

# TRY TO ACHIEVE *perfection*

Drainage is the key to maintaining consistent, playable bunkers.

By John Torsiello

Superintendents would like to hear golfers in the 19th hole chatting about the fine conditions of greens, fairways and tees. But when the discussion turns to bunkers, it's usually time to start worrying.

Like it or not, player expectations of bunker conditions might even exceed those demanded of greens – despite the fact that when a ball is hit into the sand it's supposed to be a penalty. That's why it's paramount for superintendents to maintain bunkers properly, at times renovating them, even though doing so is costly and time consuming.

"I get more complaints about bunkers than I do anything else," says Brad Sparta, golf course superintendent at Ballyowen Golf Club in Hamburg, N.J. "People tend to forget that a bunker is a hazard. Unless bunkers are maintained perfectly, you're going to get complaints. And even if they're maintained perfectly in your eyes, you're still going to get complaints."

Translation: It's a no-win situation.

"I say it tongue in cheek, but it's true: Taking care of your bunkers is like painting the Golden Gate Bridge," says Les Rutan, golf course superintendent at Crystal Tree Country Club in Orland



Bunkers are susceptible to contamination and heavy rainfall because they're often below the playing surface and sloped. Photo: BunkerBlaster



## BUNKER MANAGEMENT

A bunker renovation at Guyan Golf and Country Club solved drainage and contamination problems. Photo: Guyan Golf and Country Club



Park, Ill. "Once you get done, you start all over again."

Paul Miller, CGCS, at Nashawtuc Country Club in Concord, Mass., site of the Bank of America Championship Champions Tour event, says the USGA defines a bunker as a hole in the ground, usually filled with sand, that serves as a penalty.

"It's very vague," Miller says. "But what we've determined in the industry from our members and the pros is that bunkers should receive almost as much, if not more, consideration than greens. It sounds crazy, but that's the way it is."

Miller is developing a master plan for Nashawtuc's renovation that will include considerable bunker work, which will take up 30 percent to 40 percent of a several-million-dollar price tag.

One of the difficulties of bunker management is the physical characteristics of the hazards. Because they're often below the playing surface and sloped as much as 30 degrees, bunkers are susceptible to contamination and damage from heavy rainfall and strong winds. Crews pumping water out of, and raking sand back into the face of, bunkers is a scene that brings

to mind the ancient Greek myth of Sisyphus, who was sentenced to rolling a boulder up a hill only to have it tumble down the other side, forcing him to begin the task all over again.

Another complicating aspect of bunker management is that golfers have different preferences. Skilled players usually like a firmer sand for better shot control, while less accomplished golfers prefer a softer sand that allows them to pick out the ball with greater ease.

Elevation changes from hole to hole, as well as surface and ground-

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water drainage patterns, cloud the issue even more, making bunker consistency impossible for most courses.

"It's darn near impossible to get perfect consistency from bunker to bunker," Miller says.

"Conditions change from hole to hole in terms of elevation and how the property drains."

As far as the types of sand desired in bunkers, a round sand will allow the water to pass through more easily and would be ideal for bunkers in



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Subsoil makeup and design contribute to the effectiveness of a bunker's drainage. Photo: Professional Turf Products

low areas of the course. Angular sand has a small amount of silt in it, allowing it to pack tightly.

"You can have two different types of sand on a course, but that's where the art comes in," Miller says.

### THE IMPORTANCE OF DRAINAGE

Drainage is the key to keeping bunkers consistent and playable. Much of that depends on the drainage that's installed, subsoil makeup, how the bunkers are designed (flat bottomed or flashed), if any surface runoff comes from outside the bunker into it and sand selection.

When Ballyowen opened, there wasn't enough drainage in the bunkers, and they were a real headache, Sparta says. Now that additional drainage was added, they drain fine, and there are few bunkers that need to be pumped after a rain.

"You can never have enough drainage," he says. "I like to see a trunk go up through the belly of the bunker and laterals coming off of that every 15 feet or so."

Because bunkers are battered constantly by the elements and player expectations have risen so sharply, superintendents often face costly renovation projects when bunkers become extremely contaminated and drain poorly. Whether done by a contractor or in-house, it's a time-consuming, costly undertaking.

"We only have 39 bunkers on the course, but caring for them was very time consuming," says Tim Mack, superintendent at Guyan Golf and Country Club, a 1922 layout in East Huntington, W.Va. "The biggest problem we had was poor drainage and contamination. A lot of our drainage systems under the bunkers were shot



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or poorly installed, and the pipes were filling up with silt and clay."

Mack and his crew cored out the bunkers, removed clay that had built up in some areas and added clay walls in other bunkers to facilitate drainage. They placed perimeter drainage at the base of the slopes on the edges of the bunkers to prevent water from flowing down and sitting at the low points of the hazards. The crews installed new synthetic liners in the bunkers to prevent contamination from below ground and refilled the hazards with angular sand, which Mack believes is the best for the club's players and maintenance practices.

"What we did before the renovation was do four of our worst bunkers using two different types of liners and sand to see how they performed," Mack says. "We got feedback from members and our crews, and then we chose the liner and sand we wanted to go with for all the bunkers."

The project took about four months to complete and cost around \$80,000, and Mack says that was much cheaper than having a contractor come in and do it.

### GROUNDWATER CONCERNS

Brian Benedict, golf course superintendent at the Seawane Golf & Country Club in Hewlett

Harbor, N.Y., undertook a massive renovation of the course's 160 bunkers several years ago. The project was challenging because the course is close to the Long Island Sound and some holes are almost at sea level.

"We did six and a half acres of bunkers," Benedict says. "Our groundwater is, in some instances, only 30 inches below the surface, and that meant we couldn't cut the bunkers too deep or we would have been in the groundwater. We went in with a bulldozer and found where the groundwater was and built up from there. We wanted to be about 24 inches above the groundwater level and have six to 10 inches of sand in the bunkers."

Because of Seawane's location, it's sometimes a victim of extreme high tides. Benedict chose to use flexible duckbill valves on drainage pipes in his reworked bunkers that allow water to exit, but not enter, when flooding occurs.

"Because we went to the duckbills, the bunkers have become a lot firmer than they used to be," he says. "The biggest thing for us here is water displacement. If we get saltwater onto the course, we need to get that into the ground as fast as possible."

Renovating Seawane's bunkers took somewhat of a trial-and-error approach.

"We have interior holes that are probably at

During the renovation of the 160 bunkers at Seawane Golf & Country Club, bunkers couldn't be cut deep because of their proximity to groundwater. Photo: Seawane Golf & Country Club

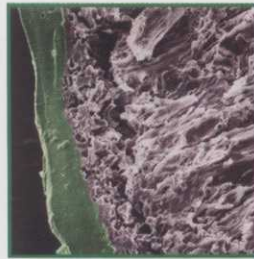




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## BUNKER MANAGEMENT

least a half mile from the nearest canal or beach, where the groundwater is only 19 inches below the surface," Benedict says. "It all depends on the hydraulic pressure of the land. We would cut in, and, if we found a wet spot near a greenside bunker, we would fill it up and make it higher. Each bunker complex has its own drainage system, and every hole was customized so it would enhance the playability of the course."

Benedict opted for angular sand in his bunkers because that type of sand is resistant to high winds that buffet the course most of the year.

### REDUCING CONTAMINATION

Rutan is undertaking an intensive, multiyear project that includes renovating and upgrading all 122 bunkers scattered about the Robert Trent Jones Jr.-designed course built in 1989. So far, between 50 and 55 have been completed, and the work is being done in-house over the course of several years. It's a cost savings but also very time consuming, Rutan says, adding his crews spend 60 to 70 man-hours just getting water out of bunkers and moving sand back where it should be after a heavy rainfall.

This is the second or third time Rutan and his crew have tended to the bunkers, with most of the problems relating to sand contamination.

"We've gone to a unique idea for drainage," he says. "If you can picture a peace symbol, that gives you an idea of how we have installed perimeter drainage around the edges of the bunkers and funneled the water through a herringbone design down through the middle of the bunker. We've found that this configuration cuts down on contamination and has worked effectively."

It takes Rutan's crews an average of three or four days per bunker to complete the restoration work, which is undertaken mostly during early spring and late fall so it doesn't interfere with play.

### EVENTUAL DETERIORATION

Perhaps the most sobering aspect of bunker management is there are no shortcuts superintendents can take to prevent eventual deterioration.

"Over time, bunkers are going to deteriorate," Sparta says. "If the bunkers are designed right, constructed right and you have the right sand selection, you stand a fighting chance of delaying a large capital expenditure to your bunkers. But sooner or later you'll have that large capital expenditure that you'll have to make on them." **GCI**