Technical Guidelines

Brock Shock Pad Series 15 (SP15XL)

Synthetic Sub-Base System for Synthetic Turf Fields

Materials, Installation, and Performance Guidelines for Synthetic (Drainage and Impact) Underlayment

This document does not create any warranty, express or implied. Limited warranties will be established by separate documents provided by the vendors of the respective materials and the installation contractor.

Synthetic Base Material and Performance

Scope:

This document defines requirements for the installation and operating performance of an athletic field synthetic base underlayment material needed for a professional-grade synthetic turf field. Defined are the primary system requirements for insuring quality, environmental compatibility, optimum safety of the playing surface (impact attenuation/surface playability) and high capacity subsurface drainage of the installed playing field.

Specifications listed are defined per applicable ASTM standard test methods, or other national or internationally recognized testing standards. All other specifications and tolerances listed shall be defined under standard ANSI and/or ISO drawing and specification rules.

Note: This specification requires prior installation of stabilized subsurface base, including a perimeter foundation-grade concrete curb and high-capacity trenched storm drain system.

Part 1: Specification References

1.1 Related Specification Sections

Section 02319: Sub-Grade Foundation and Drainage
Section 02792: Synthetic Turf System

Part 2: Testing References

2.1 American Society for Testing and Materials (ASTM), International Standards Organization (ISO), European Committee for Standardization (EN), German Institute for Standardization (DIN), Environmental Protection Agency (EPA):

ASTM D3574-08 Test E	Standard Specification for Flexible Materials - Tensile Strength, Tensile Elongation
ASTM D3575-08, Test D	Flexible cellular polymeric materials - Determination of Compression Strength
ASTM D696	Determination of Coefficient of Linear Thermal Expansion
ISO 62:2008 DIN 53428	Standard Test Method for Water Absorption of Plastics
ASTM 1551: DIN 18-035, Part 6	Water Permeability of Synthetic Turf Systems and Permeable Bases
ASTM F355-16 Missile E	Standard Test Method for Impact Attenuation of Playing Surface Systems, Other Protective Sport Systems, and Materials Used for Athletics, Recreation and Play

ASTM F3146-18	Standard Test Method for Impact Attenuation of Turf Playing Surface Systems Designated for Rugby
ASTM F355-16 Missile A	Standard Test Method for Impact Attenuation of Playing Surface Systems, Other Protective Sport Systems, and Materials Used for Athletics, Recreation and Play
ASTM F3189-17	Standard Method for Measuring Force Reduction, Vertical Deformation, Energy Restitution of Synthetic Turf Systems Using the Advanced Artificial Athlete
EN 14808:2005	Surfaces for Sports Areas. Determination of Shock Absorption
EN 14809:2005	Surfaces for Sports Areas. Determination of Vertical Deformation
ASTM F1936-10	Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field
ASTM F925	Test Method for Resistance to Chemicals of Resilient Flooring
ASTM G22	Determining the Resistance of Plastics to Bacteria
ASTM G21	Determining Resistance of Synthetic Materials to Fungi
ISO 14001:2004	Environmental Management Systems
ISO 9001:2008	Quality Management Systems
EPA 6010B, 7470A, 7471A	Heavy Metals, Mercury
EPA 8260B	Volatile Organics
EPA 8270C	Semi-Volatile Organics

Part 3: Sub-Base System Description

3.1 General Requirements for Underlayment System – An impact energy absorbing sub-base drainage system designed specifically for use with synthetic turf is required. The specified material must have physical, drainage and performance properties that meet the following requirements:

3.1.1 Minimum material nominal thickness 15 mm – material thickness must be within ±1.5 mm

3.1.2 Tensile Strength > 45 psi (ASTM D3574-08 Test E)

3.1.3 Tensile Elongation > 10% (ASTM D3574-08 Test E)

3.1.4 Compression Strength > 25 psi @ 25% strain (ASTM 3575-08 Test D)

3.1.5 Linear Thermal Expansion < 0.10 mm /m /° C (ASTM D696)

3.1.6 Water Absorption ≤ 5% after 24 hrs (ISO 62:2008 / DIN 53428)

3.1.7 Water Permeability > 500 in/hr (ASTM 1551 DIN 18-035, Part 6)

3.1.8 Head Injury Criterion < 1,000 from > 0.4 m drop height (ASTM F3146-18, Procedure A)

3.1.9 Gmax < 160 g (ASTM 355-16 Missile A)

3.1.10 Shock Absorption > 55% (EN 14808:2005 / ASTM F3189-17)

3.1.11 Vertical Deformation < 4.0 mm (EN 14809:2005)

3.1.12 Resistance to Chemicals ≤ 2 (ASTM F925)

3.1.13 Resistance to Bacteria - no growth (ASTM G22)

3.1.14 Resistance to Fungi – no growth (ASTM G21)

<u>Impact Safety Requirements for installed Surface System of Infilled Synthetic Turf and Underlayment:</u>

3.1.15 Surface system must provide maximum average Gmax of 110 g upon initial testing of installed field (ASTM F1936-10)

3.1.16 Surface system must provide maximum average Gmax of field of 120 g during warranty period of artificial turf (ASTM F1936-10)

Part 4: Quality Assurance and Guarantees

4.1 Product must be made in ISO accredited facility in the United States of America according to the Federal Trade Commission Made in USA Standard.

4.2 Material must be manufactured in an ISO 9000:2008 certified facility.

4.3 Product must be of consistent material composition. Variable content material will not be accepted.

4.4 Manufacturer must provide documentation of material content and pre-approved standard OSHA MSDS sheet.

4.5 Manufacturer must demonstrate successful athletic field installation in the United States of at least 40 million square feet (approx. 500 fields) over a minimum period of 10 years.

4.6 Material must be covered by a pre-approved and binding 16-year limited product and performance warranty issue by a company in the United States of America. Warranty shall include the provision that manufacturer will deliver to the Owner and install new panels to replace the non-conforming panels. The installation shall include the temporary removal and repair or replacement of the artificial turf and infill over the affected area.

4.7 Warranty must specify static and dynamic load limits in pounds and pounds per square inch. Warranty must not specify monetary limits of liability. Warranty must allow owner a notice period of at least 30 days for non-compliance claims.

4.8 Warranty must include guarantee for surface system Gmax ≤ 120 G's according to ASTM F1936-10 for warranty period of artificial turf.

4.9 Product must be designed to freely drain and not designed to hold or retain water. Any product that intentionally holds or retains water will not be accepted.

4.10 System seams should be mechanically locked into place by hand without cutting, splicing, use of additional materials, glue, fasteners, or secondary processes and equipment.

4.11 Material must be installed according to manufacturer's instructions, without exceptions.

4.12 Manufacturer must provide written procedures to selected turf supplier or contractor for the installation of turf on top of underlayment.

4.13 Product is to be shipped as flat panels on pre-packaged pallets.

Part 5: Environmental Compatibility

5.1 Material must be manufactured in an ISO 14001:2004 certified facility.

5.2 Product must not contain concentrations of metals, volatile organic compounds (VOCs), or semi-volatile organic compounds (SVOCs) at concentrations greater than EPA Regional Screening Levels or Department of Toxic Substances Control Human Health Risk Assessment (HHRA) Note 3 thresholds. (EPA 60108, EPA 7470A EPA 7471A, EPA 8260B, EPA 8270C).

5.3 Product must not contain leachable concentrations of metals, VOCs, or SVOCs (using the synthetic precipitation leaching procedure) greater than maximum contaminant levels (MCLs) or Regional Water Quality Control Board Environmental Screening Levels for groundwater and surface water - fresh water aquatic habitat. (EPA 60108, EPA 7470A EPA 7471A, EPA 8260B, EPA 8270C).

Additional Requirements for California:

5.4 Product must not contain a chemical on the current California Proposition 65 Safe Drinking Water and Toxic Enforcement Act of 1986 - Update effective 06 JUNE 2014

5.5 Product must not contain concentrations of substances at hazardous waste levels per California Code of Regulations, Title 22, Division 4.5, Chapter 11 – Identification and Listing of Hazardous Waste.

Part 6: Submittals

6.1 General: Bidding contractor must identify performance base system with bid package. If a non-specified product is identified, the proposed alternate product must be submitted and pre-approved by the design architect/engineer 10 days prior to the bid opening. If bidding contractor does not identify a manufacturer, the Township/School District will

assume that the specified product is included in the bid package and will not consider substitutions.

6.2 Product Data: Submit 8” x 12” product sample and typical properties sheet.

6.3 Shop Drawings: Submit cross-sectional view showing product installation in relation to sub-base and synthetic turf (including edge attachment).

6.4 Test Data: Submit all applicable test data for compliance to specifications. All testing to be performed following applicable ASTM or other internationally recognized standards and procedures.

6.5 Installation: Submit copy of product installation instructions and manufacturer recommendations.

6.6 Warranty: Submit copy of product 16 -Year warranty coverage as specified in 4.6 – 4.8.

Part 7: Products

7.1 Description: Resilient Expanded Polypropylene Shock Pad Material.

7.2 Product: Brock Shock Pad Series 15 or pre-approved equal

7.3 Contact Information:
Brock USA LLC
3090 Sterling Circle
Boulder, CO 80301
Telephone: (303) 544-5800
sales@brockusa.com
www.brockusa.com

Ronnie Pascale
National Director of Sales
Telephone: (804) 366-1368
rpascale@brockusa.com

7.4 Manufacturing/Ordering Information:
Brock USA LLC
3090 Sterling Circle
Boulder, CO 80301
Telephone: (303) 544-5800
sales@brockusa.com

7.5 Product format: Interlocking panels
Size: approximately 67.25 x 47.5 inches (1708 x 1207 mm) overall dimensions
Area: Net coverage per panel 21.0 ft^2 (1.95 m^2)
Thickness: 0.59” (15 mm) ± .08”
Panel Weight: approximately 3.8 lbs / panel

Part 8: Product Substitutions

8.1 Product substitutions are allowed only in accordance with pre-bid substitution request procedures outlined in the contract documents. No substitutions will be allowed after the bid date. Bidding contractor must identify performance base system with bid package. If a non-specified product is identified, the proposed alternate product must be submitted and pre-approved by the design architect/engineer 10 days prior to the bid opening. If bidding contractor does not identify a manufacturer, the Township/School District will assume that the specified product is included in the bid package and will not consider substitutions.

Part 9: Installation

9.1 Per manufacturer's recommendation - obtain written installation instructions and procedures from the manufacturer.

Part 10: Surplus Material

10.1 Surplus materials to be determined by the Owner prior to order and delivery of product to the installation site. Surplus quantities to be identified in writing by the General Contractor at the time of order placement.

Part 11: Project Completion

11.1 Upon completion of installation, a walk-through will be conducted to inspect the quality of work and ensure all details meet specifications.

11.2 A punch list of unacceptable or incomplete items will be documented and agreed upon for completion prior to final project closeout and acceptance.

Part 12: Approvals

12.1 Finished synthetic base installation workmanship must be approved in advance by the turf manufacturer. Approvals to be based on a physical inspection performed at the site prior to installation of any synthetic turf material.

12.2 Any approvals sought after turf installation will be declined. Any associated repair or replacement costs associated with rework of the synthetic base will be the responsibility of the turf supplier/installer.

END OF SECTION

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