

Flexterra FGM[®] Case Study: Windsor, Ontario Roadway Project

Controlling erosion, promoting growth establishment on steep embankments



Situation

To provide a quicker and more direct route into the city for motorists living in the outskirts of southwest Windsor, Ontario, Canada, the city built exit ramps from a county road to a thoroughfare, Highway 401. The addition of the ramps was designed to accommodate residents living in new subdivisions that access the county road.

An important facet of the roadway project included seeding and establishing healthy plant life on the 11-acre (4.4 ha) area under construction, including the 23-foot (3.35 m) tall ramp embankments. The contractor had a limited amount of city property to work with during construction. As a result, the embankments for the descending ramps onto the thoroughfare were built at an extremely steep angle—the embankments' inclines were two feet vertical for every one foot horizontal.

Problem

“This project was a big challenge,” said John Reynolds of Mulch-It. “Erosion control was necessary to stabilize banks, establish seed growth and prevent erosion of silt and soil into waterways.”

Achieving this was not an easy task on slopes with a 2H:1V gradient ratio. The steep slopes made it difficult to work on and around, and to apply a solution that would thoroughly cover and stick to the soil. In addition, a product was needed to prevent erosion of silt and soil and to retain moisture for seed growth.

“We were looking for an erosion control tool that would really hold up well on steep embankments,” said Susan St. Louis, the project engineer from Dillon Consulting, LTD in Windsor.

Flexterra[®]

Alternatives

Reynolds determined erosion control blankets were not appropriate for use on steep slopes. Applying a blanket is more labor-intensive and requires stapling to the ground, he said. In addition, the soil on the embankments was coarse. Blankets cause tenting when applied to coarse soil, which means a blanket doesn't make complete contact with the soil. As a result, small patches of soil are left unprotected and without moisture, increasing the chances for seed migration.

Reynolds also ruled out conventional bonded fiber matrix (BFM) products. BFMs lack the ability to efficiently grip and bond to the soil for an extended period of time, thus jeopardizing their effectiveness in erosion prevention and moisture retention. Also, most BFMs require a cure time of 24-48 hours without rain and should be applied on dry soils.

Solution

Reynolds recommended using Flexterra® from Profile Products. Flexterra is the only FGM that uses patented technology to combine both chemical and mechanical bonding into a mulch fiber. Mechanical bonding incorporates man-made fibers into the matrix, making it a stronger-gripping mulch.

In other words, Flexterra sticks better to the soil. This is an important characteristic for effectively controlling erosion under rainy and windy conditions, and on steep slopes, for an extended period of time.

When applied, Flexterra forms like a blanket. But unlike blankets and BFM products, "Flexterra helps create a micro-environment for seed growth," Reynolds said.

Flexterra requires no cure time, which eliminates the threat of mulch washing away and downtime in having to wait for rain to pass. "The combination of mechanical bonding plus a cross-linked hydro-colloid tackifier allow you to spray Flexterra despite the threat of rain," Reynolds said.

In addition to manufacturing quality soil solution products such as Flexterra, Profile Products partners with its customers to lend support on projects. Dwight Johnson, an erosion control expert with Profile Products, provided on-site analysis of the roadway project in Windsor and worked with the engineer and distributor on an erosion control program.

The Results

St. Louis went with Reynold's recommendation to use Flexterra. In early June 2003, Flexterra was applied hydraulically at a rate of 3,200 to 4,000 pounds per acre (3600-4500 kg/ha). Mixed in with the FGM was a combination of seven grass species and a fertilizer tailored for the site.

Despite the dry summer and steep slopes, erosion control and turf establishment were clearly evident two months after application, Reynolds and St. Louis agreed.

The threat of rain can hinder application of most erosion control products, but it didn't stop sub-contractor Peter Palmari from applying Flexterra. Light rain did fall one day, but because Flexterra needs no cure time, he continued to apply the FGM.

Flexterra's interlocking matrix of man-made and organic fibers creates more water-absorbing cavities to increase moisture retention and enhance seed germination. As a result, the matrix helped to absorb and retain the little amount of rain that did fall during the summer of 2003.

For St. Louis, Flexterra's performance met her expectations. "There are no signs of erosion and quite a bit of vegetation," she said. "The fact that we didn't have any erosion to speak of is great for us."

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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