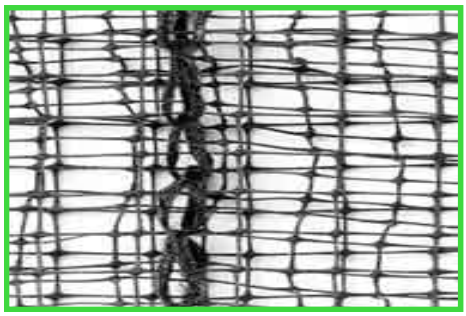

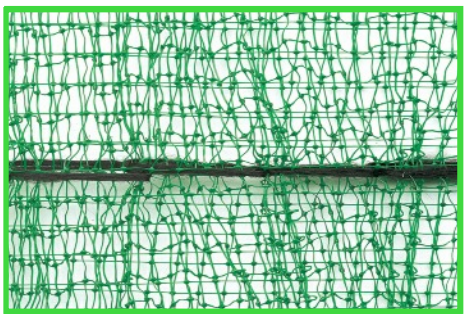

MultiMat™

A three-dimensional MultiMat Geomat which, due to its flexibility, is easy to place on both the bed and banks of the dry canal.

The Problem

Earthen canals and waterways in general are continuously exposed to erosion and flooding from rainfall, runoff and surface runoff, both on the canal bed and their banks.

Under these conditions, the concentrated forces produced by the velocity can cause the formation of holes, longtritudinal and transversal furrows and undercutting at the base. The subsequent sliding of earth down the embankment onto the canal bed can also affect the hydraulic properties of the canal itself.

The Solution

A dense vegetative plant covering on the bed and banks of the canal provides an effective defence as it increases the profile roughness (subsequently reducing the flow velocity), the sedimentation of suspended solid particles and prevents the detachment of soil. The formation of plant growth covering is accelerated by using a three-dimensional MultiMat Geomat which, due to its flexibility, is easy to place on both the bed and banks of the dry canal.

Anchored to the slopes and base by means of U shaped anchors, the Geomat is filled with topsoil and seeded. The planting process allows the roots of the grass to firmly anchor themselves to both the three-dimensional structure and the underlying soil, together forming permanent protection.

Even before vegetation begins to grow, MultiMat Geomat is capable of drastically reducing the quantity of soil erosion from slopes and above all it eliminates the formation of rivulets and furrows.

Proven History

Full-scale University tests have demonstrated that the limit of water velocity, below which erosion of the bank and the base does not occur, greatly increases when the channel is protected by MultiMat Geomats.

Features/Benefits:

- Flexible
- Allows vegetation to anchor its roots to the three dimensional structure
- Help prevent soil erosion
- Proven history

Application Categories: Ground Engineering

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Feature	Hy-Tex MultiMat
Physical Attributes	
Structure:	Three Dimensional Geomat composed by 3 layers
Mesh Type:	Rectangular apertures
Standard Colour:	Black
Polymer Type:	Polypropylene
Carbon Black Content (ASTM D4218):	1.00%
Dimensional Characteristics	
Aperture Size MD:	12.0mm b,c
Aperture Size TD:	16.0mm b,c
Thickness (ISO 9863):	17.0mm b
Porosity (ISO 9863):	95% b
Mass Per Unit Area (ISO 9864):	320g/m^2 b
Roll Width:	2.20m b
Roll Length:	30.0m b
Roll Diameter:	0.78m b
Roll Volume:	1.40m^3 b
Gross Roll Weight:	24.0kg b
Technical Characteristics	
Peak Tensile Strength (ISO 10319):	MD 10.0kN/m TD 15.0kN/m a,c
Yield Point Elongation (ISO 10319):	MD 20.0% TD 15.0% b,c
Performance Characteristics	
Permissible Velocity	
Product Only	4 m/s b
30 Minute, Vegetated	5.5 m/s b
60 Minute, Vegetated	3.35 m/s b
Permissible Sheer Stress	
Product Only	290 N/m^2 b
30 Minute, Vegetated	475 N/m^2 b
60 Minute, Vegetated	290 N/m^2 b

NOTES:

a) 95% lower confidence limit values, ISO 2602

b) Typical values

c) MD : machine direction (longitudinal to the roll)

TD : transverse direction (across roll width)

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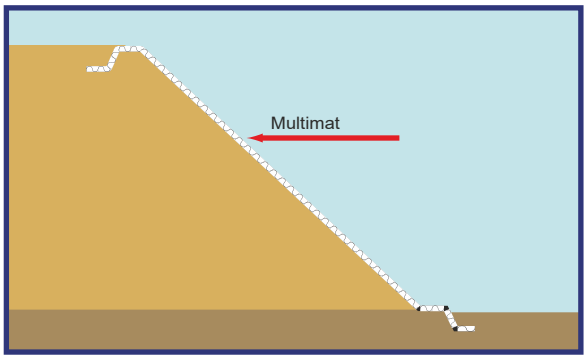

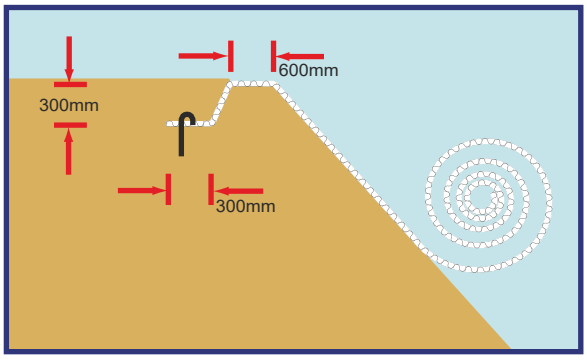

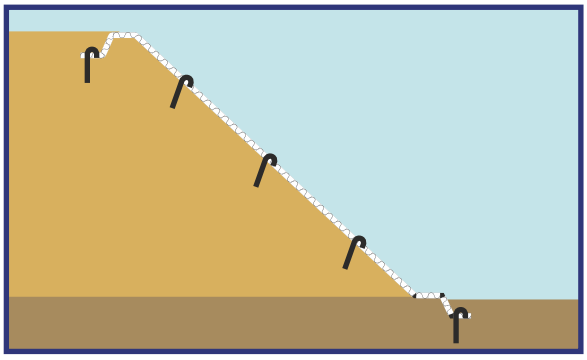

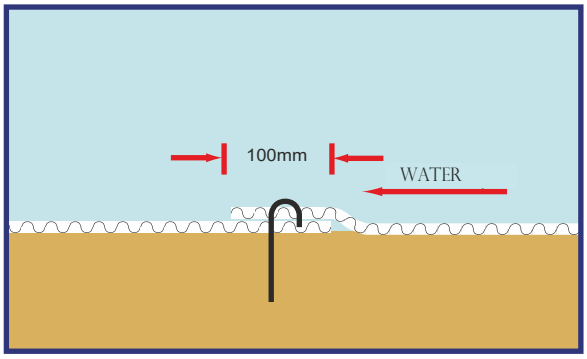

Site Preparation

For both slope and channel applications, prepare the site to the design specifications (grade, geometry, soil compaction, etc.). The area should then be dressed to be free of soil clods, roots, stones or vehicle imprints of any significant size. Any voids should be filled in order to obtain a smooth and compact laying surface allowing the Multimat to fit flush against the ground surface contours.

Installation

Excavate Anchor Trenches: Anchor trenches are required to securely fasten the Multimat to the ground surface. For a slope application, anchorage at the rest can typically be provided by excavating a trench at least 600mm beyond the crest of the slope. The anchor trench should be at least 300mm wide and 300mm deep.

Note: Anchor trench details will vary depending upon application, soil type, slope or channel slope geometry, etc.

The Multimat is installed into the trench and fastened at the bottom of the trench with 'U' shaped pins/staples (Min. 8mm diameter and typically 150-300mm in length depending on consistency of the sub-grade) a maximum of 1metre apart along the trench.

The anchor trenches are then backfilled and compacted in a manner that does not damage the Multimat. Unrolling of the geomat and filling of it on the slope can only be carried out after the Multimat is anchored on the crest.

Multimat Placement

Once anchored, deploy the Multimat by rolling down the slope or channel. Overlaps (edge to edge) between rolls should not be less than 100mm. The end to end detail between rolls should be overlapped in a tile manner and not be less than 750mm. All overlapping areas of the geomat should be in the direction of water flow.

Always securely fasten to the ground the edges of the Multimat and overlaps at intervals of 1-2m with 'U' shaped pins/staples (depending on geometry of the slope or channel). Securely fasten down the centre of each roll staggering centreline fasteners between the outside fasteners.

Always lay Multimat so that contact with the soil is maintained at all times. After the Multimat is installed, go back over the Multimat and install additional fasteners as required to ensure the Multimat is in intimate contact with the soil.

Filling Multimat

Infilling can be performed manually or carried out using mechanical plant.

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