For more information contact Presto Products - 1-800-558-3525
Cellular confinement employed at Cootes Paradise

A cross-disciplinary team of engineers and landscape architects opted for a revolutionary cellular confinement system with polymeric tendons to rehabilitate a 1.5h:1v slope in a Hamilton, Ontario conservation area. Ontario’s transit authority, GO Transit, was expanding its commuter rail lines, necessitating track improvements between Toronto and Hamilton. The owner of that section of track, CP Rail, constructed a twin track beside an existing track, including a new railway bridge over the DesJardins Canal. The canal connects Lake Ontario’s Burlington Bay and Cootes Paradise, a designated conservation area owned by the Royal Botanical Gardens.

Justice Benkhysen said. “Perhaps 10 or the battle to restore the area as a cattail natural, living appearance with excellent stability through sound design,” Dan Senf of Presto Geosystems said. “We’ve done bio-engineered slopes before, and they require a more specialized Installer. With assistance from Interisol, we were able to install this system ourselves. This is a system that a general contractor can install.”

Silty clay material was brought in, placed and compacted with a sheep’s foot drum compactor to restore the slope’s original profile. The only compacting required was provided by the weight of the backhoe and a sheep’s foot drum compactor. The Geoweb was expanded into place, anchored, and the adjoining sections were mechanically fastened together using a manual industrial stapler. The system was infilled with unscreened topsoil using a track backhoe with an extended dipper. The backhoe bucket was used to lightly compact the topsoil infill. “It was too late in the season for hydroseeding,” Waters said. “The intent is to hydroseed in the spring. In the meantime, a lot of native vegetation has spread to the area and is growing on its own.”

Bioengineering still a possibility

“Looking at the steepness of the slope, we knew we’d have to go with some type of system that was appropriate and was proven,” said Kristof, a landscape architect with Ecoplans, a multi-disciplinary environmental consulting firm that has won awards for a similar project in the Town of Oakville, Ontario. Ecoplans is a division of McCormick Rankin, the transportation consulting firm hired by CP rail to administer the project. McCormick Rankin does most of its work in Ontario, but a division of the firm, McCormick Rankin International, does work abroad, including the United States and Australia.

“We considered a bioengineering approach, where aggressive growing species like poplars, willows and dogwoods would be transplanted,” Kristof said. “But the timing was wrong. It was mid-sum-mer and the plant material would die. It’s generally better to transplant during the dormant period through late autumn and early spring.”

Kristof contacted InterSol Engineering, Inc., Presto’s consultant and Canadian technical representative to determine if the Presto Geoweb Cellular Confinement System would be applicable. Jamie Walls of InterSol analyzed the slope using WebCover, a software program developed in cooperation with Presto Geosystems.

“What WebCover allows us to do is analyze the stability of the Geoweb® system and give the client the safest, most cost-effective solution. It’s not just a stand alone product anymore. It’s an engineered system,” said Andrew Lister, Technical Representative for InterSol Engineering and Presto.

Technology used in Desert Storm

Presto Geosystems pioneered cellular confinement technology, a combination of a honeycomb-like polyethylene structure and engineered infill materials, in cooperation with the Army Corps of engineers like poplars, willows and dogwoods but a division of the firm, McCormick Rankin does most of its work in Ontario, to administer the project. McCormick Rankin, the trans- global company, is a technique that Ecoplans has incorporated before, most recently in the Mountaintop Road bridge approach project in Georgetown, Ontario.

“It was a result of Hurricane Opal. Reprinted from the February 1996 Geofabrics Journal

A cellular confinement system with polymeric tendons is used to rehabilitate this 1.5H:1V slope.

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The contract for bridge construction began in September of 1994, and work on the slope took place in the spring of 1995, concluding in May. The budget for the bridge at DesJardins Canal was roughly $2 million, a very small percentage of which was for slope rehabilitation.

Bioengineering still a possibility

A bioengineering approach is still possible within the Geoweb system. Saplings can be inserted in the individual cells, helping to anchor the system in place and adding to the biodiversity of the site. This is a technique that Ecoplans has incorporated before, most recently in the Moun-

On December 5th we recorded 91 millimetres of rain. That’s about 3/8 inches. In my last 20 years working for Environment Canada I remember hearing about a rainfall like that once in the 1970s, I’d say that rain is a once in 35- to 100-year event. Within 30 miles of Hamilton they received 116 millimetres.

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