WESTERN GREEN

THE NEW MAXIMUM IN EROSION CONTROL AND TURF REINFORCEMENT

NORTH AMERICAN GREEN®

Why Use Vmax® Reinforced Vegetation in Place of Hard Armor?

- Much more economical than rock or concrete at less than 1/3 the installed cost! And Vmax products are easier to install than rock or concrete and require no heavy equipment.
- Recognized and emphasized by the U.S. EPA as a preferred Best Management Practice (BMP) when compared to rock riprap in meeting National Pollutant Discharge Elimination System (NPDES) regulations.
- Unlike "hard" rock and poured concrete, Vmax provides "soft" protection that poses no threat to pedestrians and/or automobiles when used near travel routes.
- Provides a natural filter for runoff water by allowing infiltration, entrapping sediments and absorbing harmful pollutants. Hard armor enables little or no water infiltration and/or pollutant removal.
- Requires little maintenance other than periodic mowing. Rock riprap collects trash, supports weed growth and requires special attention when mowed around.
- Offers a flexible lining that won't crack and deteriorate like concrete.
- Provides a more natural, aesthetically pleasing and ecologically functional "green" landscape. Rock can harbor undesirable wildlife.

Why Use Vmax Composite TRMs Instead of "Conventional" TRMs?

1 Maximum Erosion Protection

- Vmax Composite TRMs are surface-applied to provide the highest level of erosion protection at the lowest cost. Many conventional TRMs require costly soil-infilling which is extremely vulnerable to erosion.
- The Vmax unique corrugated permanent matting structure forms a shear plane perpendicular to water flow to deflect erosive hydraulic forces away from the soil surface.
- Unlike conventional open-structured TRMs, the Vmax natural or synthetic fiber matrix shields soil from the erosive forces of raindrop impact and prevents shear stress extraction of soil particles from or through the matting structure.

2 Maximum Vegetation Establishment

- Unlike conventional open-structured TRMs, fiber matrix better regulates moisture and temperature for maximum seed germination and plant development.
- The Vmax corrugated matting structure deflects shear forces away from newly planted seed and structurally reinforces seedlings.

3 Maximum Vegetation Reinforcement

- The Vmax high strength, 3-D matting structure fortifies both stem and root systems for the ultimate in vegetation reinforcement.
- UV stabilized synthetic matting structure maintains strength and integrity even under long-term exposure to sunlight.
- High strength matting structure resists damages from natural as well as man-made forces such as heavy foot, maintenance equipment and vehicular traffic.
- The permanent matting structure of all three Vmax products (without degradable organic fiber matrix) exceeds FHWA FP-03 standards for TRMs.

Critical Flow Channels

Stream Banks

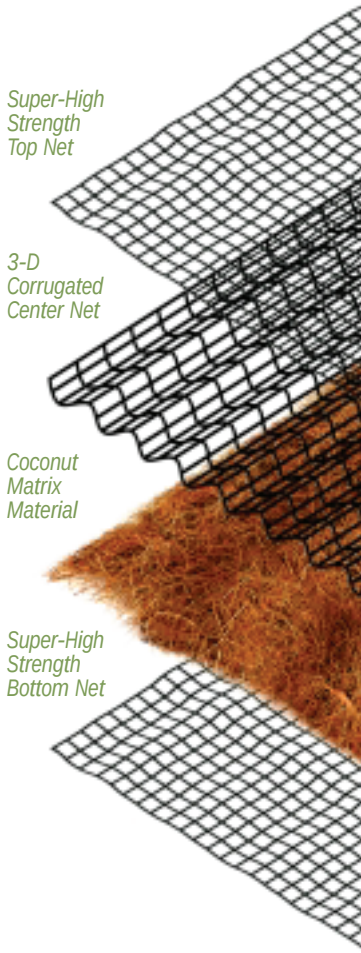
Shorelines

C350® Permanent Turf Reinforcement Mat

Super-High performance – equivalent to 30" rock riprap

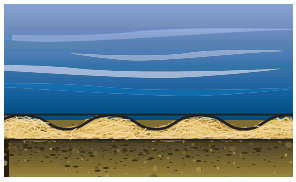
The C350 is constructed of a permanent, super-high strength three-dimensional matting structure incorporated with a 100% coconut fiber matrix. It is designed to provide both long term, pre-vegetated erosion protection and permanent turf reinforcement in a wide variety of applications.

The 100% coconut fiber matrix supplements the permanent matting's initial mulching and erosion control performance for up to 36 months. Proven in laboratory and field research, unvegetated C350 reduces soil loss to less than 0.5 in (12.7 mm) under shear stress up to 3.2 lbs/ft² (155 Pa). The super-high strength permanent 3-D structure boosts the shear resistance of vegetation up to 12 lbs/ft² (575 Pa), offering permanent erosion protection equivalent to that of 30 in (0.76 m) rock riprap. The C350 provides a cost-effective, environmentally friendly "green" alternative for severe erosion control projects.



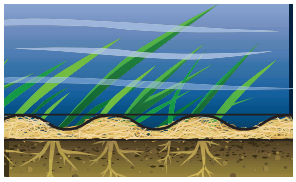
C350 Performance Profile

Phase 1 (unvegetated)



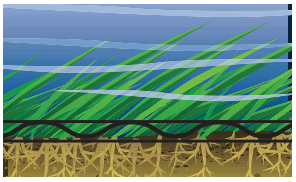
Unprotected seed and soil are highly susceptible to erosion. Upon installation, the C350's coconut fiber matrix and corrugated matting structure provide a uniform mulch layer and effective erosion protection for seed and soil under flow-induced shear stresses up to 3.2 lbs/ft² (153 Pa).

Phase 2 (vegetation establishment)



The tender stems and undeveloped root systems of immature vegetation provide little protection for the soil surface and are prone to damage or removal at shear stresses of only 0.6 lbs/ft² (29 Pa).* The C350 continues providing erosion protection between, and structural support for, developing plants - increasing the permissible shear stress of new vegetation up to 8 lbs/ft² (384 Pa).

Phase 3 (vegetation maturity)



Under flow-induced shear stress of only 1.0 lbs/ft² (48 Pa), unreinforced mature vegetation may allow significant soil loss and experience physical damage.** The C350's corrugated matting structure reinforces soils and anchors vegetation roots and stems – increasing the permissible shear stress of the permanent vegetative stand up to 10 lbs/ft² (478 Pa).

*Based on FHWA HEC#15 Permissible Shear Stress for Class D Vegetation (2-6" tall (5-15 cm), fair stand.
**Based on FHWA HEC#15 Permissible Shear Stress for Class C Vegetation (6" tall (15 cm), good stand.

Maximum Value with Vmax.C350

Based on costs for protecting a 16 ft wide X 1000 ft long (4.8 m X 305 m) drainage channel

Cost Comparison	C350	30" (0.76 m) Rock Riprap
Materials	$7,800-9,900	$32,000
Labor	$6,400-7,900	$21,300
Total Installed Cost	$14,200-17,800 ($8-10 yd²/$9-12 m²)	$53,300 (30 yd²/$36 m²)

MAXIMUM SAVINGS OF $39,100

* Shown in U.S. Dollars, Cost may vary based on location

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Product Application Guide

Product	Applications	Limiting Shear Stress lbs/ft² (Pa) Flow Duration				Permissible Velocity ft/s (m/s)		Typical Projects	FHWA FP-03 TRM Categories
		Bare Soil		Vegetated					
		0.5 hrs	50 hrs	0.5 hrs	50 hrs	Unvegetated	Vegetated		
SC250®	1:1 & Greater Slopes Medium to High Flow Channels 24 month vegetation grow-in period	3.0 (144)	2.5 (120)	10.0 (480)	8.0) (384)	9.5 (2.9)	15 (4.6)	Roadside Ditches; Golf Course Swales; Stream Bank Protection	Types 5. A and B
C350®	1:1 & Greater Slopes High Flow Channels 36 month vegetation grow-in period	3.2 (155)	3.0 (144)	12.0 (575)	10.0 (480)	10.5 (3.2)	18 (5.5)	Drainage Ditches; High Flow Areas; Shoreline Protection	Types 5. A, B and C
P550®	1:1 & Greater Slopes Extreme High Flow Channels 36 month vegetation grow-in period or when sparse vegeta-tion stand is expected	3.3 (160)	3.25 (156)	14.0 (670)	12.0 (574)	12 (3.7)	20 (6.1)	Spillways; Swales; High Flow Drainage Areas; Shoreline Protection	Types 5. A, B and C

All unvegetated and vegetated Vmax[3] performance values are based on laboratory research utilizing test methods similar to those detailed in ASTM D 6459.

Note: This guide is for general purposes only. Actual product selection and design should be developed using North American Green's ECMDS® program.

The North American Green Advantage

Through its worldwide network of qualified distributors, North American Green offers a full line of erosion control blankets and turf reinforcement mats. These distributors, in conjunction with North American Green's Regional Managers and Technical Service Team, can provide site-specific recommendations and design support to help ensure the success of your project.

- North American Green products are known for their quality - all blankets and mats produced by North American Green are stitched on 1.5-inch centers, adding significantly to field performance capabilities.
- North American Green products are tested thoroughly under field and laboratory conditions to accurately quantify performance.
- North American Green products are protected by the industry's only comprehensive performance guarantee. When selected and designed with North American Green's Erosion Control Materials Design Software (ECMDS®)

WESTERN GREEN

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