Section 33 4600 Subdrainage

**PART 1: GENERAL**

1.1 DESCRIPTION OF WORK

1. The contractor shall furnish all labor, material and equipment to complete installation of a SYNTHETIC TURF IMPACT AND DRAINAGE LAYER (STIDL) including all necessary and incidental items, in accordance with the Contract Drawings and these Specifications.
	1. RELATED WORK SPECIFIED ELSEWHERE
2. Section 22 1420 - Storm Drainage Piping

Section **31 2300 - Excavation and Fill**

Section 32 1820 - Athletic & Sports Surfaces

Section 32 1826 - Artificial Grass Surfacing

Section 32 1822 - Synthetic Athletic & Sports Surfacing

Section 33 4000 - Storm Drainage Utilities

Section 32 1815 – Synthetic Turf Drainage Layer

1.3 REFERENCE STANDARDS

The latest revision of the following standards of the American Society of Testing and Materials (ASTM) and the European committee for standardization (CEN) are hereby made a part of these specifications:

1. ASTM D 3575, [Standard Test Methods for Flexible Cellular Materials Made From Olefin Polymers](file:///C%3A%5CUsers%5Cchrisc%5CAppData%5CStandards%5CD3575.htm) - Compressive Strength, Tensile Strength, Compression Set
2. ASTM D 4491, [Standard Test Methods for Water Permeability of Geotextiles by Permittivity](file:///C%3A%5CUsers%5Cchrisc%5CAppData%5CStandards%5CD4491.htm).
3. ASTM D 4716, [Standard Test Method for Determining the (In-plane) Flow Rate per Unit Width and Hydraulic Transmissivity of a Geosynthetic Using a Constant Head](file:///C%3A%5CUsers%5Cchrisc%5CAppData%5CStandards%5CD4716.htm)
4. ASTM F 355 (method A), [Standard Test Method for Impact Attenuation of Playing Surface Systems and Materials](file:///C%3A%5CUsers%5Cchrisc%5CAppData%5CStandards%5CF355.htm).
5. ASTM 5199, Standard Test Method of Thickness Measure.
6. ASTM D 696, Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30°C and 30°C with Vitreous Silica Dilatometer.
7. ASTM D 2126, Response of Rigid Cellular Plastics to Thermal and Humid Aging.
8. ASTM D 2126, Water Absorption – Flexible Cellular Materials Made From Olefin Polymers
9. ASTM E 96, Water Vapor Transmission
10. EN 1177, Impact Attenuating Playground Surfacing - Determination of Critical Fall Height.
11. EN 12616, Surfaces for Sports – Determination of Water Infiltration Rate.
12. EN 12667, Thermal Performance of Building Materials and Products - Determination of Thermal Resistance.
13. ISO 8295, Plastics – Film & Sheeting – Determination of the Coefficient of Friction.
14. EN 14808, Shock Absorption
15. EN 14809, Vertical Deformation

1.4 SUBMITTALS

1. Provide three (3) 12 x 12 inches samples of the STIDL.
2. Provide technical specifications, containing the typical values for the reference standards (as per 1.3), of the STIDL.
3. Provide installation manual of the STIDL.
4. Provide MSDS of all products to be used for installation.
5. The manufacturer of the STIDL shall prove that the proposed STIDL has been successfully installed on a minimum of five (5) similar size fields or larger that have been in use for three years or more.
6. Manufacturer warrants that it has not supplied any SSIDL that has been documented to be contributing towards a catastrophic system failure.
7. Declaration of Conformity (DoC) and site sample: Prior to shipping to the site, the Contractor shall submit (a) a DoC stating that the delivered STIDL is tested according the ISO 9001 certified control scheme and that the values meet the typical values of the provided technical specifications., and (b) a sample (12" x 12") of the STIDL to be delivered to site.

1.5 WARRANTY

1. Manufacturer of the STDL will provide to the Owner a twenty-five (25) year warranty that covers the Drainage/Performance Pad under normal and ordinary use of the product, which is considered as usage up to 2000 hours per year of regular play.

**PART 2: PRODUCTS**

2.1 SYNTHETIC TURF DRAINAGE LAYER (STDL)

1. Standard of Quality shall be: ShockWave 430 as manufactured and warranted by:

 Enplast Technologies

 Houston, TX 77073

Distributed by:

SportsEdge®

P.O. Box 837

259 Murdock Rd.

Troutman, NC 28166

PH: 800.334.6057

info@sportsedge.com

www.sportsedge.com

1. Materials
2. The STDL shall have the following components and attributes:
	* 1. The drain core of the SSIDL shall be manufactured by a fusion process, which bonds 82% of ELT (end of life tires) with 13% of EVA and 5% of low density polymer. The material is high pressured formed to provide high flow drainage grooves. **\*Note: specifiers to select from the following two options:**
3. Part # SESW2430-V ShockWave with holes for vertical drainage applications.
4. Part # SESW2430-H ShockWave with no holes for horizontal drainage applications.
	* 1. The STIDL shall be manufactured in rolls 4’ wide and sufficient length to traverse the entire width of the field.
		2. The STIDL sheets shall contain in-plane drainage channels for lateral water flow.
		3. The STIDL shall be supplied by a certified STC member.
		4. The STIDL shall be manufactured from a minimum of 80% recycled material by weight and be 100% recyclable.

## **PART 3: EXECUTION**

3.1 STDL HANDLING AND PLACEMENT

1. The Contractor and the Installer shall handle the STIDL with caution to ensure it is not damaged in any way. Precautions shall also be taken to prevent damage to the sub-base during the installation of the STDL.
2. Prior to the STIDL installation, the sub-base shall be tested and approved by the Architect/Engineer.
3. All installed STIDL shall be ballasted as required to prevent displacement by severe wind conditions. Such ballast shall be placed during installation of the STDL and shall remain until installation of synthetic turf.
4. Manufacturer's representative shall be on site at the first day of STIDL installation. This representative shall instruct the STIDL installer on installation method to ensure proper product installation.

3.2 STIDL INSTALLATION

1. If sub-base is subject to external water sources (i.e. high water table, flowing ground water, etc.), design should include sub-base drainage or a separation layer to protect the base from moisture that may migrate up from the sub-base.
2. The predominant flow direction of the SSIDL 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.
3. Place a suitable leveling course, a minimum of 2” thick, precisely graded, on the sub-base and compact to a minimum of 95% standard Proctor.
4. Install per the manufacturer’s published instructions and as indicated on the plans and drawings.

END OF SECTION