



Peabody Coal Overwinter Streambank
Stabilization
ShearForce10 Hybrid-Turf Instant Armor Mat

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- ***Hybrid-Turf Instant Armor Mats – Immediately Effective Soft Armor Alternatives to rock riprap in high flow applications***
- **The first and only soft armor mats with immediate erosion protection equal to large rock**
- **Over 3X the unvegetated permissible shear stress ratings of conventional TRMs/HPTRMs**
- ***Hybrid Vegetative Armoring Systems***
 - ***Simulated Turf protecting, establishing and permanently reinforcing***
Natural Vegetation



Hybrid-Turf Instant Armor Mat

- 1 inch thick monolithic UV stabilized PE simulated turf structure
- Engineered lightweight PET geotextile fabric backing
- **Forms a virtually non-erodible boundary on the soil surface against high flow-induced shear stresses, while facilitating the establishment and reinforcement of natural vegetation**
- 3ft/6ft wide x 45ft rolls
- Installed over seeded soil surface with 8+ inch wire staples or fabric pins
- Easy to Maintain, Mowable Surface



Peabody Coal Streambank Project Details

- **Project Name: Peabody Coal Constructed Streambanks Stabilization**
- **Product: InstaTurf™ ShearForce10™ Hybrid-Turf Instant Armor Mat**
- **Application: Overwinter Protection and Vegetation Establishment on Constructed Streambanks**
- **Project Owner: Peabody Coal, Somerville IN Mine**
- **Regulatory Oversight: Army Corps of Engineers**
- **Time Frame: Installation of ShearForce10 on Oct 25, 2018**
- **Site Description:**
 - **Standard cool season annual/perennial grass and legume mix**
 - **Silty Clay Loam soil**
 - **Approximate 6ft wide stream channel bottom (left unprotected for natural substrate)**
 - **Stream channel bottom gradient <1%**
 - **Variable gradient sideslopes (protected with ShearForce10 ECTRM)**
 - **Drainage from 120 acres of reclaimed mineland**
 - **Over 30 inches of rainfall from Oct 25, 2018 through April 30, 2019**
- **Objective: Test application for the InstaTurf ShearForce10 at protecting the highly erodible banks of a constructed stream channel through reclaimed mineland over the winter months, while establishing permanently reinforced vegetation.**



InstaTurf ShearForce10 Instant Armor Mat Installed October 25, 2018 on seeded streambank

Peabody Coal Streambank Stabilization Project



Unusually heavy rains throughout the fall, winter and spring months flooded the stream channel on numerous occasions

Peabody Coal Streambank Stabilization Project



The ShearForce10 did an excellent job of protecting the streambanks through winter. Note the grasses emerging thru mats in early March.

Peabody Coal Streambank Stabilization Project



ShearForce10 effectively armored the streambanks through all flood events, sustaining a good stand of vegetation by April 30 and June 30

Peabody Coal Streambank Stabilization Project



April 30, note the distinct lines formed by the edges of the ShearForce10 mats along the shoreline

Coconut Erosion Control Blanket On Peabody Coal Streambanks



The two inch rainfall that occurred one week after installation severely damaged coconut erosion control blankets installed on other sections of the stream channel and initiated significant bank erosion

Peabody Coal Streambank Installation



ShearForce10 just after installation on June 28, 2019 (left). 2 months after installation, vegetation developing nicely (right).