

GEOWEB®

NATURALLY VEGETATED SLOPE SOLUTIONS

American Tobacco Trail Slope



STABILIZING A MULTI-USE TRAIL'S RIGHT-OF-WAY EMBANKMENT

Excerpt from *Erosion Control* magazine article:

PROJECT BACKGROUND

The American Tobacco Trail is a 20-mile Rails-to-Trails project that runs from Durham County to Chatham County in North Carolina along an abandoned railroad bed originally constructed for the American Tobacco Company in the 1970s. The trail is part of the East Coast Greenway, used by pedestrians, cyclists, and equestrians. The trail crossed over a 25-foot high, wooded embankment and culvert in Cary, North Carolina.

THE PROBLEM

The embankment had been excavated in conjunction with replacing the culvert and then re-built to its original 1.3 : 1 slopes. "The loss of rootmat led to sloughing of the surface soils on the face of the embankment", Mr. Barney Hale, PE Sr Geotechnical Engineer with Terracon. The narrow crest width of the embankment and potential for undermining the trail required stabilization of the slopes. Wetland and stream buffer boundaries prevented flattening the slopes.

THE GEOWEB® SOLUTION

"The trail had been installed there a year or two before, so they had to dig out all of this embankment material and put it back and put a new culvert in," says Harvey McQueen, President of McQueen Construction. To stabilize and stop further settling of the slope, Presto Geosystems' GEOWEB® system was chosen because it could be installed by hand and was more cost-effective than soil nailing approaches, says Staci Smith, PE, Regional Engineer for ACF Environmental.

"The owner wanted a vegetated solution that would maintain the natural appearance of the embankment," Smith says. The GEOWEB system was filled with soil and its cells were cut out in a controlled pattern to allow both trees and grasses to be re-established on the slope.

THE SOLUTION

McQueen Construction installed the GEOWEB slope system with tendons anchored in a trench at the crest along with 3 ft rebar anchors to stabilize the failing steep slope in a 45-day project at the end of 2011. The cell wall slots in the GEOWEB system allowed quick threading of tendons and connection of sections with ATRA® Keys, a quicker alternative to stapling.

BENEFITS OF 3D GEOWEB SOIL CONFINEMENT

- The system's 3D structure reinforces the upper soil layer and resists erosive conditions and sliding forces.
- It is designed as a long-term solution for sustainable vegetation, permeable aggregate, hard-armored concrete or geomembrane protection.
- Its use reduces land space requirements and costs by allowing slopes to be designed steeper than when the infill material is unconfined.

Smith says access proved to be a challenge as the repaired slope was approximately three-quarters to one mile in from the closest road crossing for the greenway. "The greenway is heavily used and the contractor had to work around a specific greenway closure requirement," Smith says.

McQueen cited that as his biggest challenge. "Because it was a very steep slope, you couldn't walk on it," he says. "What we had to do was re-grade the slope and then install the GEOWEB material, backfill it with topsoil, do some seeding and also live stake-planting in the system's cells."

Project Engineer: Terracon

Contractor: McQueen Construction

Material Supplier: ACF Environmental



GEOWEB® system with tendons every 3-cells expanded down the slope.



Left photo : A tendon and ATRA® load transfer clip are passed through the GEOWEB® cells.

Bottom photo: Completed vegetated slope.



PRESTO



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