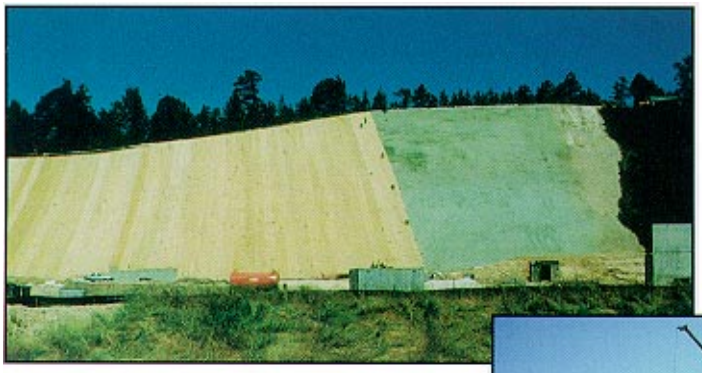
Jefferson County Solid Waste Transfer Site

PROVIDING stable vegetative cover to a large 1.5h:1v slope tested the ingenuity of project engineers and contractors during the construction of Jefferson County, Alabama's new solid waste transfer site. The chosen construction site is located directly across the street from the local wastewater treatment plant. The location made the logistics of treating the transfer site's wastewater simple, however the site's features were not ideal for construction.

"Basically, the entire site had to be cut out of a large shale hill," explains Frank Hogan of Engineering Service Associates, Inc. "Excavation left a 1.5h:lv slope that ranged in size from 70 - 200 feet in length and covered nearly 2500 lineal feet."



Budget constraints did not allow for the slope to be cut down, and leaving the shale slope unprotected would lead to serious erosion problems. Sunshine Supplies, a local Presto distributor, was approached to develop a solution.

"Due to the overall size, make up, and steepness of the slope, we recommended the installation of a comprehensive erosion control system that provided a protective vegetative mat over the entire slope," explains Skip Ragsdale of Sunshine Supplies. "A vegetative mat protects the slope from the effects of erosion and provides a natural look."

The specified system included a non-woven geotextile, the perforated cellular confinement system, hydroseeding and erosion control blankets. Installation began in April of 1997.

Presto's perforated Geoweb® slope protection system confines, reinforces and restrains vegetated topsoil infill, controlling downslope movement. The perforated system is an innovation designed to increase root lock-up with vegetated systems and allow the passage of water, nutrients and soil-organisms from cell-to-cell, thus creating a healthier soil environment. It facilitates parallel slope drainage of the infilled cell. In saturated conditions, an overall weight reduction of the infill material reduces downslope sliding potential, resulting in a more stable system.

First a 4 oz. Mirafi non-woven geotextile was laid down the slope. Next, sections of the perforated system were expanded down the slope. Increased stability was provided by incorporating polymeric tendons into the system to counteract the heavy gravitational and hydrodynamic forces imposed on the slope. Twenty-four-inch #4 rebar "J" hooks were installed on four foot centers, and four-inch #4 rebar keepers acted as restraint pins to transfer loads on each tendon at eight foot intervals down the slope. The tendons were anchored to 3-inch schedule 80 PVC pipe and buried in a 2 l/2-foot trench at the crest of the slope.

By the fourth day of installation, the six man crew had advanced to placing an eight by seventy foot length of Geoweb material with five tendons and 36 J-hooks in less than one hour, including stapling the sides and ends of each cell with three staples per joint.

Once the Geoweb system was fully installed, the crews began the tricky process of infilling the slope. A unique method of infilling was performed, utilizing a high speed conveyor truck positioned on top of the slope. The conveyor sprayed the infill material 50-60 feet out and down the slope as the construction-leveling crew, working with belaying lines to stay on the slope, raked the material into the Geoweb system.

As the work continued farther down the slope, a polyethylene tube was attached to the conveyor truck discharge. Skip Ragsdale explains, "Because of the height and overall enormity of the slope, ingenuity was used to properly infill the topsoil. A conveyor truck can normally spray infill 50-60 feet out from the top of the slope. To avoid having the topsoil pile up at the 50-60 foot length, a polyethylene tube was attached at the discharge. This tube allowed the fill dirt to be transported farther down the slope and to be placed exactly where it was needed by sliding the tube from left to right. Varying lengths of tube were cut and attached to fill different lengths down the slope."

A rainstorm occuring shortly after the infilling process was completed, provided natural assistance to the compaction process or "hydro-tamping". After the rain, the degree of compaction of the infill material was ideal and compacting the infill any further would have hindered root growth and development.

Hydroseeding with a mix of hulled Bermuda, weeping love grass, creeping red fescue and K-31 grasses was performed to initiate vegetation. Rolls of North American Green S-150 erosion control blankets were placed at a rate of 400 yd^2/man hour or 2400 yd^2 per day to prevent any surface washout before vegetation was established.

Now completed, the slope is fully vegetated and performing up to specifications. **L&W**

For more information, contact Presto Products Company, *670 N. Perkins Street, Appleton, WI 54913-2399, (800)548-3424, fax (920)738-1222.*

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