Flexterra FGM® Case Study:
Eagle's Nest Golf Course

Cost-effective erosion control on long, steep sandy dune slopes

Situation

Acres and acres of rugged dunes and roughs at Eagle's Nest Golf Course, a par-72, links-style course just north of Toronto, Ontario, Canada, called for a high-performance, easy-to-apply method of controlling erosion and protecting water quality during construction.

The silty subgrade material on the course is capped with 8 to 12 in. of sand, which provides the growing medium for the turf. The fescue roughs include mostly sheeps fescue and hard fescue along with some creeping red fescue and chewings fescue. The fairways are being planted with creeping red and chewings fescue and colonial bentgrass. In addition, the greens are being seeded with drought-tolerant velvet bentgrass, whose low fertility requirements should lower the potential for nutrient runoff.

Problem

The very features that give Eagle's Nest its distinctive character also posed a challenge during construction: how to control erosion on more than 100 acres of bare, sandy dune slopes and secondary roughs in a cost-effective manner. Many of these slopes are not only long, they're also steep. "Near vertical," says Brent Rogers, director of golf course development for Eagle's Nest Golf Club, Inc., the project coordinator.

As he points out, storm water runoff and snow melt from the unprotected slopes could wash sediment into sensitive wetlands and areas, which could threaten water quality and wildlife habitat. At the same time, Rogers also had to ensure that newly seeded vegetation would survive dry summer weather to germinate and grow, sinking roots into the ground for permanent erosion control.

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Alternatives

Rogers considered and rejected several concepts:

Spraying a cellulose-fiber mulch with a tackifier. While the least expensive option, he notes, it would also have been the least effective in controlling erosion on steep slopes and promoting turf growth.

Installing rolled erosion-control blankets. Rogers ruled out this option because of the amount of labor required to install them, especially on such a large area, and because of the difficulty of working on the steep slopes.

Using a conventional bonded fiber matrix (BFM). "These products were hard to handle and apply and did not absorb as much water," Rogers says. "Also, seed germination was poor and they required a curing window of 24 to 48 hours without rain."

Solution

Rogers found a way to limit soil losses and promote germination and establishment of turf in the form of an advanced Flexible Growth Medium: Flexterra FGM® from Profile Products.

John Reynolds of Mulch-It, Inc., Putnam, Ontario, notes how it differs from a conventional bonded fiber matrix:

- In addition to a chemical bond, crimped interlocking fibers of the FGM create a mechanical bond for added strength in controlling erosion.
- It absorbs up to 50 percent more water.
- The interlocking fibers absorb the impact energy of raindrops and hold up to 15 times their weight in water. This reduces water runoff and improves transfer of moisture to the seedbed. In turn, that increases germination and turf coverage.
- It requires no curing time.

"If we had used a lower-priced product or one that didn't perform as well, we might have spent ten times more on re-grading and lost time as well as lost seed and product."

The Results

Seeding contractor Future Green of Schomberg, Ontario, applied Flexterra with seed and fertilizer at the manufacturer's recommended rate of 3,000 pounds of product per acre, using a 1,500-gallon truck-mounted Bowie hydro-seeding unit with a centrifugal pump.

The work began in the fall of 2001. By November 2002, the company had completed 12 of the 18 holes. This included treating 85 acres of the steepest dunes and secondary roughs with Flexterra.

"The material has protected slopes and dormant fall seedings over the winter," says Ken Wray, owner of Future Green. "Summer applications have held up well, even though the rain began as we were finishing up an area. It seems to hold moisture a day or two longer than a regular hydro-mulch and sand establishment has been very even."

"We had some really severe thunderstorms last year (2002), where heavy runoff in untreated areas even blew out some asphalt pavement in some locations, but Flexterra saved us by performing well in controlling erosion of the treated slopes," adds Brent Rogers.

He also credits the product for excellent germination last year, both in early spring, following a dormant fall seeding, and in late summer, after a six-week drought. "With moisture, it produced exceptionally quick germination (4 to 6 days) and maintained good growth because of its ability to hold reserve moisture," he says. "This was icing on the cake."

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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