BY PETER BLAIS

WHAT LIES BENEATH

A subsurface air and drainage system and a ceramic soil mix improve greens at a Chicagoland club

The goal of the recently completed renovation at Westmoreland Country Club was to change how the greens are played and maintained. Photo: Westmoreland Country Club

Westmoreland Country Club reopened this past summer following a renovation project – and a bit of agronomic drama – which, to the naked eye, changed nothing. Below ground, however, there's a new reality for golf course superintendent Frank Heery.

Working with architects at Arthur Hills/Steve Forrest & Associates and builder Golf Creations, Heery oversaw the installation of a new subsurface air and drainage system under 20 greens, then outfitted the new putting surfaces with a ceramic soil mix. The goal was to change nothing about how the greens look (they were photomapped beforehand) and everything about how they're played and maintained.

For this Chicagoland club, originally designed by Joe Roseman, Heery opted for the Precision Air system, blowing air underneath the green surface, providing oxygen to roots, cooling them in summer and warming them in winter. The portable system, which ties to the drainage system, can vacuum water through the green profile to drain putting surfaces quickly following heavy rainstorms.

Heery became a fan of Precision Air after seeing results at The Alotian Club in Little Rock, Ark., where superintendent John Mills opted to install a vaulted, subsurface infrastructure. Mills and Paul R. Latshaw, a consulting agronomist at Westmoreland since 2000, acted as quality-control consultants on the Westmoreland project.

"They have a vaulted system on every green that enables them to heat or cool all their greens," Heery says about The Alotian Club. "They're growing A-4 bentgrass in Little Rock, which is challenging, especially during the summer."

Before rebuilding the 20 greens at Westmoreland, Golf Creations built a USGA-spec test green so Heery could see how a subsurface unit would work in suburban Chicago's cooler climate. Golf Creations built half the test green to accommodate Precision Air and the other half without it.

"We would be using the heating and air conditioning for different reasons than The Alotian Club," Heery says, noting the Precision Air half of the putting surface outperformed its counterpart. "We would use it primarily to heat the greens in the spring and fall, to keep the bentgrass viable and competing with *Poa* when *Poa* is at its most active and has the ability to contaminate new greens. The vaulted system with the air conditioning/heating elements is almost complete insurance for quality greens, especially based on what I saw at The Alotian Club."

DISEASE TROUBLE

As any Chicago-area superintendent will tell you, there's no sure thing in agronomy. Case in point: the drama that accompanied

The renovation included a system that blows air underneath the greens, providing oxygen to roots, cooling them in the summer and warming them in the winter. Photo: Westmoreland Country Club

the unveiling of Westmoreland's new greens last spring. The scheduled reopening of the golf course was for June 16, but the greens were unresponsive as of June 13.

"I made chemical applications, but I didn't think it could be a fungus damaging the greens," Heery says.

Just to be safe, Heery sent test plugs to two labs for second and third opinions. The first lab found nothing, but the lab at the University of Rhode Island had a different take.

"They came back to me right away and said, 'Whoa! You have a test case for root rot pythium,'" Heery says. "This is down below, not like pythium blight on the surface. They said we needed to spray and five days later I'd see a dramatic improvement. Sure enough, they improved during those five days. On the surface, it looked like devastation – and there were some mighty worried people around here.

"It sounds ridiculous, but the root structure we had on these new greens was so good, it nearly came back to bite us," he adds. "When we made the initial application of Coban, with root structure

The subsurface air system consists of 6-inch main pipe down the middle of each green and a herringbone system of 4-inch tile off the main pipe on 10-foot centers. A loop system around the outside of the green connects the 4-inch pipe and the main pipe to another 4-inch pipe that encircles the green. Photo: Westmoreland Country Club

12 inches down, we couldn't drench it in. The root structure was too established. But that proved to be our bread and butter to get the greens back. Soon, the disease stopped working, and they came right back."

Heery says the putting surfaces were completely healthy by the first week of August, though he didn't sleep much the previous seven weeks.

"This summer definitely took years off my life, but now the greens are acting the way they acted in April," he says.

A TRUE MANIFOLD

The subsurface air system at Westmoreland is different than others. Instead of drain tile on 15-foot centers, Golf Creations and subcontractor Leibold Construction installed a 6-inch main pipe down the middle of each green and a herringbone system of 4-inch tile off the main pipe on 10-foot centers. A loop system around the outside of the green connects the 4-inch pipe and the main pipe to another 4-inch pipe that encircles the green.

"Normally on a USGA green, the tile lines are laid 15 feet apart, but on the Westmoreland project we laid these tile lines 10 feet apart and ran perimeter tile all the way around each green, too," says Kevin Stieneke, operations manager for Golf Creations. "A normal green would take 600 feet of tile. We did 1,300 feet for each green. The more tile, the more spots

where the air is pushing up into the soil profile, and the more air the better."

What the construction team basically has done is create a true manifold that ties into the drainage to blow warm and cold air underneath the greens, Heery says.

"The ultimate would be to have the permanent heating and cooling units tied in underneath," he says. "But, right now, we are a percentage of the way there with the mobile units. If we run into trouble this year, we can evacuate water quickly or blow air in with those units. I've seen this work at Congressional Country Club. It has a lot of benefits. Black layer is almost nonexistent when you blow air underneath."

The mobile units can blow warmer, ambient air under the greens for 20 to 30 minutes during the winter to help melt ice on the greens. And, if and when the time comes to install permanent units, Golf Creations says the permanent machines could be retrofitted in as little as an hour apiece.

PIN LOCATIONS

For Arthur Hills/Steve Forrest & Associates, the main challenge was to retain the green contours while expanding the number of pin locations. Paul Granger of New Jersey-based Aqua Agronomic Solutions, which designed the irrigation system, used Light Detection and Ranging remote sensing technology to collect and store topographic information about all the greens. (National Oceanic and Atmospheric Administration and NASA scientists pioneered LiDAR technology to document topographic changes along shorelines.) Granger entered the information into a computer-aided design file. Hills/Forrest then used the information to redesign additional pin locations onto the greens and provided Golf Creations with the information it needed to retain the contours.

CERAMIC SOIL MIX

Heery was sold on the use of ceramic soil mix in greens construction by Paul R. Latshaw, who he worked for at Congressional, and Paul B. Latshaw, who he worked for at Merion Golf Club in Pennsylvania. Golf Creations rebuilt the soil profiles using a ceramic mix called Perma Pore instead of peat. The mix, tested in a nursery Heery maintains at Westmoreland, is designed to hold more water in the profile during times of drought. It also can be sized to the same gradation as the greens sand.

"The uniformity of the ceramics is amazing," Heery says. "Some have used peat successfully, while others have told horror stories. When we engineered the growing medium, the members' big concern was that the rebuilt greens be receptive to shots. We ran this past every accrediting lab. We wanted something that would set up softer and let us create firmness through the root structure rather than sand. These greens are receptive. They will be firm, but hold shots."

With the ceramics, the greens percolate at just less than 30 inches per hour. Mills has consulted on several new courses and used ceramics in all of them, which was one of the reasons he was brought in as a consultant at Westmoreland.

"You have to change your thinking as a superintendent when using ceramics instead of peat," Heery says. "Ceramics absorb water and retain soluble nutrients. You use less water and nutrients than on a traditional green with peat."

NEW TECHNOLOGIES

The project's success was largely due to a team of experienced professionals who had a willingness to try new technologies and work together, Heery says.

"It was especially nice to be working on a project that featured such cutting-edge technologies," says Bob Lohmann, founder and principal of Lohmann Golf Designs, which is the parent company of Golf Creations. "It shows that we're trusted in the marketplace to do the job exactly right." GCI

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AT A GLANCE
Westmoreland Country Club

Location: Wilmette, Ill.
Web site: www.westmorelandcc.org
Type of project: Greens renovation
Cost: $2.1 million
Project start: July 2006
Course reopened: June 2007
Architecture firm: Arthur Hills/Steve Forrest & Associates
Builder: Golf Creations
Subcontractor: Leibold Construction
Superintendent: Frank Heery

Ceramic soil mix was used in greens construction instead of peat. The mix is designed to hold more water in the profile during times of drought. Photo: Westmoreland Country Club