacturer.

## 2.3 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  $\pm$  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 1.25".
- F. Each roll shall be minimum 15' wide.
- G. All markings shall be tufted in-place, inlaid or glued.

2.4 PRODUCT SPECIFICATIONS

- A. Yarn shall be proven athletic quality 100% nylon diamond monofilament yarn designed specifically for indoor or outdoor use and stabilized to resist the effects of ultraviolet degradation, heat, foot traffic, water and airborne pollutants. Fiber MUST be extruded in-house. Fiber extruded by outside manufacturers shall not be acceptable. 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	56 oz/square yard
Average Total Weight	ASTM D 5848	168 oz/square yard
8mm Coating Weight	ASTM D 5848	104 oz/square yard
Primary Backing	ASTM D 5848	8 oz/square yard
Average Tuft Length	ASTM D 5823	1.25"
Stitches Per Inch	ASTM D 5793	6.5
Tufting Gauge	ASTM D 5793	3/8" maximum
Tuft Bind	ASTM D 1335	> 8 lbs
Grab Tear (L/W)	ASTM D5034	>300 lbs length
Yarn Denier (primary fiber)	ASTM D 1577	8,400 denier / 16 ends
Yarn Breaking Load	ASTM D 2256	>20 lbs
Yarn Elongation	ASTM D 2256	>30%
Pile Composition via FTIR	FTIR	100% Nylon
Surface Flammability	ASTM D 2859	8 of 8 PASS
Melt Point	ASTM D 789	220 Degrees Celcius
Gmax	ASTM F 355	<125 at installation < 175 over life of warranty

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 manufacturer 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 manufacturer'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 manufacturer as competent in the installation of these materials, including proper seaming and proper installation of the infill mixture. The manufacturer 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.
- A. 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 optimum bonding characteristics of the surfaces.

### 3.3 INSTALLATION OF THE SYNTHETIC TURF

- A. The carpet rolls are to be installed directly over the properly prepared base stone. Extreme care should be taken to avoid disturbing the base stone both in regard to compaction and planarity. A 2-5 ton static roller shall be on site and available to repair and properly compact any disturbed areas of the base stone.
- B. 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.

- C. 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.

### 3.4 Field Lining and Markings

1. 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.
2. Inlays shall conform to the manufacturers specifications, directions and recommendations for the best results.
3. Striping layouts shall be accurately surveyed by the Contractor before installation of inlaid field markings
4. 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.

END OF SECTION