

Vinyl wall solves erosion problem

Look to this case study for a way to solve extensive creek erosion with long-lasting vinyl bulkheads.

Joe Stegman, superintendent of Bent Tree Golf Club, Columbus, Ohio, used vinyl bulkheads to solve a big erosion problem.

Bent Tree Creek curves close to the front side of the course's fifth green.

Three consecutive rainy seasons caused the creek to cut a channel to within a few feet of the front edge of the green, 10 feet from its original course three years ago.

Portable Piers, Inc., Muncie, Ind., supplied the bulkheads. It had been installing vinyl bulkheads to control waterfront erosion problems for 10 years. Vinyl is better than concrete, wood or steel in these situations, says Dan Hickle, president of Portable Piers. "You can't keep going back every few years to take care of the maintenance problems, and erosion is getting to be an enormous problem."

Hickle recommended a vinyl bulkhead, backfilled with stone and sodded over, to complete an environmentally sound reconstruction of the creek bank.

C-LOC, made by Crane Plastics, Inc., Columbus, Ohio, was chosen for its strength, durability and cost-effectiveness. One-foot-wide exterior grade vinyl panels are recycled from 89 percent post-industrial regrind. They interlock to form rugged sheet piling walls that are attractive and do not need maintenance.

Easy transport

The C-LOC panels are much lighter than wood or steel, and can be delivered to



After the fill had settled, it was topped with soil and sodded.

a site without harming the turfgrass with heavy delivery trucks and pile-driving rigs. Hickle's crew moved the panels to the fifth green from the parking lot on a golf cart fitted with a pick-up bed.

According to C-LOC, the vinyl bulkheads cost less over its warranted, 50-year life than wood piling materials, and does not require heavy-duty pile-driving equipment for its installation.

The up-front cost is about 15 percent more compared to using non-warranted 2 x 10-inch tongue-and-groove treated timber. It is possible to buy 2x10-inch treated timber with a 20-year warranty, says C-

LOC, but it is more expensive. C-LOC is close to the price of warranted, 2 x 10-inch treated timber.

Within three months, the repair was not noticeable, much to the relief of golfers who had started to dread the fifth hole as a "black hole" for golf balls.

Bent Tree was voted the Columbus area's best golf course in 1996. In 1997, *Mid-Ohio Golfer* magazine said it was the best conditioned course in central Ohio for that season.

How Bent Tree installed vinyl bulkheads

1) 24-foot long, one-foot wide panels were cut to length, and driven six to eight inches into the silt with a sledge hammer. The panels interlock.

2) Panels were trued with a level and driven one at a time into the creek bed along the creek's original bank line, until they formed a large arc the length of the eroded area. Each panel was cut to a finished height of eight to 10-feet to bring them level with grade.

3) Deadmen were driven into the existing bank, and secured to tieback rods, which were also bolted at the other end to the two horizontal rows of wales that provide reinforcement to the exterior bulkhead wall.

4) Final step was to backfill the washed-out area between the new bulkhead and the eroded bank with 600 tons of #34 stone, fill dirt, finished with sod.

Dan Hickle specified the stone to make sure that runoff water that forms behind the bulkhead could find its way through the panels into the water course without building up back pressure that would stress the assembly. The four-man crew finished the job in eight days.

After three years of heavy rains, Bent Tree Creek had eroded its banks by 10 feet.



The construction crew bolts the top wale in place, working from one end of the wall toward the other.



The crew fills the eroded area with 600 tons of gravel.

