

SECTION 00000

SYNTHETIC SPORT FIELD DRAINAGE LAYER

A. **DESCRIPTION**

1. **General:**

The Contractor shall furnish all labor, material, and equipment to complete installation of SYNTHETIC SPORTFIELD DRAINAGE LAYER (SSDL), including all necessary and incidental items, in accordance with the Contract Drawings and these Specifications.

2. **Reference Standards:**

The latest revision of the following standards of the American Society of Testing and Materials (ASTM) are hereby made a part of these specifications.

ASTM 5199, Standard Test Method of Thickness measure.

GRI-GC8, Standard Guide for Determination of the Allowable Flow Rate of a Drainage Material

ASTM D4716, Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using Constant Head.

ASTM 3575 Suffix W, Test Method for Density.

ASTM D 4595, Wide Width Tensile Strength.

ASTM D 4491, Standard Test Method for Water Permeability of Geotextiles by the Permittivity Method.

ASTM D 2334, Standard Test Method for Water Permeability

BS 7044 Method, Paragraph 5, Method 4 Standard for Infiltration Rate.

ASTM F 355-A, Standard Test Method for Shock-Absorbing Properties of Playing Surface Systems and Materials, Procedure A

B. **MATERIALS**

1. The material used shall be manufactured from cross-linked, closed cell polyethylene foam. Material used is clean and free of any foreign contaminants.
2. The drain core of the SSDL shall be manufactured by a fusion process, which bonds the individual particles to each other and bonds them to a non-woven polyester geotextile. The material is heat engraved to provide high flow drainage grooves, and produced to maintain a thickness tolerance of less than a two (2) millimeter variation between rolls.
3. The geotextile of the SSDL shall be spun bound, nonwoven polyester geotextile.
4. Rolls shall be produced to traverse the width of the sport field without
5. The SSDL shall be Sport Drain_{Max} manufactured for Engineered Sport Field Solutions (ESS) (410-734-6025), or engineer approved equivalent drainage material (aggregate). For any natural drainage material alternative, design and performance demonstration must be submitted for Architect/Engineer's approval
6. Any alternative SSDL material submitted for Architect/Engineer's approval must demonstrate performance equivalency to the properties as listed in **Table 1**. Any alternative drainage material to be considered for approval must be submitted to Architect/Engineer 3 days prior to the pre-bid meeting or 2 weeks prior to the bid date, whichever happens first. After such date no alternative drainage material will be considered.
7. The manufacturer of the alternative SSDL shall submit documents for the Architect/Engineer's review that the SSDL to be supplied to the project site has proven installation. As a minimum, the manufacturer shall certify that:
 - (a) The proposed SSDL has been successfully installed in projects totaling at least 1 million square feet.
 - (b) The proposed SSDL has been installed in at least 5 projects larger than 50,000 square feet that have been in operations for a minimum three years.
 - (c) It has not supplied any SSDL that has been documented to be contributing towards a catastrophic system failure.

TABLE 1: REQUIRED SPORT DRAIN LAYER PROPERTIES (SSDL)

PROPERTY	TEST METHOD	UNITS	VALUE
Structure	95% Recycled Cross-linked, closed cell polyethylene foam		
Thickness (mm)	ASTM 5199	mm	20 +/- 2 mm
Weight		lb/sq. ft	0.9
Density (min.)	ASTM 3575 Suffix W	lb/ft ³	10-12
Tensile Strength	ASTM D 4595	psi	MD 40 TD: 39
Permittivity	ASTM D 4491	Sec-1	3.235
Shock Attenuation ¹	ASTM F 355A Gmax		88 Aggregate 97 Concrete
Infiltration Rate	BS 7044 Method 4	In/Hour	>42
Transmissivity ² – Machine Direction MD (min.)	ASTM D 4716 GRI-GC8	Gal/min/ft (m ² /sec)	>200 4 x 10E-02
Permeability	ASTM D 2434	Gal/Min/SF	>34

Notes

- Shock Attenuation Testing shall be conducted on an aggregate sample that is compacted to a standard proctor of 95%.
- Transmissivity tests shall be conducted at a normal compressive load shall be 500 PSF at hydraulic gradients of 0.01. Testing boundary conditions from the top to bottom are: upper steel load plate/ Sport Drain _{MAX} / Geomembrane / lower load plate with a minimum seating period of 100 hours.

C. **SUBMITTALS**

The Contractor shall submit the following to the Engineer:

1. **Mill Certificate and Sample:** Prior to shipping to the site, the Contractor shall submit one copy of a mill certificate or affidavit signed by a legally authorized official of the Manufacturer for the SSDL attesting that the SSDL meets the physical and manufacturing requirements stated in these Specifications. The Contractor shall also submit a sample (12" x 12") of the SSDL to be used. The sample shall be labeled with the product name and be accompanied by the Manufacturer's specifications.
2. **Shipping, Handling, and Storage Instructions:** The Manufacturer's plan for shipping, handling, and storage shall be submitted for review.

D. **CONSTRUCTION**

1. Handling and Placement
 - a. After the substratum/geomembrane has been installed/ constructed, tested and approved by the Architect/Engineer, the surface shall be cleaned and free of excess dirt and debris.
 - b. Manufacturer's representative shall be onsite the first day of product installation. Representative shall instruct SSDL installer on installation methodology to ensure proper product installation.
 - c. The Contractor and the Installer shall handle all SSDL in such a manner as to ensure it is not damaged in any way. Precautions shall also been taken to prevent damage to underlying layers during placement of the SSDL.
 - d. The predominant flow direction of the SSDL is in the machine direction (roll direction), and thus should be installed in the intended direction of flow. This is generally achieved by deploying the product directly down the slope unless an alternative drainage path is specified by the Architect/Engineer.
 - e. In the presence of wind, all SSDL shall be ballasted. Such ballast shall be installed during placement and shall remain until replaced with cover material.

E. **MEASUREMENT AND PAYMENT**

All work required for the SSDL shall be included for payment in the Contractor's Lump Sum Price for Item X.X, wherein no measurement will be made.

END OF SECTION