

South Lake at Stonebrook – An Innovative Solution to Golf Course Erosion Control

BEFORE soil is disturbed now days, a successful erosion control plan needs to be in place. U.S. EPA National Pollutant Discharge Elimination System (NPDES) litigations have become more stringent with the adoption of NPDES Phase II. Disturbed sites as small as one acre are now required to follow the NPDES permitting process.

Each year more and more golf courses are being constructed as the popularity of the sport continues to increase. Erosion control plans for golf courses pose a unique challenge. Golf courses need to establish mowable, playable turf in a timely manner in addition to controlling erosion. Conventional erosion control blankets (ECBs) do a fine job at controlling erosion while promoting ideal growing conditions; however, the netting that is commonly used on ECBs presents a problem for golf courses. Golf courses need to be able to mow their grass sooner than the netting degrades. Historically, netting that contains UV degrader additives has been used on golf course applications because the netting photo-degrades within approximately 90 days. Golf courses cannot wait months to mow their playing surfaces, thus ECB netting may be found wrapped around mowing equipment.

Sod is another option for a quick mowable turf, but it costs approximately twice as much as ECBs and requires cumbersome watering for survival.

Problem

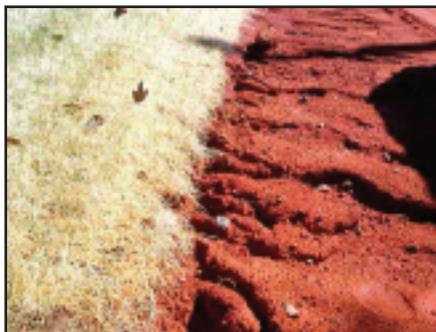
This same challenge existed at South Lake at Stonebrook, a golf course owned by Stonebrook Billiage Ltd. Construction of the Pace, Florida course began in the autumn of 2003. The 185 acre, 18 hole course contains 650 home sites, so there was plenty of potential erosion that needed to be prevented. Jay Baynes, project engineer from Land Consultant Inc.,



Net-less erosion control blanket protecting long stretch of golf course.

recognized the need for erosion control early in the planning stages of the course. Innovative solution

Jerry Bohannon, director of American Excelsior Company's Earth Science Division, offered a new erosion control and vegetation establishment solution that caught Baynes' attention. The new solution was Curlex®



Rills formed in the soil where surface covers were not installed.

NetFree™ – the first ECB that does not contain any netting.

The product consists of a specific cut of 100% weed seed free Great Lakes Aspen curled wood excelsior with 80% of the fibers being less than 6 inches in length. The product is stitched together to a consistent thickness with fibers evenly distributed throughout the entire area of the blanket. The engineered curled and barbed properties of the fibers within the product do not require the use of ECB netting to maintain product integrity.

Performance testing, which followed standard protocols published by ASTM for the testing of erosion control blankets, was conducted on the product at the ErosionLab in Rice Lake, Wisconsin during the summer of 2003. The testing proved that an ECB without any netting could perform similarly to conventional netted ECBs.

Erosion control measures taken

Baynes decided to try the innovative product on the sandy clay soils of the golf course. Approximately 200 rolls of the net-less ECB were installed on the course to prevent soil erosion and enhance vegetation establishment without the headaches of ECB netting. The product was used on hillslopes up to 3H:1V, holding ponds, and stormwater retention areas.

Hiram J. Cook Jr., PGA Golf Professional, supervised the construction activities at Stonebrook. No outside contractors were used on the project as course personnel completed all the work.

The greatest single application of the new ECBs was installed in a large stormwater retention ditch, which was constructed to handle runoff generated on the course. Retention areas are very important because they slow and retain stormwater runoff. Pollutants in stormwater runoff, such as nutrients from fertilizers, are prevented from discharging into receiving water bodies. First, the retention ditch was constructed to a trapezoidal shape with a 100 ft wide bottom, 40 ft long side slopes at 4H:1V, and a total length of 700 ft. Maximum flows are not expected to exceed 1.0 lb/ft² shear stress based on the design of the retention ditch. Following construction, the soil was compacted, seeded with Winter Rye, and blanketed. A small crew ranging from two to three individuals was used to install the ECBs. Common Bermuda was used to over-seed the retention area in April 2004 because Winter Rye is only an annual grass.

Learning experience

Installation personnel incurred a minor problem during the installation of the ECBs. Approximately 10% of the center cores were crushed inside the blanket rolls. The manufacture of the ECBs was informed of the inconvenience and now provides a soft core in the center of the blankets that does not get crushed inside the product.

Results

The benefit of installing ECBs was recognized shortly after the products were installed. Rainfall-induced runoff caused rills to form in soil that was unprotected,



Winter Rye emerging through erosion control blanket shortly after seeding.

while soil under the ECBs was held in place. The threat of the seedbed washing away exists anytime that rills form in the soil. Vegetation is the ultimate goal of erosion control projects, so the seedbed must be protected so germination can occur.

Plush vegetation now exists on all the slopes, holding ponds, and retention ditches where the net-less product was installed. Cook states, "Course personnel are extremely pleased with the results of the innovative solution and they thought the blankets would hold without using many staples". It is not recommended to install any ECB without anchoring it to the subgrade, but course personnel recognized the ability of the

product to conform to the soil. John Slupecki – CPESC, American Excelsior Company – has been monitoring the success of the project and he believes the product provides great intimate contact with the subgrade because the product does not contain any netting, which potentially can cause a product to bridge and reduce contact with the soil. Product-subgrade contact is critical in all erosion control applications.

Summary

The problems associated with ECB netting were removed from the picture completely at Stonebrook. Course personnel were able to mow the protected areas as soon as vegetation became established. An erosion control mulligan will not be needed on this course because the project team scored well under par with the innovative approach. **L&W**

For more information contact American Excelsior Company, 850 Avenue H East, P.O. Box 5067, Arlington, TX 76005-5067, 1-800-777-SOIL, email: info-curlex@curlex.com.



Winter Rye stand six months after seeding.