

# Flexterra FGM® Case Study: New Jersey DOT Evaluates FGM

Flexterra tested on 2.5:1V gradients during adverse weather



## Situation

In the spring of 2003, representatives from the New Jersey Department of Transportation attended a training seminar on the use of hydraulically-applied materials under challenging roadside conditions. Pinelands Nursery and Supply, Columbus, NJ, conducted the training which was designed to provide information helpful in conforming to Phase II of the EPA's National Pollutant Discharge Elimination System (NPDES). The session included a demonstration of Flexterra FGM® (Flexible Growth Medium) provided by Glen Ballinger, Mid-Atlantic Regional Manager for Profile Products. "We were interested in the FGM as another weapon in our erosion control arsenal," said DOT project engineer and landscape architect, Paul Pospiech, who supervises landscape construction in northern New Jersey. Following the seminar and additional consultation and research with Ballinger, a decision was made to compare Flexterra® with the use of straw at a DOT construction project near Sparta, NJ.

## Problem

The New Jersey DOT test site involved 4.4 acres of bare fill on slopes which were up to 60 feet high. The slopes, with gradients of 2.5H:1V and steeper, were part of a project to widen State Route 15 from two to four lanes.

In similar situations, conventional practice had been to blow two to three tons of straw per acre on erosion-prone surfaces. Although it provides a low cost per acre in material, this method incurs additional costs for labor when small bales are used, as well as for equipment with large bales. It can also be impractical if the slope is too steep to be negotiated by workmen and equipment. If not properly anchored to the soil, straw mulch is also prone to being blown or washed away. Also, seeds in the straw can introduce weeds and other unwanted material to the site.

**Flexterra®**

## Alternatives

In addition to the use of straw and FGM, rolled erosion control blankets were an option for achieving erosion control and promoting establishment of vegetation on long, steep slopes. This method was not used in the New Jersey DOT test because it would have required additional time and expense for smoothing the surface of the slope prior to installation. Without surface preparation, rocks, clods, debris and other surface irregularities can create gaps between the blanket and the soil. This makes it easy for water to infiltrate and create unseen rill erosion. An additional consideration was the labor cost for stapling the blankets in place and the concerns for safety when working on steep grades.

## Solution

The test, which began in July 2003, provided an excellent opportunity to evaluate the handling and erosion control characteristics of Flexterra® Flexible Growth Medium.

After seeding and fertilizing the entire 4.4 acre test site, Aspen Landscaping Contracting covered half with straw and half with Flexterra. A Finn 3300 hydroseeder was used to apply the FGM at the recommended rate of 3,500 lb per acre.

This was Aspen's first use of Flexterra and according to Don Fuentes, senior project manager, "Because we had never used this product before, we were careful mixing the proper amounts of material and water." As a result, he said, "We had no problems applying it with the hydroseeder's tower gun."

*Among the Flexterra characteristics demonstrated at the Sparta site were:*

- **Ability to conform to steep, uneven surfaces.** This derives from a formulation which blends crimped, man-made fibers with wood fibers, creating a mechanical bond which is both strong and pliable. This is particularly valuable on steep slopes since it enables the FGM to "mold" itself to the surface without extra site preparation.
- **No curing time is required.** Unlike other bonded fiber matrix products, Flexterra begins controlling erosion almost immediately. This was demonstrated in the New Jersey test since several rain events occurred during the grow-out period.

## The Results

After application in mid-July, several storms drenched the Sparta test site with as much as two to three inches of rainfall at a time. Despite this, the FGM performed well, according to these observations from three project participants.

**Don Knezick, President of Pinelands Nursery and Supply, Columbus, NJ—**  
"The FGM definitely out-performed the straw in controlling erosion and providing vegetative cover. Also, it eliminated the problem of weeds, including corn, which grew from seed in the straw."

**Don Fuentes, Senior Project Manager, Aspen Landscaping Contracting**  
"We were very happy with the results of the FGM. It prevented erosion and can replace soil stabilization matting. It retains more moisture than mats to improve germination, and it looks attractive after it's applied."

**Paul Pospiech, Project Engineer, New Jersey DOT**  
"The FGM worked very well. No areas washed out where it was applied, and the grass germinated and grew up through the matrix uniformly. The product isn't for every situation. But, it gives me another tool when I need it. That's what I like."

Independent laboratory tests have also verified Flexterra's ability to control erosion under a wide variety of conditions. In Utah, plots treated with the product lost the equivalent of 76 lb of soil per acre in runoff from a simulated rain event. Comparable per-acre losses were: 7,322 lb for a competitive bonded fiber matrix, 7,323 lb for a straw blanket, and 8,384 lb for an excelsior blanket.

## Key Product Properties

### Flexterra FGM® Flexible Growth Medium

*Extensive documentation from independent laboratory tests combined with jobsite reports show that Flexterra can be more efficient and cost effective in situations where:*

- A stronger mechanical and chemical bond is needed to withstand greater surface flow and/or severe slopes.
- The soil needs extended erosion protection for periods up to one year.
- Immediate erosion protection is required to eliminate risk from impending weather conditions.
- Faster, more complete germination is needed. Tests show Flexterra can provide up to 20 percent better germination when compared with excelsior blankets and straw blankets.

*Flexterra's patented technology provides an engineered medium with superior erosion control properties.*

- Chemical and mechanical bonding techniques are used to lock the growth medium in place.
- Crimped man-made and wood fibers combine with performance-enhancing additives to form a lofty, interlocking matrix.
- The Flexterra matrix creates air space and water absorbing cavities which improve germination, reduce the impact of raindrop energy and minimize soil loss.



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