

Eyeing LINERS

A construction crew works on a bunker on the 11th fairway at Sherwood Country Club in Thousand Oaks, Calif.

Superintendents look to reduce maintenance labor when weighing bunker liner options. BY MARISA PALMIERI

Superintendents pursuing bunker renovations these days have much more of a selection when it comes to liners than did their counterparts of even a decade ago.

When they select liners – whether it's synthetic fabric or sprayed-on liquid or concrete material – superintendents consider several factors. Bunker design, cost, longevity and future maintenance needs are at the top of their lists.

"No. 1 is what type of architecture you're dealing with," says Brian Anderson, CGCS, at Nemacolin Woodlands Resort in Farmington,

Pa. "No. 2 is the sand and the base, like if you're trying to keep white sand from being contaminated by the base soil. But architecture will dictate a lot."

Sean Dyer, golf course maintenance director at Sherwood Country Club in Thousand Oaks, Calif., looks at lifespan, playing conditions and maintenance.

"How is it going to hold up over the years?" Dyer says. "How will it affect playability? How will it keep my contamination down, drain the water and keep my sand on the face?"

IN FAVOR OF FABRIC

Nine years ago Robert Stone opted for fabric liners for the 70-some greens bunkers at The Honors Course in Ooltewah, Tenn.

The renovation was done in-house for about \$50,000, including liner sand and labor. It took about three months.

At the time, fabric liners were one of the only options, Stone says, noting he would have liked to renovate all of the bunkers using the Billy Bunker method (named for former Augusta National superintendent, Billy Fuller).

"That's the best way to do them, but it's

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more labor intensive and costly," he says. "That's why a lot of these other products have come along."

Because Billy Bunkers weren't in Stone's budget, he chose Sand daM, which is made of non-biodegradable polyester and synthetic binders.

"Overall, it's done well," Stone says, adding that there have been some problems with fabric sticking up out of the sand.

"You have so many things to do and sometimes you get a little low on sand and someone may hit the fabric, so you'll see a piece that sticks up."

Stone's team rakes all bunkers by hand, so mechanical bunker rates don't cause problems – just golfers do. He tries to mitigate this problem by maintaining 3- to 4-inch sand depths.

"Checking your sand depths is as important as your other routine jobs," he says. "It's not a job that can get put on the back burner."

Stone expects the liners to make it to 20 years. "We're just under 10, and we should make it as long as we keep our sand depths."

SPRAY-ON ADVOCATES

Being a stop on the PGA Tour from 2003 to 2006, Nemacon Woodlands agreed in 2002 to redo its 50-plus bunkers so they drained better and featured pure white sand with better playability.

Anderson led the project that included completely renovating 6.6 acres of bunkers – all new drainage, liners and sand. Aspen Corp. was the contractor on the \$1 million project.

When it came to selecting a bunker liner, Anderson, who's dealing with a native clay soil, was focused installing a product that would keep contaminants from coming up and plugging the drainage, keep the filtration rate at its peak and maintain bright white sand. Washouts aren't a major concern at Nemacon Woodlands because of the bunkers' flat bases.

Though washout cleanup wasn't a big concern for Anderson, maintenance was on his mind.

"I'd worked at a facility before where we had liners, and it was constant maintenance on them," he says. "The bunkers were highly flashed, so the sand would move, and we'd hit a staple or a golfer would hit a liner and/or a staple. We just didn't want to deal with that."

So after looking at several fabric options, Anderson chose Klingstone, which is a liquid-applied polyurethane-based barrier, despite its higher cost. Anderson estimates the liquid product was about double that of fabric options at the time.

"It was about 95 cents a square foot to pur-



An applicator sprays on the liquid silica stone Sportcrete material during Sherwood Country Club's bunker renovation.

chase and install vs. the fabrics that were about 45 cents to purchase and install," he says. The installation costs were kept down thanks to Nemacon's flat-bottomed bunkers, which required fewer men to install.

Seven years after installation, Anderson is pleased with his liner choice and expects the liner to hold up for at least another 11 years.

"In the long run, I believe it's helped us keep the bunker functioning like it was meant to when we constructed it. That is, draining properly and not contaminating the sand."

Sherwood's Dyer is fresh off completely renovating 51 bunkers. From February to April, contractor McDonald & Sons removed the old sand, installed new drainage, liner, new sand and subsurface drip irrigation from the bunker faces and resodded. Dyer chose Sportcrete's liquid silica stone liner, and the manufacturer did its own installation.

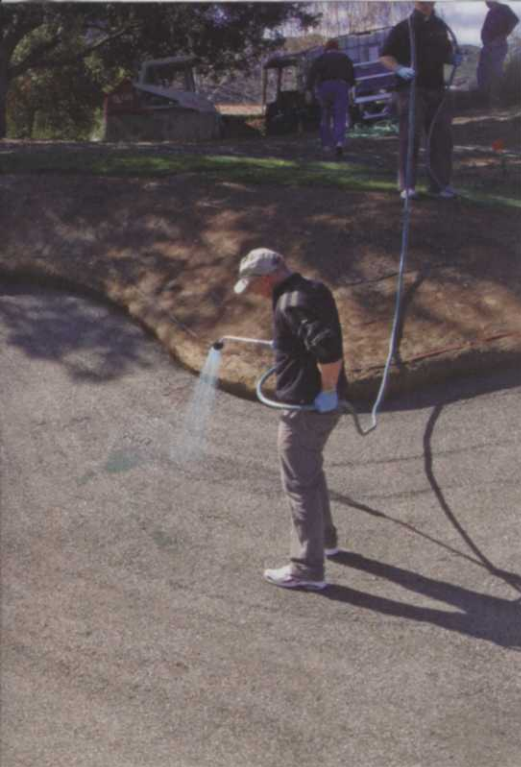
In addition to a quick installation, as Sherwood is home to the Tiger Woods-hosted Chevron World Challenge 2009 in early December, Dyer was looking for a liner that would save him labor.

"Before, we'd have at least 12 hours of work just to get the water out of the bunkers after a rain," he says. "We'd have every pump in the shop pumping out the bunkers and cleaning up the contamination."

When considering bunker liners, Dyer priced out fabric options but never really considered them.

"I've used them at two different construction projects and they both peeled up very easily within a year or two," he says. "The mechanical bunker rake always finds it, and it's kind of a nightmare."

The amount of staples needed were a concern



for Dyer, too, because of their nature to pop up due to freeze/thaw cycles.

"Even in California, we frost four to five times a week in the wintertime," he says.

Sherwood's bunker renovation cost about

\$585,000, and he says the liner was about \$2 per square foot installed. The fabric options compared at about 40 cents to 50 cents a square foot installed. Dyer sold the Sportcrete by demonstrating what he'd save on labor.

"It's more expensive, but it pays for itself," he says. "It's guaranteed for five years, but considering just what it's saved me on labor in my small rain window, we'll see payback in that warranty period."

So far, Dyer's pleased. He saw his proof during installation after the first hole was complete and the course took on 3 inches of rain.

"We didn't have any sand displace and there was no water in the bunkers," he says. "By that point, I was still questioning like any superintendent would, but right there I had faith."

"I knew the drainage would work, but I was really surprised about how the liner kept the sand on the face," he says. "It sucks the water out quicker than the sand could move."

ON THE FENCE

Morristown, N.J.-based Morris Golf completed

a \$650,000 renovation of the 71 bunkers on Hamilton Farm Golf Club's championship golf course last March. Though it's a young golf course (construction began in 1999), it was time to renovate and bring in new sand for the steep-faced bunkers, which were originally lined with natural coco fiber liner, one of the only materials available a decade ago.

"Four or five years ago it deteriorated to just netting under the sand," says Patrick Husby, grounds superintendent for the Gladstone, N.J., club. "We have very steep-faced bunkers. With no liner, the sand washes straight down and erodes our native clay subgrade. The bunkers were contaminated to the point that it was nearly impossible to have a good hit out of them."

In addition to playability, maintenance was a concern.

"The washouts would be so bad previously that after an inch of rain over a one- or two-hour period I might have 15 to 20 men take an entire day to put the bunkers back together," he says. "It was nasty. That was part of the



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reason the sand deteriorated so badly. There was no option but to remove so much of that silted material."

When selecting a liner, Husby went with a fabric material despite not being a fan of using staples. At the time, he felt like there were few other options.

The price per square foot (installed) was about \$1.75 for a SandMat product.

How's it holding up?

Husby has experienced some problems with the staples popping up out of the ground.

"Hammering staples back in is a maintenance headache," he says, noting the course's thick, red clay soil makes matters worse. "It's physically hard to do. Many are three-quarters of the way in and then bent over the rest of the way."

Keeping track of the tens of thousands of staples is a difficult task for the maintenance staff. Husby worries a golf club could catch on one, so his five-man bunker crew spends about an hour or an hour and a half a day pounding staples back in when they hand rake bunkers.



Installers lay down Sand Mat liner at Hamilton Farms Golf Club in Gladstone, N.J.

The liner edges are also becoming an issue, Husby says. When the edges are exposed they start to fray, which requires dedicating labor for trimming them. He sends a three-man crew around once a week.

"That's adding up to some considerable time – eight to 16 man-hours per week," he says. "It's become something we have to do that we didn't have to do before."

What does he like about the fabric liner? "My bunkers never wash out," he says. "I never really even have rivulets in the sand from rain coming down – and we probably had six inches of rain from May to the beginning of July this year."

As far as lifespan, Husby expects the liners to last five to seven years, which is what architects have told him to expect.

After Husby committed to fabric liners, he heard about Sportcrete from a peer who'd worked with the material overseas. Since he was already going to have all the bunkers shelled out, he decided to try Sportcrete on one of them.

"Even though we were already using fabric, we tried one to see how it would perform comparably," he says, noting he considered it a learning opportunity – Hamilton Farms also has an 18-hole executive course that may need liners down the line.

So Husby renovated one bunker with Sportcrete as an experiment for about \$2 per square foot.

Like his fabric-lined bunkers, the Sportcrete bunker also never washes out.

"I believe it's performing the same as our fabric liners as far as drainage, but it doesn't have staples, so that's an obvious benefit," Husby says. "But had we done Sportcrete on a global scale, I don't know if our steep bunkers could handle it."

What's his recommendation for other superintendents?

"I'd investigate, ask, talk to everyone I know about any alternate ways to line bunkers," he says. "Do your due diligence and don't think any idea is too silly to protect the club's investment and your reputation in that you can provide what you said you could provide when it comes to maintenance. No method is 100 percent perfect." **GC**



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