

Flexterra FGM® Case Study: Patriot Hills Golf Course

Limiting soil losses from stormwater runoff



Situation

Lakes, wetlands or other water hazards test the skills of golfers and golf course builders alike. Unless bare soil is protected from erosion due to runoff, rainfall, snowmelt or irrigation during construction, soils can wash off site and pollute other bodies of water on site and/or farther downstream. In addition to reducing water quality, this could also violate National Pollutant Discharge Elimination System (NPDES) regulations and run the risk of costly fines or a shutdown of the project.

Controlling erosion to prevent wind and water from dislodging soil particles is the first line of defense against off-site transport of sediment. It's also the key to minimizing costs of sediment control, which is to minimize sediment from runoff before it is discharged from the site.

Problem

It was against this background that Turco Golf Builders of Suffern, NY, began construction of the 18-hole Patriot Hills Golf Course located at Stony Point, NY, in the summer of 2001.

“There’s a lot of elevation change throughout the course,” reports Joe Smyth, GCSA, superintendent of Patriot Hills. “Erosion was a major concern in building the course.”

The easily dispersed clay particles in the clay-loam soils added to this concern, as did the water features: a pond on one hole and a total of about four acres of wetlands around two other holes. In all, about 20 acres of slopes on fairways, roughs and areas around greens, tees and bunkers at Patriot Hills called for measures to limit soil losses from stormwater runoff.

Alternatives

Smyth considered and rejected several concepts:

- Due to the project's slope lengths and gradients, using loose straw or hydromulch would have been ineffective in controlling erosion.
- On a previous project, Smyth had used sod effectively, but in this case the costs exceeded the erosion control and turf establishment budget.
- Erosion control blankets were considered, but the staples used to secure them must be removed later, and netting can interfere with mowing. Erosion control blankets were installed on several small areas early in this project, but the expense of covering all the critical slopes ruled out this alternative.

So, Smyth went with a less costly approach—an advanced Flexible Growth Medium—Flexterra FGM® from Profile Products.

Solution

“Material and installation costs of the product are about half those of sod,” says Dick Grant of Chesapeake Turf LLC. The porous blanket allows turf to grow up through the matrix of fiber and conforms closely to humps, dips and other surface irregularities for maximum soil protection.

Other advantages include the unique crimped and man-made interlocking wood fibers, which create a mechanical bond for enhanced erosion control. These fibers retain up to 15 times their weight in water, reducing stormwater runoff and transferring more moisture to the seedbed, which improves germination and turf establishment.

There's another important difference. Conventional BFM's require about 24 to 48 hours after application to cure and to fully control erosion. Flexterra is effective *almost immediately*.

“ *Compared to the other choices, we felt Flexterra was the most cost-effective way to achieve quick germination and control erosion.* ”

The Results

In 2001, Chesapeake Turf completed seeding and erosion control on 11 holes between the first of August and the end of November. Flexterra was applied with seed and fertilizer at an average rate of 3,800 pounds per acre, covering about 1 to 1.5 acres a day. A hot, dry summer and fairly normal fall was followed by above-average rainfall for the rest of the seeding period, Smyth reports. The weather included several storms in which one inch or more of rain fell within two hours.

“The Flexterra product performed real well, and there was little runoff from the storms,” he says. “As expected, the seed germinated in about five to six days and produced a good, uniform stand.”

Grant recalls one particular situation in August. “The rain was heavy enough to create washing in untreated areas, but there was no washing whatsoever where we applied Flexterra.”

“In addition to controlling erosion on the banks of a pond and around wetlands, Flexterra also prevented seeds in the roughs from washing onto the fairways and the sand traps,” adds general contractor Dennis Turco. “Wherever it was sprayed, everything held up well.”

“Flexterra is a nice alternative for controlling erosion if you don't have the budget for sod,” concludes Smyth. “I'd use it again.”

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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