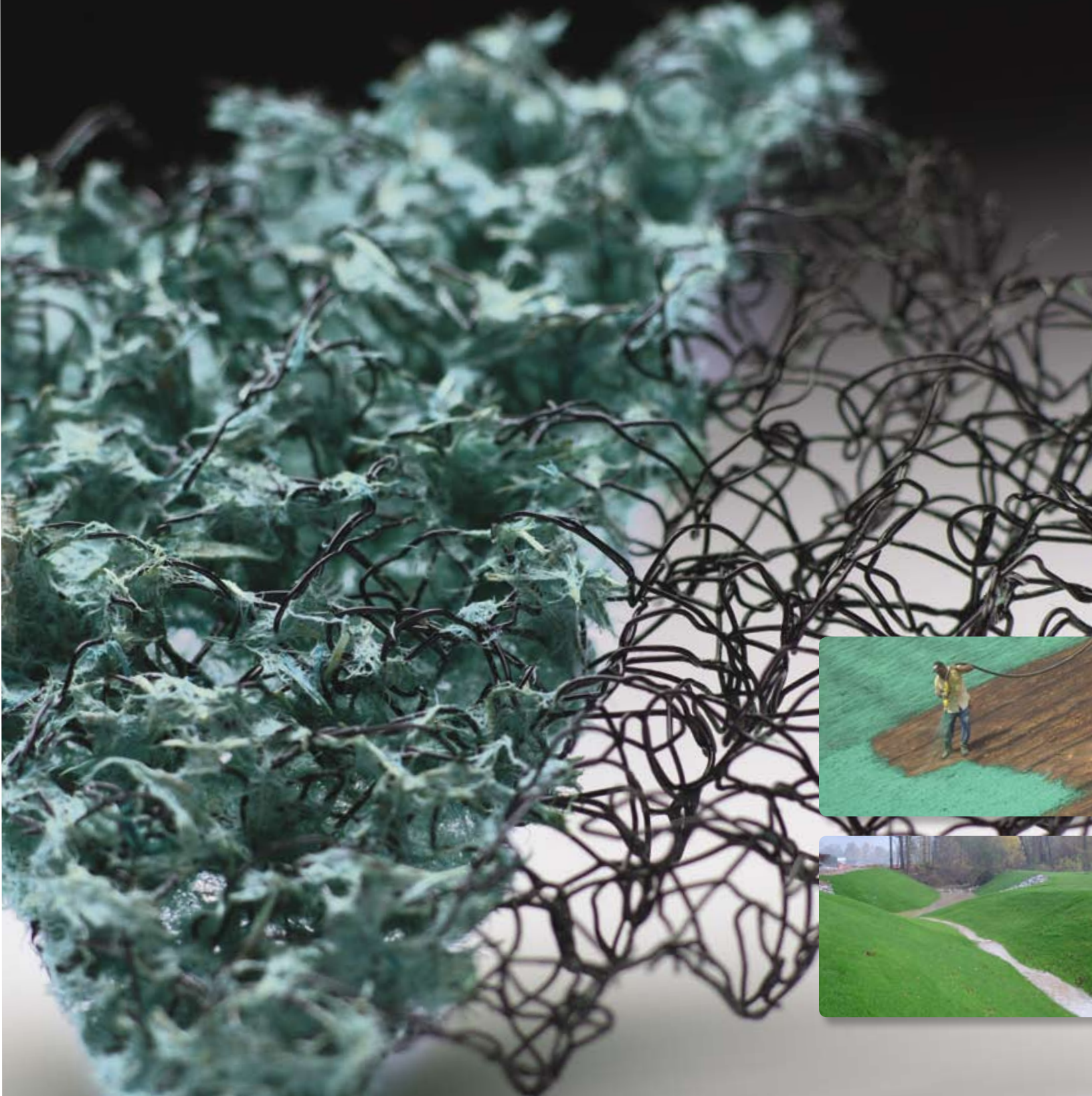


A REVOLUTIONARY GREEN ALTERNATIVE TO HARD ARMOR

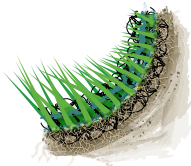


 **GREENARMOR™
SYSTEM**

www.greenarmorsystem.com

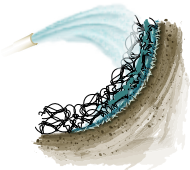
UNMATCHED FACTORS OF SAFETY

Providing immediate and lasting protection, the GreenArmor System exceeds safety factors of other TRMs at 1/3 to 1/2 the cost of hard armor.



TWICE AS FAST!

Holding 15 times its weight in water, the GreenArmor System doubles turf establishment rates of other TRMs.



HYDRAULICALLY INFILLED

Flexterra FGM is sprayed into the Enkamat matrix to provide immediate erosion control.

STRUCTURAL INTEGRITY

Designed with durable, UV-stabilized, thermally fused nylon filaments, Enkamat TRM will not unravel, crush or tear.

ENVIRONMENTALLY SUPERIOR

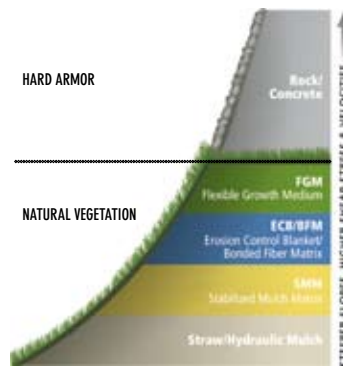
More aesthetically pleasing—vegetation filters pollutants and cools runoff, promotes groundwater recharge, adds oxygen into the atmosphere and provides wildlife habitat.

HIGHER-DENSITY TURF

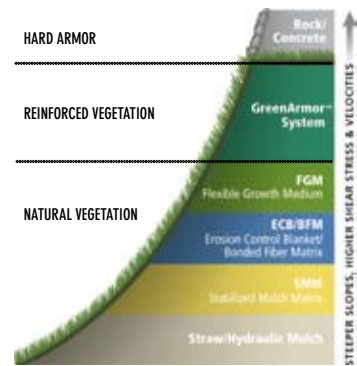
With 95% open space, Enkamat TRM assures thicker turf establishment and enhanced root reinforcement.

99% EFFECTIVE

Upon installation, the GreenArmor System delivers superior erosion control on slopes and in channels.



Prior to the introduction of turf reinforcement systems, hard armor was used exclusively to accommodate sites where velocities (6-8 ft/sec) and shear stresses (2-3 lb/ft²) exceeded the limits of natural vegetation.



Today, the fully vegetated GreenArmor System raises the limits of vegetation to velocities of 20 ft/sec and shear stresses of 17 lb/ft².

REVOLUTIONARY SYSTEM— UNPRECEDENTED RESULTS

Designers need to know TRM performance limits in both vegetated and unvegetated conditions. The GreenArmor™ System has been comprehensively evaluated at the world renowned Colorado State University (CSU) Hydraulics Laboratory. All testing was conducted according to the ASTM D6460-06 protocol—“Determination of Rolled Erosion Control Product (RECP) Performance in Protecting Earthen Channels from Stormwater Induced Erosion.”



VEGETATED RESULTS:

Using the GreenArmor System, a mixture of warm season Bermuda grass varieties were seeded and established in a portable planter box for a period of 4 months. The planter box was then placed into a hydraulic flume at a fixed slope of 50 percent (2:1 H:V). The reinforced vegetation was then subjected to a series of increasing water discharge rates.

Close monitoring of the severe conditions proved the reinforced warm season grasses resisted extreme flow velocities and shear stresses—a testimony to the strength, dimensional stability and true root reinforcement provided by the GreenArmor System. Further, the 4 month stand of warm season species demonstrated lower plant density and ground coverage than the solid stands of reinforced mature cool season grasses typically tested under these flow conditions—offering a more real-world evaluation of this system.



Image taken during testing at Colorado State University.



View of the GreenArmor System, demonstrating extensive root development within and below the reinforcing matrix.

Vegetated Product	Critical Shear Stress	Average Manning's (n value)
GreenArmor™ System 7020	17.0 lb/ft ²	0.05

UNVEGETATED RESULTS:

The objective of unvegetated testing is to measure the ability of an RECP to resist soil erosion prior to vegetative establishment. The unvegetated GreenArmor System was installed within an indoor flume above a one-foot thick soil layer and subjected to increasing flow discharges.

This research demonstrated the unique properties of Flexterra® to physically bond to the soil surface and create a barrier to overland flow; resisting soil erosion and holding seeds in place. The GreenArmor 7020 System produced the highest unvegetated critical shear stress and velocity ratings reported in the industry—easily outperforming other TRM products.



Image taken during testing at Colorado State University.



Post-test endurance results concluded that unvegetated GreenArmor 7020 exhibited a critical shear stress of 5.8 lb/ft².

Unvegetated Product	Critical Shear Stress	Average Manning's (n value)
GreenArmor™ System 7010	3.3 lb/ft ²	0.028
GreenArmor™ System 7020	5.8 lb/ft ²	0.023

REPLACES HARD ARMOR ON A WIDE RANGE OF SITES

The GreenArmor™ System brings together the rapid growth establishment capabilities found in Flexterra® FGM™ with the dimensional stability of Enkamat®, the most widely used turf reinforcement mat on the planet. This unique solution has been proven to provide immediate erosion control, speed growth establishment and deliver superior performance—in a range of applications worldwide, including:



○ STEEP SLOPES & EMBANKMENTS



○ LANDFILL SLOPES & DIVERSION CHANNELS



○ EARTHEN DAMS & SPILLWAYS



○ DITCHES & STORMWATER CONVEYANCE CHANNELS



○ STREAMBANKS & SHORELINES



○ LEVEES & CANAL SIDE SLOPES



Case Study: Collierville, TN: Residential Development

before



after



Challenge: Developers of a retirement community sought an aesthetically pleasing and environmentally superior means of protecting a storm water conveyance channel located adjacent to a sensitive wetland.

Solution: Profile's GreenArmor™ System was recommended for its ability to withstand high-discharge water flow with triple the erosion resistance of non-reinforced vegetation, while also addressing environmental and aesthetic considerations.

Results: Even under the exceptional drought conditions of 2007, the conveyance channel exhibited dense vegetative growth in less than two months, requiring minimal maintenance and enhancing the area's visual appeal to nearby residents.



Case Study: San Antonio, TX: Residential Project

before



after



Challenge: Poor soil conditions on near-vertical geogrid reinforced slopes of up to 40 feet in height required a cost-effective erosion control solution for the Toll Brother's Sonoma Verde residential project in San Antonio, TX.

Solution: Profile's GreenArmor System was chosen for the unrivaled structural integrity of Enkamat TRM and the immediate protection and rapid turf establishment provided by Flexterra FGM.

Results: More than 10 walls were implemented with the GreenArmor System. Within three months, the first 30-foot wall was fully vegetated, and each of the 10+ walls held up despite record rainfall events and torrential downpours during the spring and summer of 2007.

EXTEND THE BOUNDARIES OF NATURAL VEGETATION

The GreenArmor[™] System combines engineering and agronomic excellence to create the world's most effective Green Design Engineering[™] alternative. The system begins with Enkamat[®] TRM (Turf Reinforcement Mat) which provides a permanent, lofty and open matrix. It is then hydraulically infilled with Flexterra[®] FGM[™] (Flexible Growth Medium[™]) to intimately bond soil and seeds while accelerating growth. This unique system protects against elevated levels of hydraulic lift and shear forces while encouraging turf establishment and long-term root reinforcement—growing denser vegetation, faster, in areas where common TRMs have fallen short. This synergistic combination of cost effective technologies enables the GreenArmor System to provide unprecedented levels of design safety.

QUICK, THICK AND LONG-TERM KEYS TO THE GREENARMOR SYSTEM



1) ENKAMAT TRM PERMANENT PROTECTION

The resilient three-dimensional matrix of thermally fused nylon filaments creates the ideal anchor for root reinforcement. Because the lofty matrix consists of 95% open space, it readily accepts a hydraulic infill, captures soil and encourages vegetative growth. And unlike stitch-bonded TRM products combining loose fibers, threads and nets, Enkamat resists crushing, unraveling and tearing during and long after installation. The durable, UV-stabilized Enkamat matrix offers unrivaled structural integrity.



2) FLEXTERRA FGM IMMEDIATE PROTECTION/RAPID GROWTH

This hydraulically applied blanket provides immediate erosion control with no cure time required. Flexterra FGM is designed with Thermally Refined[®] wood fibers, crimped interlocking fibers and additives engineered to perform under extreme conditions, delivering > 99% erosion control effectiveness. When applied into an Enkamat TRM, Flexterra forms an intimate bond with the matrix, seeds and soil. Holding 15 times its weight in water, the GreenArmor System doubles turf establishment rates of other TRMs.



3) SYNERGISTIC SOLUTION UNMATCHED ROOT REINFORCEMENT

Combining today's most technologically advanced erosion control and revegetation products, the GreenArmor System is a superior way to reinforce turf. Enkamat is designed to maximize root reinforcement and stand up to high water velocity and shear conditions. Flexterra FGM offers immediate protection while speeding growth establishment and root entanglement. Together these components provide more than twice the erosion resistance of natural vegetation.

COMPREHENSIVE, CUSTOMIZED SOLUTIONS FOR YOUR SITE

Profile Erosion Control Solutions (PECS™) combines the industry's most comprehensive assortment of erosion and sediment control technologies and innovative Green Design Engineering™ to help you maximize erosion control and vegetation establishment on slopes, channels, shorelines, fine turf areas and environmentally sensitive sites. Our dedicated team of erosion control and agronomic experts will work with you to create and implement a complete solution, utilizing a range of proven Profile products.

PECS is a unique, fully integrated approach to your site, including:

IN THE GROUND

Agronomic solutions that promote rapid seed germination and long-term vegetation establishment.

ON THE GROUND

Innovative products that prevent erosion on slopes, channels, shorelines, streambanks and wetlands while minimizing risk to the environment.

BY YOUR SIDE

Green Design Engineering ensures unfailing support from agronomic and erosion control experts, to help select and install the right products for maximum results.

P E C S™

PROFILE EROSION CONTROL SOLUTIONS



PROFILE Products LLC • 750 Lake Cook Rd., Suite 440 • Buffalo Grove, IL 60089 • www.greenarmorsystem.com



For technical information, distributor location and customer service call 1-800-508-8681.

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