

SECTION 00000

SYNTHETIC SPORT FIELD IMPACT and DRAINAGE LAYER

PART 1 GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish all labor, material, equipment, and incidentals required to install a polyethylene-encapsulated SBR granules extruded SYNTHETIC SPORTFIELD IMPACT DRAINAGE LAYER (SSIDL) as shown on the drawings and as specified herein. The SSIDL will be perforated to allow vertical drainage into an existing stone drainage layer.

1.02 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 SSIDL attesting that the SSIDL meets the physical and manufacturing requirements stated in these Specifications. The Contractor shall also submit a sample (12" x 12") of the SSIDL 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.

1.03 REFERENCE STANDARDS

A. American Society of Testing and Materials (ASTM)

1. ASTM D624-00 Standard Test Method for determining Tear Resistance
2. ASTM D3574-05 (Test E) Modified Test Method for determining Tensile Strength
3. ASTM D5199, Standard Test Method of Thickness measure.
4. ASTM D4716, Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width.
5. ASTM D2126-09 Standard Test Method for determining response to thermal and humid aging.
6. ASTM D3575-08 Standard Test Method for determining water absorption.
7. ASTM F1936 Standard Test Method for determining Shock Absorption Gmax and HIC.
8. ASTM DF355-10a Standard ASTM Test Method for determining Impact attenuation of playing surface systems and materials.
9. ASTM DF1551-09 Standard ASTM Test Method for determining Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials – water permeability
10. ASTM D1621 Standard Test Method for determining compression strength

PART 2 PRODUCTS

2.01 MATERIALS

- A. The extruded thermoplastic elastomer polyolefin composite SYTHETIC SPORT FIELD IMPACT DRAINAGE LAYER (SSIDL) shall be manufactured by extruding a blend of thermoplastic elastomer and polyethylene that forms a three dimensional structure. The SSIDL pad will be perforated to allow vertical drainage into an existing stone drainage layer.
- B. The SSIDL shall have a heat engraved vertical ridge manufactured in the machine direction on the top surface with a honeycomb structure on the bottom surface that proper impact attenuation, lateral confinement and dimensional stability.
- C. The SSIDL shall have a locking ridge on each edge of the manufactured SSIDL that allows for the adjoining edge of two panels to be secured to one another as shown in the drawings.
- D. The SSIDL shall have a minimum of two Expansion and Contruction Joints to absorb lateral movement under temperature variation, granting a lateral coefficient of Linear Thermal expansion of less than 0.0025 in/ft.
- E. The SSIDL shall have a minimum density of 27.8lb/f3
- F. The SSIDL shall have a min water storage capacity on the top layer of ½ gal sqyd
- G. The SSIDL shall be **ShockDrain 580** as manufactured by EN-PLAST Technology Systems, LLC (17510 Carlsway Road, Houston, TX 77073 www.en-plast.us), or engineer approved equal.
- H. Alternative SSIDL material shall be submitted for Architect/Engineer's approval and must demonstrate performance equivalency to the properties 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.
- I. Alternative SSIDL materials that fail to have top drainage channels and to meet the specifications herein and properties listed in **TABLE 1** will not be accepted.

2.02 DELIVERY, STORAGE, AND HANDLING

- A. The SSIDL shall be shipped, stored and handled in accordance with Manufacturer's recommendations as specified herein.
- B. The SSIDL shall be stored in such a way that it is protected from construction damage.
- C. Rolls shall be stacked in a pyramid configuration with a maximum of 2 rolls high.
- D. The lowest rolls shall be held off the ground by means of pallets or other similar methods.

2.03 MATERIAL WARRANTY

- A. The Contractor shall furnish the Owner a written warranty from the SSIDL manufacturer that shall warrant the material against manufacturing defects and conform to the specifications stated herein at the time of delivery for a minimum of 25 years. Furthermore manufacturer should warranty a min GMax of 120 for at least two years of turf cycle..
- B. Should a defect occur, which is covered under warranty, the Warrantor shall bear all costs for the repair and/or relocation and replacement of the SSIDL.

SHOCKDRAIN 580

drainage, pad, liner

TABLE 1

Material Properties	Unit	Values ¹
Composition	Composite	Thermoset Elastomer, Polyolefin Composite
Composite Ballast²	lbs/ft ² (kg/m ²)	0.94 (4.6)
Nominal Thickness	mils (mm)	580 (15)
Core Thickness	mils (mm)	99 (2.5)
Thermal and Humid Aging³	%	<1%
Water Absorption⁴	lbs/ft ² (kg/m ²)	0.02 (<0.06)
Tensile Strength⁵	lbs/ft	1200 (MD) 1200 (TD)
Elongation at Break⁵	%	(MD) 120 (TD) 120
Compression Set⁶	lbs/sf	1,000 5,000 10,000
	% (min)	(100%) (95%) (70%)
Coefficient of Linear Thermal Expansion¹³	in/ft	0.003

Hydraulic Properties	Unit	Values ¹
Transmissivity⁷	gpm/ft(m ² /sec)	120
Infiltration Rate (Perforated)⁸	in/hr	140

Shock Absorbing Properties	Values ¹	Chemical Properties	Values ¹
Impact Attenuation (Gmax⁹)	90	Polycyclic Aromatic Hydrocarbon¹¹	No Detectable Level
HIC⁹	1.3	Common Metals¹²	No Dispersion Above Limit
Advance Artificial Athletes¹⁰	Upon Request		

Dimensions and Delivery
The product shall be delivered to the jobsite in roll form with each roll individually identified and nominally measuring from 4 ft. in width by 206 ft. in length. The typical truckload quantity is 60 rolls. Custom roll lengths available upon request.

PART 3 EXECUTION

3.01 INSTALLATION

A. Panel Placement and longitudinal Field Seams

- Care shall be taken to keep the SSIDL clean and free from debris prior to installation. If the SSIDL is not clean, it shall be washed prior to installation.

2. The SSIDL shall be installed in such a manner as to ensure that it is not damaged in any way, and the following shall be complied with during installation.
 - A. The installer shall place the En-Plast ShockDrain 580 material in the proper manner at the elevations and alignment as shown in the construction drawings and as directed by the Engineer.
 - B. Install En-Plast ShockDrain 580 in-conjunction with the synthetic turf deployment, allowing no more than 25 yards of En-Plast ShockDrain 580 to be exposed ahead of artificial turf. It is important to roll out the En-Plast ShockDrain 580 with the roofed end of the roll on top. After the first roll is deployed and positioned, a second roll is deployed adjacent to the previous roll. The roofed section of the second roll is then connected to the last channel of the first roll to assure a positive connection along the entire length of the roll. Care should be taken to make sure this positive connection is achieved throughout the entire length of the roll. Securing the longitudinal Joints is required before the turf is installed on the Enplast ShockDrain material.
 - C. The SSIDL shall be tight and flat on the underlying substrate. Care shall be taken to ensure that wrinkles do not occur.
 - D. For protection and proper performance, no machinery or equipment shall be allowed on the SSIDL unless previously approved by the Engineer and Manufacturer. Use of a low ground pressure All-Terrain Vehicle (ATV) that exerts a maximum of 6 psi may be used to install the geosynthetics if approved by the Engineer and Manufacturer. Vehicles, machinery, and equipment shall be operated to avoid abrupt stops, starts, and/or turns.
 - E. The SSIDL shall be cut using scissor or other cutting tools approved by the engineer. Care shall be taken to not leave tools on the SSIDL after installation.

B. Field Seams

1. The following requirements shall be met during installation of the SSIDL:
 - A. All butt seams shall be glued with 12 inch seaming tape and glue, such as Helmitin Helmicol 3407 or approved equal. Adhesive manufacturer's instructions should be followed completely. Butt seams should be followed completely. Butt seams should be ballasted until the adhesive is cured. Any rips, tears or damage areas on the deployed En-Plast ShockDrain 580 shall be removed and patched by placing a patch sized and seamed with the approved seaming materials.
 - B. Field Seams
 - C. Butt Seams

END OF SECTION