The ARMORMAX® Engineered Earth Armoring Solution is the most advanced flexible armoring technology available for severe erosion and surficial slope stability challenges. ARMORMAX® can be used in erosion control applications where additional factors of safety are required, including protecting earthen levees from storm surge and wave overtopping, and stream, river and canal banks from scour and erosion. In addition, this system is ideally suited to protect storm water channels in arid and semi-arid environments where vegetation densities of less than 30% coverage are anticipated. For slope stability applications, the system can be further engineered to provide surficial slope stabilization to resist shallow plane failures. Consisting of our PYRAMAT® woven three-dimensional High Performance Turf Reinforcement Mat (HPTRM) with X3® fiber technology and Engineered Earth Anchors, you can count on the ARMORMAX® Engineered Earth Armoring solution to hold its ground.

**OTHER FEATURES & BENEFITS**

- Supports the EPA Green Infrastructure initiative
- Recognized as a stormwater Best Management Practice (BMP) and is proven to reduce erosion and reinforce vegetation for low-impact, sustainable design
- Easy to handle, lightweight components for rapid installation
- Use of lightweight equipment and unskilled labor facilitates installation with limited site access
- Aesthetically pleasing and more cost effective than conventional methods such as rock riprap and concrete paving

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WOVEN THREE-DIMENSIONAL HPTRM PROTECTION LAYER FEATURING X3® FIBER TECHNOLOGY

- Unique X3® fiber shape provides over 40% more surface area than conventional fibers to capture the moisture, soil and water required for rapid vegetation growth
- Exhibits extremely high tensile strength as well as superior interlock and reinforcement capacity with both soil and root systems
- Maximum ultraviolet protection for long-term design life
- Netless, rugged material construction stands up to the toughest erosion applications where high loading and/or high survivability conditions are required

ENGINEERED EARTH ANCHORS SECURE THE MAT TO THE GROUND

- Made of corrosion resistant material to provide considerable mechanical strength and durability during installation and in service
- Connected to a zinc-aluminum coated carbon steel or stainless steel tendon to fully enhance corrosion resistance particularly at the soil air interface
- As the load exerted on the soil by the ARMORMAX® system increases, a body of soil above the anchor is compressed and provides resistance to any further anchor movement, permanently securing the mat to the ground

EROSION CONTROL APPLICATIONS
The figures below illustrate the ARMORMAX® system for erosion control applications. The system is comprised of the PYRAMAT® HPTRM and typically Type B1 Engineered Earth Anchors.

SLOPE STABILITY APPLICATIONS
The figures below illustrate the ARMORMAX® system in slope stability applications. The system is comprised of the PYRAMAT® HPTRM and typically Type B2 anchors as specified by the project engineer. Propex may be able to provide preliminary design information.
PROPEX EROSION CONTROL
PRODUCT GUIDE OF PERMANENT SOLUTIONS

MODERATE

- WOVEN HPTRMs & TRMs
- 2nd Generation Woven Technology
- High Performance Turf Reinforcement Mats (HPTRMs) and Turf Reinforcement Mats (TRMs)
- High-flow channels, extreme slopes, pipe inlets and outlets and other arid/semi-arid applications
- Up to 25, 50 & 75 years*

SEVERE

- ENGINEERED EARTH ARMORING SYSTEM
- System consisting of HPTRM and Engineered Earth Anchors
- Earthen levees and stream, river and canal banks
- Stormwater channels in arid and semi-arid environments
- Surficial slope stabilization
- Up to 50 & 75 years*

STITCH-BONDED TRMs

- 1st generation Turf Reinforcement Mats (TRMs)
- Moderate-flow channels, bank protection and steep soil slopes
- Up to 10 years*

STITCH-BONDED TRMs

- Temporary Erosion Control Blankets (EBCs)
- Low-flow channels and gentle slopes
- Up to 3 years*

ECBs

*Design life performance may vary depending on field conditions and applications.
ARMORMAX KEY PHYSICAL PROPERTIES

Material Composition: Proprietary ultraviolet protection package in PYRAMAT HPTRM, and the durability of the anchor provides long-term design assurance.

Tensile Strength: PYRAMAT HPTRM boasts 4000 x 3000 lb/ft (58.4 x 43.8 kN/m) of tensile strength, which exceeds the U.S. EPA definition of a High Performance Turf Reinforcement Mat.

Seedling Emergence: PYRAMAT HPTRM features X3® fiber technology, which offers 40% more fiber surface area to capture the critical sediment and moisture needed to increase seed germination within the first 21 days.

Flexibility: Allows the system to conform and maintain intimate contact with the prepared subgrade.

Anchor Loading Capacity: Based on anchor size, tendon length and on-site soil parameters the anchor foot provides up to an ultimate of 500 to 3000 lbs of pullout resistance per anchor.

Actual holding strengths depend upon soil characteristics, anchor type and installation techniques.

PROPERTY OF MATERIALS
% U.S. Manufactured

PHYSICAL
Thickness
30.0 mm

Light Penetration (% Passing)
10%

Color
Visual

MECHANICAL
Tensile Strength
4000 x 3000 lbs/ft

Elongation
40 x 35 %

Resiliency
80%

Flexibility
0.534 in-lb

ENDURANCE
UV Resistance % Retained at 6,000 hrs
90%

UV Resistance % Retained at 10,000 hrs
85%

PERFORMANCE
Velocity (Vegetated)
25 ft/sec

Shear Stress (Vegetated)
16 lb/ft²

Manning’s n (Unvegetated)
0.028

USACE / CSU Wave Overlopping
USACE Approved

Seedling Emergence
296%

ROLL SIZES
8.5 ft x 90 ft

15.0 ft x MR

TYPE B1 ANCHOR PROPERTIES

ENDURANCE/ COMPONENT MATERIALS
Anchor Head
Die cast aluminum

Cable Tendon
Zinc-aluminum carbon steel

Load Bearing Plate
Die cast zinc

Load-Lock Mechanism
Die cast zinc w/ceramic roller

Crimped Ferrule
Aluminum

PERFORMANCE
Load Range (Cohesive through Non Cohesive Soils)
Up to 500 lbs

Embedment Depth
Up to 5 ft

Ultimate Strength
1,100 lbs

Working Load
800 lbs

NOTES:
1. The property values listed above are effective 07/13/2015 and are subject to change without notice.
2. Minimum average roll values (MARV) are calculated as the typical minus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any samples taken from quality assurance testing will exceed the value reported.
3. Maximum Average Roll Value (MaxARV), calculated as the typical plus two standard deviations. Statistically, it yields a 97.7% degree of confidence that any sample taken during quality assurance testing will meet the value reported.
4. Typical Value.
5. Maximum permissible velocity and shear stress has been obtained through vegetated testing programs featuring specific soil types, vegetation classes, flow conditions, and failure criteria. These conditions may not be relevant to every project nor are they replicated by other manufacturers.
6. Calculated as typical values from large-scale flexible channel lining test programs with a flow depth of 6 to 12 inches.
7. Master Roll (MR) is to be up to 600 feet in length.
WORLD CLASS ENGINEERED EARTH SOLUTIONS & SERVICES

Propex GeoSolutions is one of the largest geosynthetic and erosion control manufacturers in the world, offering full service engineering support for multiple applications, all while creating an Engineered Earth Solution. Our solutions are guaranteed to outperform conventional methods, capitalizing in various markets such as Transportation, Slope Stabilization, Shoreline Restoration, and Flood Control.

Applications include:

- Roadway Stabilization
- Pavement Rehabilitation
- Canal, Stream, and Channel Protection
- Slope Protection and Stabilization
- Drainage and Filtration
- Earthen Levee Protection

We provide industry leadership, setting standards for quality innovation, and pride ourselves in offering the most comprehensive and advanced technical services and support in the market. Our number one goal is to provide 100 percent customer support.

The many features and benefits of our Engineering Services Team includes:

- Product Selection
- Design Support
- Surficial Slope Stability Analysis
- Erosion Control Analysis
- Paved and Unpaved Roadway Design
- Installation Support
- Construction Details
- Inspection and Validation Testing
- Market Advancement
- Industry Organization Participation
- Product and Application Research

Contact our Engineering Services Team Hotline at 423.553.2465 or email GeoEngineering@propexglobal.com to let us help with your next project.