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

Peter Blais is a freelance writer based in North Yarmouth, Maine. He can be reached at pblais@maine.rr.com.

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

Myth? BUSTED!

A New England superintendent tests flagsticks to see how they react when golf balls hit them

BY RICH GAGNON

One of my first jobs after accepting the superintendent position at Segregansett Country Club in Taunton Mass., was to sit down with my green chairman at the time, Chris Ryding, and figure out which pins/flagsticks the members wanted on the golf course. I had three full sets of completely different style pins and no idea which one they preferred.

Par Aide manufactured all three different style flagsticks, which are listed in the company's catalog as:

- the half-inch solid regulation fiberglass flagstick;
- three-quarter-inch tapered tournament flagstick; and
- one-inch aluminum/fiberglass tournament flagstick.

Ryding and I agreed on the three-quarter-inch tapered tournament flagstick, which seemed to look better and would be more durable because

Some members of Segregansett Country Club complained about the flagsticks on the course because they were too hard and they thought balls were less likely to drop in the hole after hitting them. Photo: Segregansett Country Club

of its weight and thickness. We didn't give it much more thought than that.

That is until a complaint rolled in from a member that changed our way of thinking a bit. The complaint was that we needed to get rid of the "metal" flagsticks because the ball bounces off them too hard and is less likely to fall into the hole. I was told we needed to go back to the half-inch, solid regulation fiberglass flagsticks. I assured the chairman the flagsticks were made of fiberglass and the only metal component was the ferrule on the bottom and the screw threads on the tip, which hold the flag on. I was told that regardless of what the flagsticks were made of, fewer balls go in the hole with the flagsticks we were currently using.

A couple years passed. The same three-quarter-inch tapered tournament flagsticks were being used, but now I had a new chairman, Earl Dion. The old complaint had resurfaced with a new set of ears to listen, and I was asked if it was

To meet the needs of members, superintendent Rich Gagnon and assistant superintendent Tate Asselin tested three different flagsticks to determine how they affected ball bounce. Photo: Segregansett Country Club

Rich Gagnon needed data to back up his claims about flagsticks to help his debate with members. Photo: Segregansett Country Club

a legitimate complaint once again. It seemed that if all the flagsticks were eight-feet tall and had a half-inch-wide base made of fiberglass that it wouldn't affect the ball dropping into the hole or kicking to the side. After hearing this complaint yet again, I figured I'd try to put the myth to rest – that the flagsticks we were using were reducing the chances of the ball dropping into the hole.

Segregansett has 20 members who have a USGA handicap index of 2 or lower, 12 members who qualified for the Massachusetts Amateur Championship in 2007 and two members who played in national USGA events last year. The members have the reputation of being one of the best playing memberships in the state. I wasn't about to win any debate with any of them about what a ball does or doesn't do when it hits a flagstick. That is unless I had data to back up what I said.

SET IT UP

To conduct this test, I used all three sets of pins. I set a regulation cup into a green mowed at one-eighth inch on a flat surface and set up a transit tripod several feet away from the cup. Then I cut a 10-foot section of PVC irrigation pipe, set it on the tripod and raised the entry point of the pipe two feet off the ground, with the exiting end of the pipe 14 inches from the hole resting on the green. All the flagsticks had flags on them, the ferrules were all the same, and the Par Aide cup was set at regulation depth.

Assistant superintendent Tate Asselin and I rolled 100 balls through the PVC pipe at each of the flagsticks. We removed a ball from the cup

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- ❑ G-Builder/Developer
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- ❑ L-Golf Course Management Company Executive
- ❑ Z-Others (please describe)

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- ❑ C-27 Holes
- ❑ D-36 Holes
- ❑ E-Other

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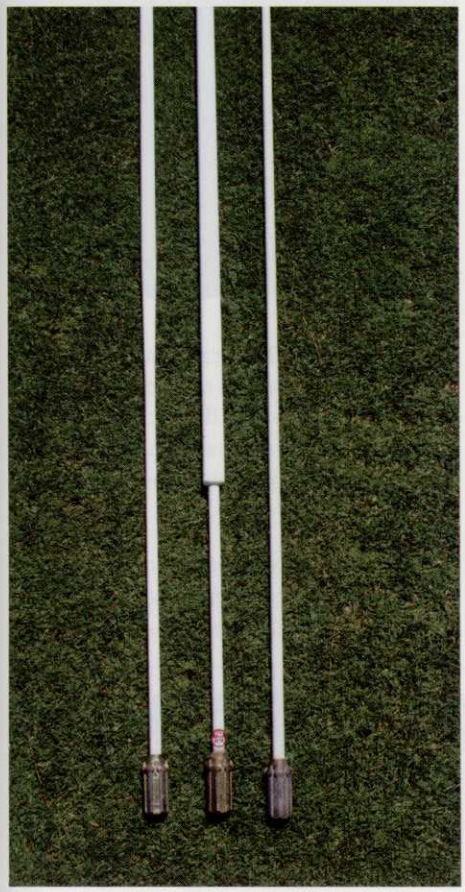

After research, it turned out more balls were likely to fall into the hole after bouncing of the half-inch flagstick. Photo: Segregansett Country Club

every time one landed in it to make sure the balls leaning against the flagstick didn't have any effect on vibration or stability. We wanted to simulate a chip shot as it hits the flagstick but wanted to make sure all balls hit the flagstick dead-on at a normal pace to see how the ball reacted.

We understood that, in the real world, any perfect chip shot that just drops in the hole wouldn't be affected by which flagstick was in the cup and any ball skulled or off center wouldn't be impacted either. What we wanted to avoid was the ball traveling too fast, too slow or too off center. The 10-foot pipe set up at two feet off the ground on one end and 14 inches from the hole on the other end seemed to be the perfect combination for simulating a direct hit at a medium pace.

As the flagstick test was under way, Asselin thought it would be a good idea to take the test to another level and use the exact same make of ball to assure consistency and accuracy. I'm sure some balls might react differently than others based on their individual characteristics, and the idea was a great one, but our final decision to use 100 random golf balls, not 100 of the same kind. This was based on one factor: I wanted to duplicate what is actually happening on the golf course when my membership hits the flagstick on a chip shot. What better way to test for this than having 100 random balls that were hit by the membership at one time, picked up by me after they were lost and eventually used in this experiment?

RESULTS THAT MATTER?

After 300 balls were sent through the pipe, the results were in. With the flagstick we were using (three-quarter-inch tapered), 67 percent of the balls fell into the cup. With the half-inch flagstick, 72 percent of the balls fell into the hole. The complaints were valid, but barely. At a 5-percent difference in the members' favor, it

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Statement of Ownership, Management, and Circulation (Requester Publications Only)
Required by 39 USC 3685

1. Publication Title: GOLF COURSE INDUSTRY
2. Publication Number: 1054-0644
3. Filing Date: 10-1-2007
4. Issue of Frequency: January, February, March, April, May, July, August, September, October, November
5. Number of Issues Published Annually: 10
6. Annual Subscription Price: Free to Qualified
7. Complete Mailing Address of Known Office of Publication (Not Printer): GIE Media, Inc., 4020 Kinross Lakes Parkway #201 Richfield, OH 44286 — Contact Person: Melody Berendt, Telephone: 800-456-0707
8. Complete Mailing Address of Headquarters or General Business Office of Publisher (Not Printer): GIE Media, Inc.4020 Kinross Lakes Parkway #201 Richfield, OH 44286
9. Full Names and Complete Mailing Addresses of Publisher, Editor, and Managing Editor - Publisher: Kevin Glibride, GIE Media, Inc., 4020 Kinross Lakes Parkway, #201, Richfield, OH 44286; Editor: John Walsh, GIE Media, Inc., 4020 Kinross Lakes Parkway, #201, Richfield, OH 44286; Managing Editor: n/a, GIE Media, Inc., 4020 Kinross Lakes Parkway, #201, Richfield, OH 44286
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11. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: None
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14. Issue Date for Circulation Data: September 2007	Average No. Copies Each Issue During Preceding 12 Months	No. Copies of Single Issue Published Nearest to Filing Date
15. Extent and Nature of Circulation		
a. Total Number of Copies (Net press run)	32,275	35,223
b. Legitimate Paid and/ or Requested Distribution (By Mail and Outside the Mail)		
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16. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the issue of this publication. November 2007

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Even the smallest details on a golf course, such as flagsticks, are important to members of Segregansett Country Club. Photo: Segregansett Country Club

appeared that for every 20 chip shots that hit the flagstick dead-on, one more fell into the cup with the half-inch flagstick compared to the three-quarter-inch tapered flagstick. Although not a major difference, there still was a difference.

"If I hit the flagstick with 100 chip shots this year, I want the five birdies – there's a difference!" Dion says. "If I go up against a good chipper in the club championship, I want the three-quarter-inch flagsticks in. Who wouldn't?"

Most golfers would say there's no difference which flagstick was in the cup. And, statistically, the 5-percent difference in our results would probably hold true for 100 coin tosses. But one flagstick had to win the race and the results would never turn out 50/50 anyway. There might not seem to be a difference between the half-inch and the three-quarter-inch flagsticks, but when the two pins were matched up against the one-inch flagstick, the results proved there can be a significant difference between flagsticks and the percentage of balls falling into the cup.

The biggest shock of all was that with the one-inch flagsticks, no balls fell into the hole. That's right, none. It's hard to imagine there would be such a big difference, especially since the bottom 12 inches of all three flagsticks is exactly the same width (half-inch) and made of fiberglass.

WEIGH IN

I took things a step further and wanted to see if weight had any effect on the results since the area that the ball was hitting was exactly the same on all the flagsticks. The three-quarter-inch flagstick was heavier than the half-inch one, but the one-inch flagstick was lighter than the three-quarter-inch flagstick. Weight, materials and width in the impact area all have no effect on the results.

Is 5-percent difference enough to change the flagsticks at Segregansett to the half-inch ones? It's still debatable, but I can assure you that after reading the results of our experiment you'll never see the one-inch flagsticks in our cups again. That is, until my chairman goes up against a good chipper in the club championship. **GCI**

Rich Gagnon is the golf course superintendent at Segregansett Country Club in Taunton, Mass. He can be reached at sccturf@hotmail.com.