



GROUPS MAINTENANCE



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Retain Smartly

by Marybeth Reed

The role of segmental retaining walls (SRWs) in helping to groom the country's golf courses has increased dramatically in the past few years. From solving embankment soil erosion problems to creating usable space without heavy construction, SRWs have caught the attention of golf course designers and superintendents faced with decisions on how to make the most efficient use of available land.

Many new and newly renovated golf courses across the country have improved areas from tee to green using SRWs attractive textures, shapes and colors in practical and aesthetically pleasing ways. SRWs provide an easy, low-cost way to dress up cart paths, course entryways, and clubhouse grounds.

THE CONCEPT

The concept of segmental retaining wall design and construction is relatively simple. SRWs are gravity retaining walls where the weight of the wall itself, the friction between units that comprise the wall and the cant (setback) of the wall all provide resistance to the sliding action of retained soil. This makes them easy to install and maintain. In circumstances where walls over 4-feet in height are planned, geosynthetic materials (geogrids or geotextile fabrics) are simply extended horizontally through the interface of the SRW unit into the retained soil mass behind the wall. This reinforcement provides the needed resistance to greater external forces common in taller walls. Geosynthetic support to SRWs is also commonly used in applications where surcharge loads are present, such as slopes, parking lots and driveways.

THE MATERIAL

The typical SRW unit is made of high-strength concrete; its size and weight allow for installation by a single worker. Heavy construction and installation equipment are generally not needed. A variety of SRW unit colors, shapes and textures are typically stock items readily available for immediate delivery. SRW units are also ecologically friendly; they are made from naturally occurring materials that are in abundant supply nationally and contain no chemical preservative or toxic substances that can leach into the soil or water.

SRWs are flexible structures (no mortar, no concrete footing). Because the units can move

and adjust relative to each other, they will tolerate minor ground movement without causing distress. In addition, dry stacked SRW construction allows free draining of water through the wall face, thereby reducing hydrostatic pressure build-up behind the wall. Because of these features, SRWs are not appropriate for use as building foundations, but they perform beautifully along tee areas, water hazards, cart paths and in many other golf course landscaping applications.

You can find SRW systems with hollow-core unit and solid unit characteristics. Because they require no mortar to secure and align each unit, there are a number of different methods used in ensuring a wall's integrity and performance. You must fill hollow-core units with crushed gravel. On the other hand, you don't have to do this for solid units, saving on labor and installation time. Solid units also tend to be more resilient to damage during transport, construction and in the overall lifetime of a wall.

THE DESIGN

SRWs provide great design flexibility that allows for straight, curved, or serpentine walls to meet almost any site constraint. You can also easily incorporate interesting and eye-catching design elements, such as steps, columns and tiers. Another advantage of solid SRW systems, as opposed to those with hollow-core units, is that you can modify or split solid units on-site as needed for building any element or design, while hollow-core systems usually require you to order specialty units to incorporate several design elements.

Flexibility of design, ease of installation and greater durability have prompted officials at golf courses across the country to take a good look at SRW systems when addressing new landscape construction or site improvements.

THE APPLICATION

Winnetka Golf Club is an 89-year-old, premiere public course nestled in the northern Chicago suburb of Winnetka, Ill. In maintaining the club's historic tradition, renovations have been kept true to the original designers' intentions. Mark Anderson, assistant course superintendent, had this in mind when it became necessary to enlarge the 15th tee box. "We needed to widen and lengthen the area, but because the land was so sloped at the long ends of the box, widening the box was all we could achieve with relative ease. We couldn't move the box closer to the green, and because of the surrounding uneven, sloped, wooded areas we couldn't lengthen the back of the tee box without significant reconstruction. We had tried timber walls in the past and saw them rot before our eyes. So we researched other options and decided a solid pinned SRW system was our best option in the long run," Anderson says. "We could tame the uneven ground and create the flat space we needed for a larger tee box. We chose a system that offered a random-pattern appearance and had been textured to provide an antiqued, or 'weathered' look, giving our tee box an old-time feel that fit its history. When you have a golf course that's been around since 1914, it's important to preserve that tradition."

Superintendent Mark Vaughn of the Goodyear Golf Club in Danville, Va., also faced some extensive renovation when it was decided to replace the rotting timber walls that were used in every possible application on the course — water hazards, tee boxes, planters, bridge ramps and walls along cart paths. "We also had too much slope on some older tees and erosion

around our lakes,” Vaughn says. “I decided to use segmental retaining walls because I didn't want to be part of the large and expensive task of replacing treated-timber ever again, and these [the club's chosen solid, pinned SRW system] are durable and made to last. I was also able to easily create more interesting designs like fanned-out steps to tee boxes.”

Even bigger problems faced the staff at Soldier's Field Golf Course in Rochester, Minn. A major U.S. Army Corps of Engineers flood control project on the Zumbro River, which traversed the course, called to widen and deepen the river channel, which would adversely affect three course greens and one tee and would require the course to be closed for a year. On top of that, to maintain its established course rating, Soldiers Field personnel estimated that the time required to rebuild the greens would take another year. Loss of revenue for two seasons would have been disastrous; alternatives needed to be explored.

Original plans dictated the selection of an anchored sheetpile retaining wall system along this critical stretch of the river. Construction activity required to build this system could not be altered to minimize impact on the nearby tee and greens. So the Corps of Engineers conducted a value engineering study on various types of retaining wall systems, including SRWs. The study indicated that an SRW system would have minimum effect on play areas in proximity to the project, and call for a shorter construction timeframe. Another benefit in choosing the solid pinned SRW system turned out to be a cost savings of almost half a million dollars.

At planned community residential/golf course developments, segmental retaining walls line ponds and lakes, define fairway land areas, conquer soil erosion problems, and control course damage due to unwanted water. Their use and application is limited only by the imagination. Winghaven Country Club is part of an extensive master-planned community built around the international headquarters for MasterCard Inc. The community literally rose out of 1,200 acres of hilly swampland to become a town virtually overnight — complete with a shopping center, schools, churches and the Championship Jack Nicklaus design golf course. Because of its popularity and central location, the Winghaven Clubhouse needed more space to service the growing country club membership. Natural stone was originally used to retain a newly graded area created for the expansion of the club's raised terrace and patio. Unfortunately, the stonewall fell before any construction on the patio began. Steve Sebastian, head pro at Winghaven, recalled that the club superintendent and the developers went looking for a product that was certainly strong, but it needed to complement the look of the clubhouse and the community as a whole. Winghaven selected a solid system with a split-faced texture and random-pattern appearance to provide the support for the new patio, as well as create spaces for floral plantings and greenery. “It wasn't just about getting a wall that held up the soil, it was also about finding something that would fit the whole feeling of the place,” Sebastian says. “This is a beautiful club amidst natural surroundings, and nobody wanted a structure that would stick out like a sore thumb. It had to be part of the scenic backdrop.”

THE RESULT

Long-range value in SRW systems easily off-set any of its up-front costs by offering the ultimate savings in time, labor, materials and maintenance, in addition to their long-term performance and durability. And, while SRW systems are not appropriate for all building applications, their design flexibility, ease of installation and low maintenance history, are

making life a little easier for golf course superintendents and maintenance staffs by providing long-term, cost-effective solutions to managing their extensive landscapes.

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