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GOLF COURSE INDUSTRY

2016 CONSTRUCTION & RENOVATION ISSUE

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VOL. 28 NO. 10

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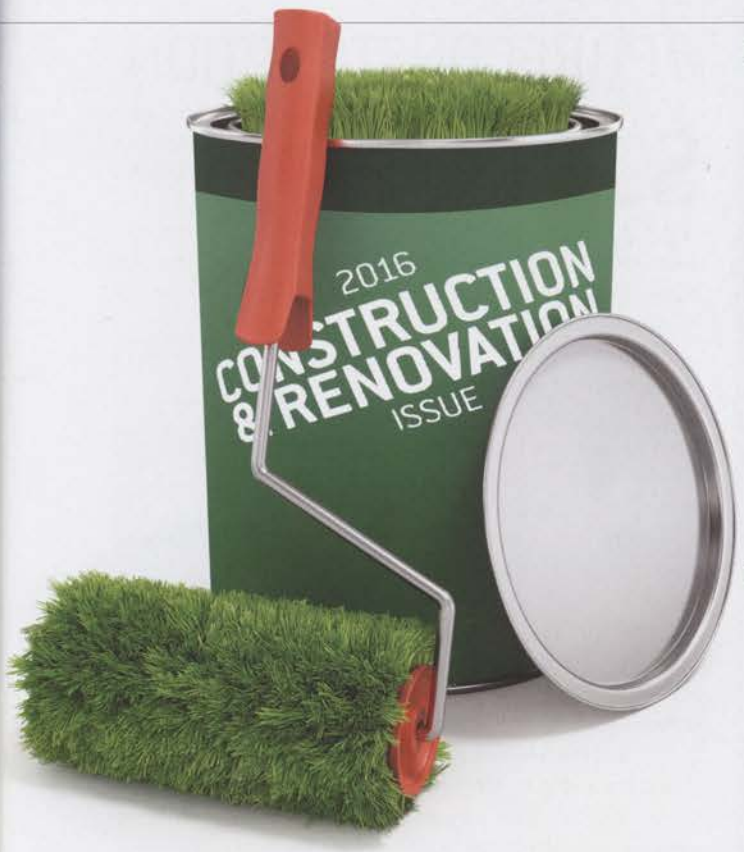

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#PURECONSTRUCTION

Sorry, Tim Allen. This #PureMichigan moment didn't occur beneath the Mackinac Bridge or inside a quaint, secluded lakeside cabin.

It happened on the dirt-covered third tee of a private suburban Detroit golf course. The spot, believed to be one of the highest points in Wayne County, offers an expansive view of Meadowbrook Country Club.

Guy Cipriano
Associate Editor

Here, along famed 8 Mile Drive, crews from TDI Golf pushed dirt. Superintendent Jared Milner and trusted assistants Brian Hilfinger and Andy O'Haver inspected every square foot of emerging, tender turf. Arizona-based, Wisconsin-born architect Andy Staples noted changes since his last visit. Shaper Scott Clem crafted intricate features such as "Chocolate Drops" and bunkers designed to be surrounded by bentgrass.

Beaches and lakes, trees and critters, ballparks and fireworks are snippets of idyllic summer evenings. For those of us invested in the golf industry, scenes like the one at Meadowbrook are tough to top.

Here's the condensed version of the story (we plan on telling the full version later on): Meadowbrook is a 100-year-old club in the shadows of a city gutted by the recession. The club hosted no rounds of golf this summer. It closed in fall 2015 for a major renovation. Members overwhelmingly approved the project. When the course reopens next spring, it will feature rebuilt greens and bunkers, 35 acres of regrassed fairways, two acres of sand-capped approaches, enhanced irrigation and drainage, fewer trees, and 15 to 20 acres of native areas.

Thousands of hours and millions of dollars are needed to complete the work. The club assembled an energetic team consisting of a savvy superintendent with previous construction experience surrounded by two talented assistants, experienced builder and architect who cares more about fun and resource management than protecting par. Milner, Hilfinger, O'Haver, Staples and Clem, along with general manager Joe Marini, joined us on our #PureMichigan evening. Marini reads publications addressed to superintendents and knows the difference between bentgrass varieties. He's bullish on Meadowbrook's future, and his optimism resonates with the entire team.

As daylight faded, our #PureMichigan evening continued indoors. A conversation about the state of Meadowbrook and golf in the Rust Belt ensued. Business and agronomics spurred the renovation. Nobody else in Meadowbrook's neighborhood has undergone a major post-recession makeover; Michigan winters place *Poa annua* greens in precarious positions.

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Our next #PureMichigan moment occurred the following morning as we stopped 110 miles short of the Mackinac Bridge, a breathtaking structure linking Michigan's lower and upper peninsulas, to tour The Loop at Forest Dunes. Tom Doak wanted to design a reversible golf course; businessman Lew Thompson wanted something to differentiate Forest Dunes from competitors. "We are basically going from one to three courses, which in this economic timeframe and lack of growth is impressive," Forest Dunes general manager Chad Maveus says.

The Loop was an infant during our visit. The course plays clockwise one day; counterclockwise the next. Overnight guests receive divergent experiences, and one crew is needed to maintain two courses. Fine fescue tees and fairways flow together. The responsibility of managing fine fescue and developing a team that maintains two golf courses as one falls on director of agronomy Brian Moore. "It's like any golf course to me," he says. "I think people overthink it a little bit. Once you get out here and see it, it's a pretty straightforward and easy concept to grasp."

This issue is devoted to creativity blossoming into normalcy.

Stripping *Poa*, coring greens and moving existing *Poa* to new locations like Sewickley Heights Golf Club (page 12) might seem #PureCrazy to outsiders. But it should help the Western Pennsylvania club accomplish its goal of supporting championship greens.

Or what about deftly handling agronomic issues when developers are involved (page 20). Or waiting 12 years to receive functioning bunkers (page 26)? Or enhancing a property that once harbored Cold War weapons (page 34)? Or a municipal course becoming a golf hub in a state dominated by pricey private clubs (page 42)?

Superintendents played integral parts in fostering the creativity. Let's hope they all paused for a few minutes, admired the activity and experienced their own pure moment. **GCI**

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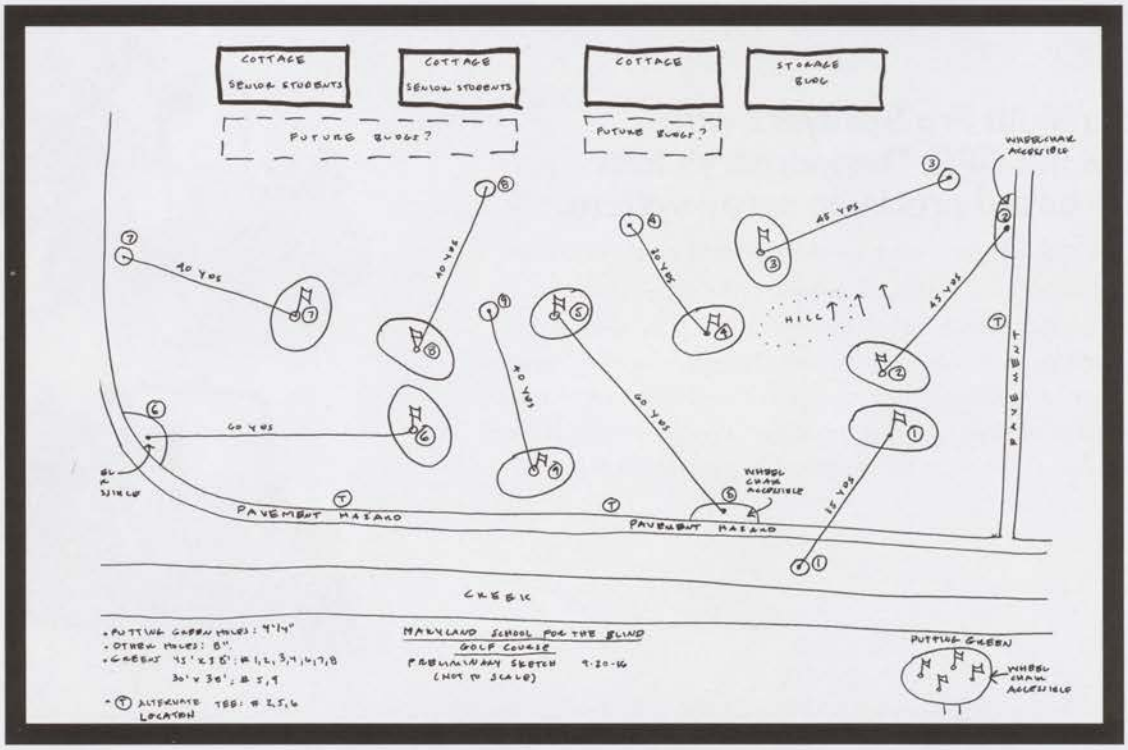


Preliminary sketches provided by Norman Kritz for a nine-hole golf course and practice putting green at the Maryland School for the Blind. No hole on the proposed course exceeds 60 yards.

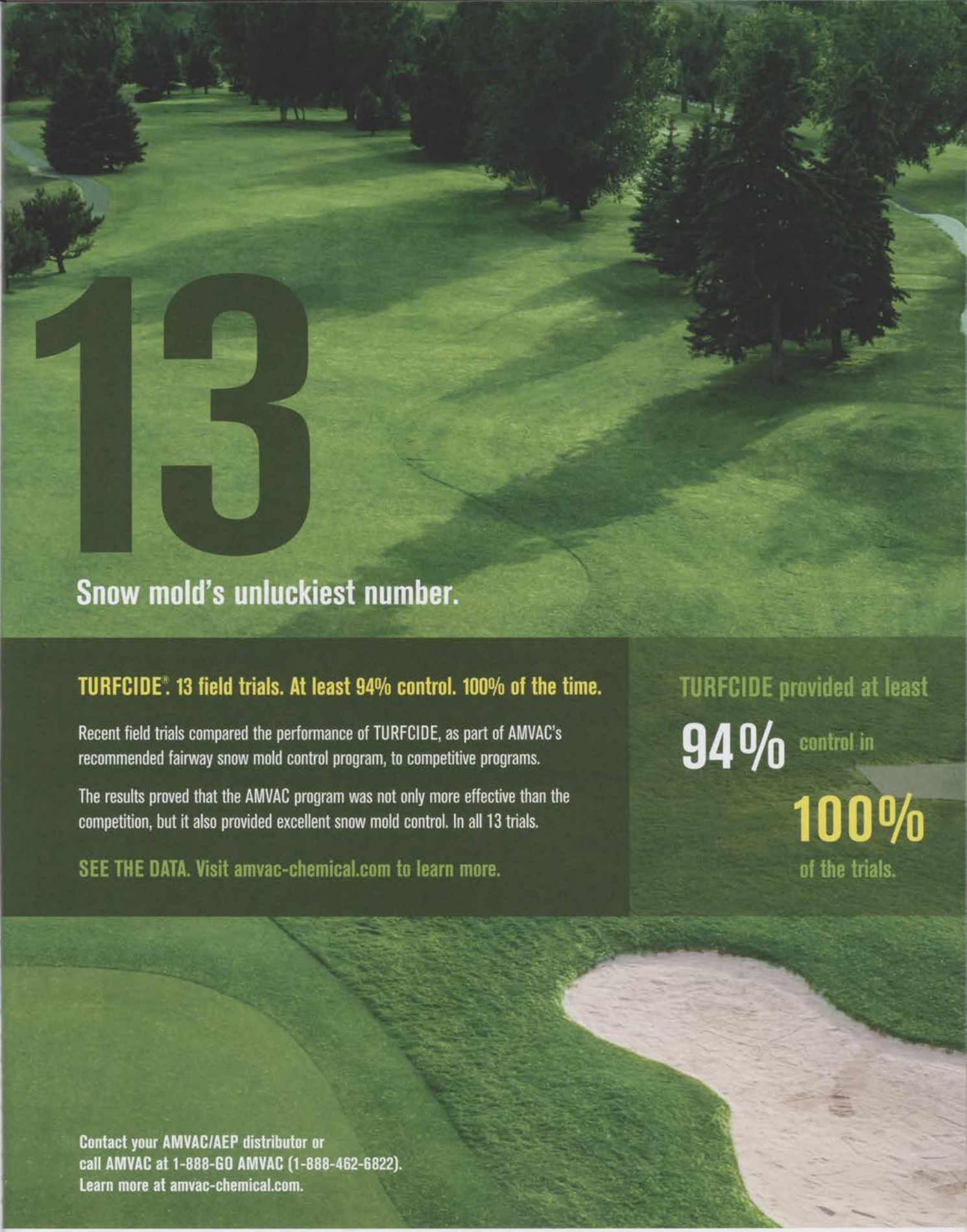
BUILDING for the blind

By Guy Cipriano

NORMAN KRITZ is a Philadelphia-area pharmacist. Charitable involvement turned him into a golf course architect. His first – and still only – completed project resulted in a playable course for blind children.

More than 500 satisfied players later, Kritz could be moving toward repeating what the Middle Atlantic Blind Golf Association constructed at Overbrook School for the Blind. "It's been a revelation," Kritz says. "It's the greatest thing I have ever done. Just watching the kids play is a reward in itself. We would like to build a golf course for every school for the blind."

The Overbrook course, in a densely populated northwest Philadelphia neighborhood, opened in 1996, three



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years after the MABGA started its junior program. With help from maintenance crews at Cobbs Creek Golf Club and Bala Golf Club, the MABGA constructed a course with nine holes, none longer than 45 yards. Holes were designed around a quarter-mile macadam track, making the course wheelchair accessible. The facility took two years to build.

The nine-hole course at Overbrook School for the Blind opened in 1996. Programs conducted at the course receive help from numerous industry efforts, including the GCBAA Foundation Sticks for Kids.

© MIDDLE ATLANTIC BLIND GOLF ASSOCIATION

Along the way, the MABGA has received help from numerous Philadelphia-area golfers and pros who volunteer time to offer instruction and services such as resizing and regriping donated clubs. The junior program received a boost when it established a relationship with the GCBAA Foundation Sticks for Kids program. Kritz, who directs the MABGCA's junior programs, drove from Philadelphia to Jersey City, N.J., in early August to attend the annual GCBAA Foundation auction and raffle. Kritz mingled with GCBAA members and gave a passionate presentation about how support from efforts like Sticks for Kids help blind children. Sticks for Kids provides the MABGA with clubs, bags and other equipment.

The Middle Atlantic Blind Golf Association hosted a junior clinic earlier this fall at its course at Overbrook School for the Blind in Philadelphia.

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"Sometimes you take it for granted when you are in the national offices, and you see letters and emails keeping us posted on what programs are doing and how you can help them," GCBAA executive director Justin Apel says. "And then you get a chance to have someone like Norman come and shows us the pictures and tell us the stories. It's indescribable, not only to us as staff, but to our members."

An encounter at the GCBAA meeting could help Kritz accomplish his goal of designing another course for blind children. Chris Hill, the President of Georgia-based Course Crafters, has committed to offering his company's expertise when work starts at a site in Macon, Ga. No timetable has been established for the project, but Kritz is eager to work with a professional golf course builder.

"It will be a learning experience for me," he says. "I'm a pharmacist, been a pharmacist for 65 years, so building

From THE FEED

The industry lost one of its iconic figures when Arnold Palmer died Sept. 25. Known as "Arnie" to some, "The King" to others, GCI publisher Pat Jones explained in a column why he identified him as "Mr. Palmer." Enter **bit.ly/2dAnevP** into your web browser to read Jones' thoughts on Palmer. Memories of Palmer also surfaced immediately on Twitter following his death.

Chase Best, OCGC
@chaserhb
The great thing about Arnie, he was invested in the sport. Played it so well, but gave back to it with the same determination. #TheKing

Clay Stewart
@claystewart58
A sad day for everyone in the golf business or a fan of the game...RIP Mr Palmer, the game won't be the same #theking #arniesarmy

Joshua R. Hollins
@JR_Hollins
I'm more grateful now than ever to have met the King on #8 at Pine Valley. A legend and truly kind man who said hello to a kid watering tees

Paul Van Buren, MBA
@HarryLigule
Rest in Peace Mr. Palmer. You helped me love this game. Thankful for all you did for everyone who plays/loves the game.

greg martin
@gm_mdgolf
Arnold Palmer was golf. Arnold Palmer created the modern era with his game, his personality and his business acumen. God Bless.

golf courses is totally foreign to me. We are not creating Pebble Beach or Pine Valley. It's something that these kids can do and they seem to love it. As long as they have smiles on their face, I know I'm doing a good job."

Kritz also has completed preliminary sketches for a nine-hole course and putting green at the Maryland School for the Blind. Multiple holes on the Maryland course will be wheelchair accessible.

The programs at Overbrook are models for other blind schools that build golf courses. On the first Saturday this fall, a junior event attracted 32 participants and 40 volunteers. Participants are taught a variety of golf and life skills, including the importance of caring for the course. Overbrook's grounds crew handles maintenance, and local superintendents make themselves available when needed. Functionality, though, is the most important factor when building and maintaining a course for blind golfers.

"I don't think the greens [at Overbrook] would come in at 12' on the Stimpmeter," Kritz says. "They are puttable. Let's put it like that. We just had a clinic and 32 kids were there. I didn't have any complaints, so I figured it must be good."

The Shark Speaks

Greg Norman joined Superintendent Radio Network to discuss his 2016 design and construction experiences and longtime relationship with the GCBAA. Listen to our exclusive interview with the CEO and Chairman of Great White Shark Enterprises by entering bit.ly/2bYD3tS into your web browser.

Greg Norman has kept an active golf course design and construction schedule this year, focusing his attention on multiple overseas projects. Norman's design firm is approaching its 30th anniversary.

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What the *Poa?*

By **Guy Cipriano**

To understand why **Sewickley Heights Golf Club** wants the three-letter turfgrass variety to dominate its greens, one must understand its agronomic neighborhood.

Smirks start, eyes roll, chuckles ensue. Randall Pinckney realizes the reactions when peers hear about his latest agronomic endeavor.

Pinckney is seven months into his tenure as superintendent at Sewickley Heights Golf Club in the hilly, swanky and secluded Pittsburgh suburb of Sewickley. Large parts of his days are filled with preserving and protecting *Poa annua*.

Sewickley Heights' leaders are embracing *Poa*. On greens. On an ambitious timetable. "I get a lot of cross-eyed looks: Why would you not go to bentgrass?" Pinckney says.

What the *Poa* is happening at Sewickley Heights?

Like supporting an NFL team with six Super Bowl rings or eating sandwiches topped with fries and coleslaw, promoting *Poa* greens are a Pittsburgh thing. Sewickley Heights director of golf David Malatak says one must grasp the region's private club landscape to understand why it would renovate greens and resod them with its existing *Poa*.

A weed in some places, the stuff that makes greens slippery elsewhere, *Poa* is a desired turfgrass on

Sewickley Heights Golf Club in suburban Pittsburgh embarked on a greens renovation in late August. The project is designed to provide the necessary infrastructure to produce high-quality *Poa annua* putting surfaces.

Western Pennsylvania greens. Nine-time U.S. Open host Oakmont Country Club sits atop the region's golf hierarchy. *Poa* is the dominant variety on Oakmont's greens. It's also the dominant variety on the greens of Sewickley Heights' private club neighbors.

"In Western Pa. it's understood," Malatak says. "That's why the club voted 90 percent to get this done – because that's what we always wanted. When we started telling people in my era in our area what we are doing, people are like, 'OK, that's great.' Doing the project might be crazy, but putting the *Poa* back down doesn't seem that crazy to a lot of golf pros that I know."

Architect Jim Cervone, Aspen Golf vice president Richard Hagy, superintendent Randall Pinckney and director of golf David Malatak are overseeing the greens renovation at Sewickley Heights.

Crews from GCBAA member Aspen Golf started mobilizing at Sewickley Heights Aug. 22. Less than two weeks later, GCI toured the work with Pinckney, Aspen Golf vice president Richard Hagy and architect Jim Cervone, ASGCA. Pinckney has spent the majority of his career in Maryland; Hagy and Cervone have worked everywhere yet reside in Western Pennsylvania. A schism exists when they are describing the project to various audiences.

"In this area the major clubs have (*Poa*) and people look at you and say *Poa* is what you need to do," Hagy says. "But some people look at me like, 'They are doing what? Why aren't they putting bentgrass down?' Everybody wants their *Poa* in this area and we can give that to them."

Opened in 1961 and designed by Jim Harrison, Sewickley Heights spent its first half-century with push-up *Poa* greens resting on clay-based soils. As drainage deteriorated, the club resorted to bentgrass for the first time in its history, seeding four greens to the variety in 2011. Bentgrass, though, didn't click with the membership, Malatak says.

Golf drives decisions at Sewickley Heights – the club doesn't have a pool or tennis courts – and after six months of deliberation the membership felt comfortable pursuing a major project to enhance its greens. The project has a rapid rhythm, with a goal of completing around two greens per week during a two-month period.

The process entails stripping sod, coring, overhauling drainage, reconfiguring the irrigation system for greens and approaches, placing 4 inches of gravel and 12 inches of an 80-5-15 sand, soil and peat mix, and relaying sod from another green. "The cool thing about this as a whole is that we would always have a green open so they could core out, drain and flop sod from one green to another green when it was ready," Pinckney says. "We never had sod laying on tarps."

Sod from Boyd Turf in New Wilmington, Pa., supplements the existing *Poa*. The sod is grown via plugs taken from Sewickley Heights. Pinckney worked closely with Jeff Michel of M&M Consulting to develop the proper mix. M&M collected samples from the greens rebuilt in 2011 and the 11th green, Sewickley Heights' best-performing *Poa* green, according to Michel. Testing was conducted through Brookside Laboratories to understand the physical and chemical composition of the rebuilt greens and 11th green and to mimic those properties in the new mix. M&M also sampled successful *Poa*-based greens at other clubs. Cooperation from Wendell Boyd and Brian Bates, and developing a custom fertility package consisting of Gypsum, Pro Mag, poly-coated potassium sulfate and poly-coated methylene urea which was blended into the mix at 5 lbs/ton of mix by the plant are allowing workers to float and install sod without additional input during construction, Michel says. "The resulting media has physical and chemical properties that will lead to an extremely high probability of success with this project," he adds.

Sewickley Heights has three acres of greens, with the biggest surfaces exceeding 8,000 square feet. All 19 greens – the putting green is also being resodded with *Poa* – remained opened until Aug. 22. Once work started, members continued playing on unaffected holes, although the entire course will eventually close in early fall. Other work includes moving the second and third greens to new locations, renovating the ninth and 15th tees, and adding multiple bunkers. To protect sod, the membership granted Pinckney and his crew permission to halt aggressive greens management during the month leading into the project. The decision helped navigate a toasty start to 2016: the course had received less than 10 inches of rain through August. Sewickley averages close to 40 inches per year. Regular messages from club president Matt DiAndreth,

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 [1] Stewart, Dr. W.M. (Mike), "Sulfur–The 4th Major Nutrient," IPNI Plant Nutrition TODAY, Spring, 2010, No. 7, www.ipni.net/pnt [2] "Turf + K," Compass Minerals, Web. http://www.protassiumplus.com/turf

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greens chairman Ted Kotarsky, Pinckney, Malatak, and communications sent via the private club social network program Clubster helped members understand the reasons for preconstruction decisions such as decreasing green speeds.

"It's one of the most unique projects I have heard about in the business," Pinckney says. "With the rapid scope of the project – the schedule is quick – and to fully core out and resod *Poa annua* greens all in one season is something that … It's a big challenge for me knowing what I was going into and going through the process and talking with people in the business, I don't know anybody that has done it.

"There are a couple of clubs that will do one green. My staff isn't just worried about one green. They are worried about the whole course. It's the *Poa annua* still not dying and where on any other project you would let the greens go to crap because you are rebuilding them. Here we have to keep them healthy and going back to the club allowing us to do that was huge."

Preparation and communication led to an encouraging start. The first *Poa* stripped and moved displayed 3- and 4-inch roots within two weeks after being placed. The green, one of the four bentgrass surfaces, was mowed twice, rolled twice and topdressed during the stretch.

Cutting *Poa* proved tricky early in the process. Crews used three sod cutters before identifying one that could produce even strips. New blades are being installed weekly to ensure 3-foot strips are even before being rolled up. Thickness ranges from five-eighths to three-quarters of an inch. "We would like to be at a half-inch, but if we are cutting a half-inch, what happens is that as soon as we hit a spot, then we have nothing and we are wasting sod," Hagy says. "So we are going a little bit thicker to make sure we are not wasting. We can always fill in a spot that's low later, but we don't want to waste a lot of sod."

Projects involving stripping and reusing existing *Poa* sod on the same course's greens are rare, according to Hagy, who has spent 35 years in the industry. Hagy lauds Pinckney for the smooth start. "One of our biggest concerns was to make sure we had big enough roots to work with when we went in to strip, Hagy adds. "And, fortunately, Randall did a great job of making sure we had that. Nothing is going to waste so it's going very good. I couldn't ask for a better start to project."

Pinckney served as the superintendent when Manor (Md.) Country Club underwent a major renovation which included installing A-1/A-4 bentgrass greens. His ability to steer Manor CC through construction and grow in convinced Sewickley Heights' leaders he could guide the club through a tricky renovation on a short timetable, Malatak says. Most of Pinckney's recent experiences involves managing bentgrass in the Transition Zone, although he managed bentgrass/*Poa* greens at Piney Branch (Md.) Golf Club, where he received his first head superintendent job.

After a punishing summer, Pinckney and his crew are welcoming cooler fall temperatures. Winter damage is a concern, and Pinckney says covers will be used on greens that have experienced past problems and greens sodded in the later stages of the renovation. Moving excess sod to Sewickley Heights' nursery will provide insurance in the event of a harsh winter. "We want snowfall, but not freeze-thaw and open desiccation from the wind," Pinckney says.

SEWICKLEY *continues on page 72*

Poa annua at Sewickley Heights displaying healthy roots less than two weeks after being stripped and moved.

Tartan Talks No. 3

After showing us around Sewickley Heights, Jim Cervone joined us for the third installment of our "Tartan Talks" series with the American Society of Golf Course Architects. Cervone, a Western Pennsylvania resident who has worked around the world, describes the project at Sewickley Heights and offers ideas on how to approach a greens renovation. Enter bit.ly/2cbmvvO into your web browser to hear the conversation.

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UP AGAINST "THE WALL"

Tim Moraghan, principal, ASPIRE Golf (tmoraghan@aspire-golf.com). Follow Tim's blog, Golf Course Confidential at www.aspire-golf.com/buzz.html or on Twitter @TimMoraghan

It is unusually good timing for Golf Course Industry's "construction issue," since we are in the home stretch of a very interesting presidential election and one of the major issues is building a wall.

I'm not going to weigh in on politics, other than to say that if you are undertaking any kind of construction project — your own personal "wall" — then you had better have a plan.

Someone can't say "wall" and expect you to just start digging.

Say you work at a wonderful old course and the powers that be at the club decide to hire a hot architect to restore or reinvent it. Either way, you have to beware and be wary: Don't get roped into automatically thinking it's the next best thing, and don't buy into something that the club can't afford.

All the fancy drawings, member meetings and personal reassurances won't secure your future. Even if no one else is as cautious, you must insist on a full-scale plan, one that carefully lays out every phase of construction from initial concept to end result.

And get it in writing.

Make sure that there is an architectural review board and, ideally, an unbiased third party or independent consultant to review the entire plan before any work begins. Construction needs a system of checks and balances so that affordable reality doesn't become expensive pie-in-the-sky. And while an independent manager might seem a luxury, think of it instead as an insurance policy to protect the members' and/or owners' investment — as well as your livelihood.

As you review the plan — and you want to be sure that you not only have input but significant decision-making powers along the way — look for the sorts of features and nuances that could make your life miserable: over-the-top design elements that will be hard to maintain and turn-off potential members or customers. And expect pressure from the low-handicappers and influential members who try to push for particulars that suit only them and will annoy many others.

Here are a few areas to think about when reviewing the plan. Be prepared to question the architect, the committee, the project manager and anyone else with influence. Ask early, ask often.

PUTTING GREENS

In most cases, you're best off following USGA construction methods. Make sure there is consistency in the soil profiles and drainage.

Are the new greens overly contoured? Too flat? Can they be effectively maintained without breaking the bank? Will they provide enough challenge to good players without ruining the round for new and less skilled golfers? Can you find enough good hole locations? Can you make the greens fast enough for good players and events like the club championship?

BUNKERS

How much hand maintenance will be required to rake the bunkers and mow the banks? Will they be difficult for most players to enter and exit? Will new liners be installed? What type of sand will be used? Will it be playable for the majority of golfers coming to the course?

TEEING GROUNDS

If the architect is enlarging or adding tees, ask why. More and bigger tees raise the costs of maintenance — labor, equipment, material — and add to the time needed to prepare the course each day. Also, are the tee positions too difficult? Do they call for carries over native areas and water? Your members might not think twice about spending thousands on the redesign, but every $5 golf ball they lose will drive them crazy.

EVENTS

If you think the redesign project will result in the U.S. Open coming to your course, wise up. Unless the course is already hosting majors or other significant events, there's almost no amount of work possible that will elevate your facility to that level. If the architect or some members make that argument, take a step back and ask what this project is really all about: Is it just for the select few or for the enjoyment of all your constituents?

ACCOUNTABILITY

Someone must constantly check every nuance of the project and verify that the process is being handled correctly with tremendous attention to detail. And that someone is you.

As the superintendent, you must be engaged and involved every step of the way, in every decision. You have to be mindful of many different concerns,

MORAGHAN *continues on page 72*

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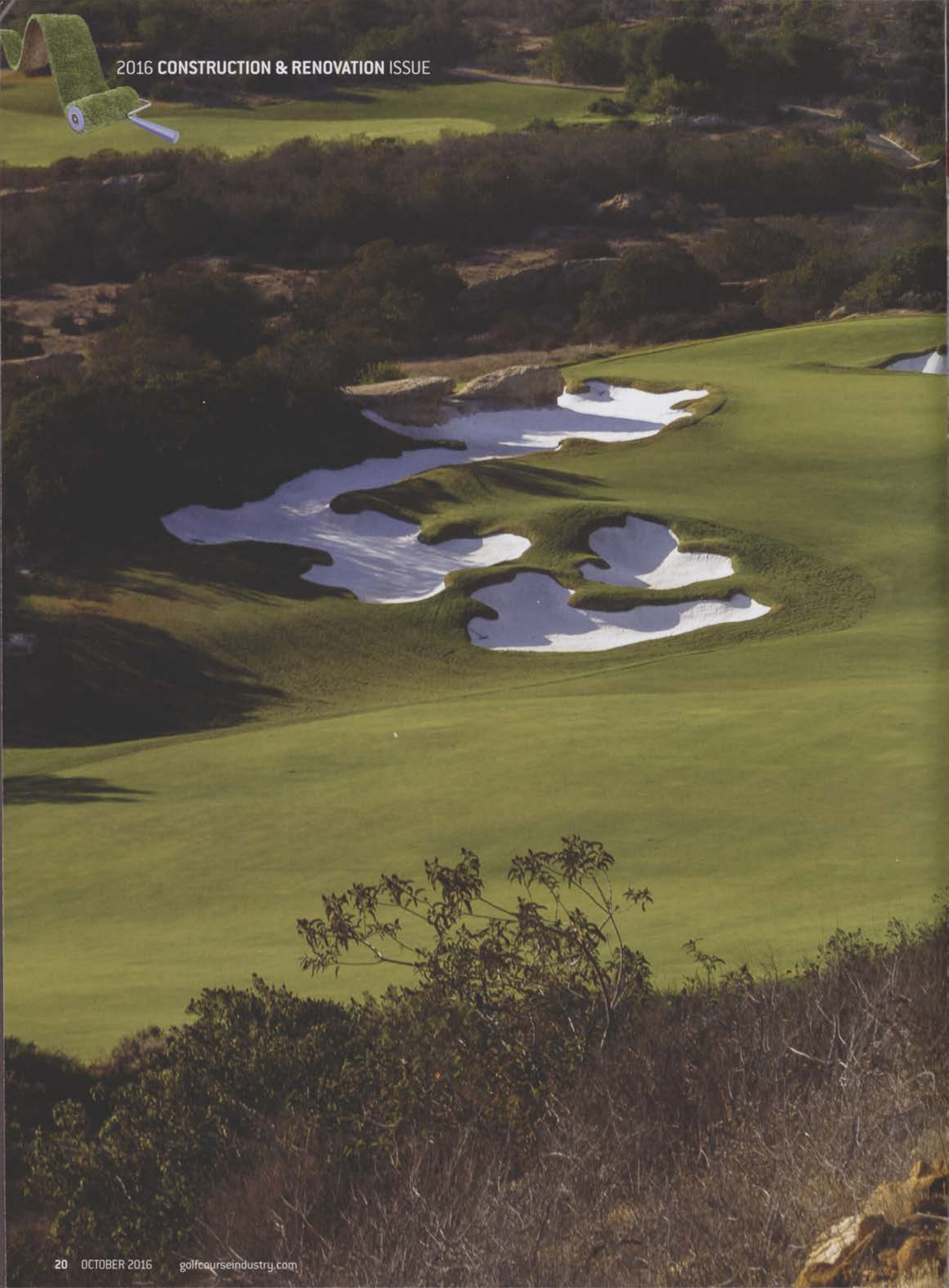


Shady Canyon Golf Club in Irvine, Calif., has undergone a series of changes in the last three years to help the course handle water issues prevalent in Southern California. As part of the changes, Landscapes Unlimited installed a targeted rough-irrigation system.

Cooperating in *NoCal* and *SoCal*

A pair of Golden State courses separated by 350 miles demonstrate water-saving possibilities when agronomists, architects and builders work together.

By **Hal Phillips**

In drought-ravaged California, savvy golf industry folk deploy water-saving products and techniques wherever they can find them.

At The Preserve Golf Club, located in the semi-arid hills above Carmel, a recently completed fairway conversion project was more or less inspired by the canny observations of an off-duty superintendent hundreds of miles to the south.

"California has some of the strongest water restrictions in the nation and Santa Barbara County has the most strict regulations in the state," says Tim Jackson, a principal with Jackson Kahn Design, which oversaw The Preserve renovation. "Roger Robarge, the superintendent at The Valley Club in Montecito, was the first to regrass with Santa Ana Bermuda after he saw a polo field nearby that, despite being in the middle of drought, looked fantastic."

Santa Ana is the strain of Bermudagrass commonly found on many of Australia's Sand Belt courses. It's an older variety that had never curried a lot of favor in North America, but The Valley Club installation proved a bit of a breakthrough. "It's a great fairway grass," Jackson says. "Very hardy, little fertility, few pathogens. It's gaining much wider acceptance and usage now."

Perfect for The Preserve, right?

Well, not so fast.

"Cory Isom, the former superintendent here [now at The Roaring Fork Club in Basalt, Colo.], was the guy who spearheaded this conversion from bent to Bermuda," Jackson says, "but The Preserve sits outside the perceived northern range of California's Bermuda zone. The experts said, 'This isn't going to work.' But Cory did four different test plots of Bermuda and paspalum over the course of 18 months and the new superintendent, Tim

Taagen, agreed that the Santa Ana could work well there."

GCBAA member Landscapes Unlimited handled the conversion, sodding 29 acres of fairway (and undertaking an extensive bunker renovation) beginning on April 1, 2016. The members were back on the golf course June 16.

Even in the wettest of times, with the most efficient Bermudagrass fairways, water is always going to be an issue at The Preserve GC, which is located on a massive, topographically dramatic, 20,000-acre property studded with ancient oaks (there's even a section of redwoods). The Tom Fazio design is mainly irrigated from wells and storage reservoirs located off course. Taagen gets a bit more reclaimed effluent from the property's sewage treatment facility, but not much. The wells only produce 10-40 gallons per minute in the heat of summer.

"Now, if they go through a tough period of drought, they can just let the fairways dry out with far less effect," says Clay Fetherbay, the Landscapes Unlimited project manager at The Preserve — and at Shady Canyon Golf Club down south in Irvine, where the company recently completed a green, bunker and irrigation renovation under the direction of Jackson Kahn.

Taagen confirmed that if The Preserve gets its expected 26 inches of rain each winter, no problem. If they don't, with Santa Ana fairways, there's no problem either. "Typically, as a superintendent, you're looking at something cutting edge — you'd never look at something as old as Santa Ana," he says. "But it's got the ability to green up earlier in the spring. It maintains a tinge of green through the winter like a typical modern hybrid Bermuda ... We can't overseed here, because if we have four to five good winters in a row, the ryegrass would never leave. But because we're right on the cusp of Bermuda barely wanting to survive here, it doesn't really move into the cool-season grasses."

Top: Bentgrass fairways at the Preserve Golf Club in California, Calif., were stripped and replaced with Santa Ana Bermudagrass. Right: Architects David Kahn and Tim Jackson. Bottom right: Bunkers were also enhanced as part of the changes at the Preserve.

Taagen adds that prior to the conversion, his sand-capped fairways were so thin, carts left tracks in the landing zones. As a result, "Our roughs took a terrible beating. Now our fairways are great, but we're fighting to get our perennial ryegrass roughs back in shape. They're getting better each week."

MEETING EXPECTATIONS WITH LESS WATER

Jackson displays a strong affinity for the agronomic side of the equation at The Preserve, but then his turf savvy shouldn't come as any big surprise. The 42-year-old Hoosier graduated from Purdue University in 1999, with a degree in agronomy — having spent a good chunk of his college days participating in Pete Dye's overhaul of the school's Kampen Course. Jackson would join Tom Fazio's firm upon graduation. There he met David Kahn. The two would form their own firm, based in Scottsdale, Ariz., in 2009.

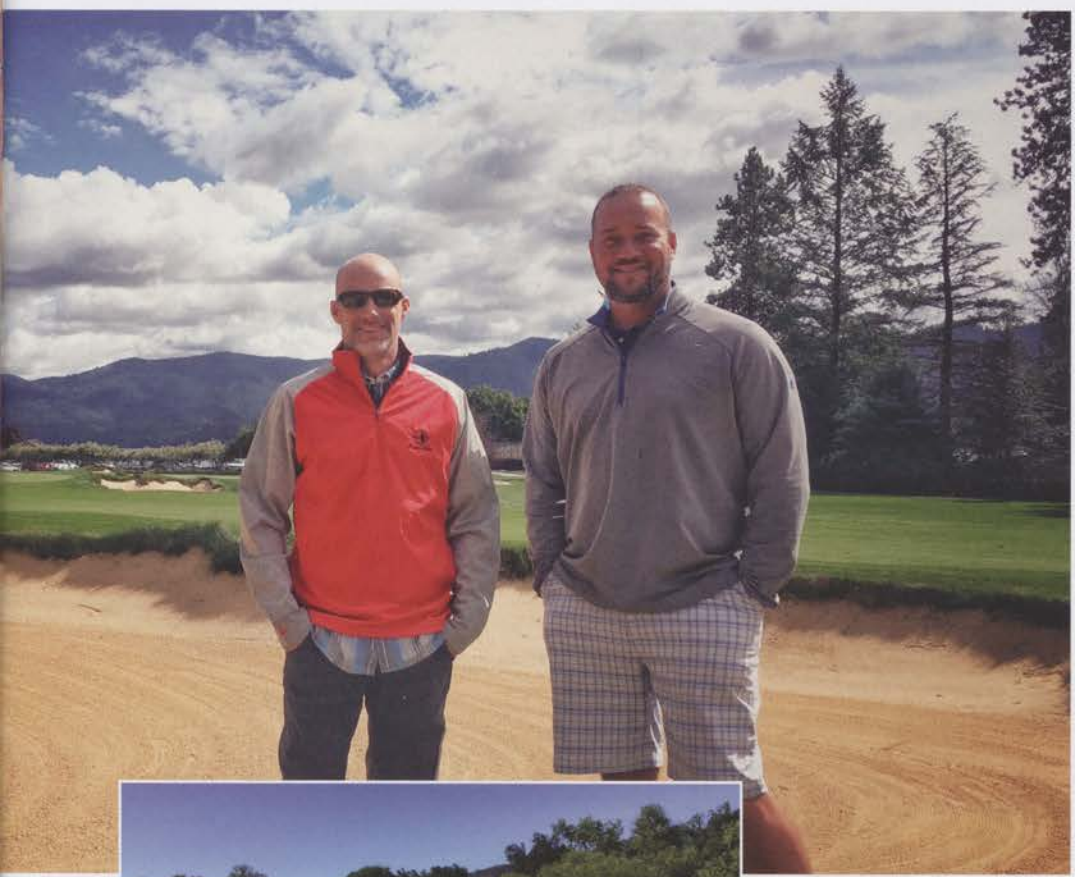
"All of the credit at The Preserve should go to Cory Isom and Tim Taagen, who recognized the opportunity to cut way back on water use, without sacrificing conditioning," Jackson says. "And once the project went ahead, it went way beyond your typical regrassing. Once you're on that property, which is tucked way up in the hills, deliveries take 45 minutes to reach the golf course. The only access on course is the cart path network, so the logistics to get sod and materials around the property while minimizing damage was really difficult. Landscapes did a tremendous job in executing the project."

At the Tom Fazio-designed Shady Canyon, 350 miles to the south, Jackson Kahn, Landscapes Unlimited and director of agronomy John Nachreiner collaborated and ultimately rooted out several more agronomic issues, one of which recalls Taagen's point about the dangers of overseeding in California.

"We all know that in coastal California, you should not overseed Bermuda fairways," Jackson says. "The first few years are fine but eventually *Poa annua* moves in, and then you can't get rid of it — not like you can in the desert, where the ryegrass cannot survive the summers. On the coast, you never get that true transition back to Bermuda."

Alas, not all developers studied agronomy at Purdue.

'Unfortunately, at times, developers make decisions based



on criteria other than best agronomic practices. In the case of Shady Canyon's developers, The Irvine Company, they felt that a 'green' golf course would be help in selling real estate. But once you overseed, even if it's just once, you never get it back and they did experience a slow and steady decline in conditions on account of the *Poa*/rye/Bermuda blend. When the membership took the club over a few years back, they regrassed the fairways."

Did they use Santa Ana? The city of Santa Ana is right next to Irvine, after all…

"No, they have a blend of Princess 77, which is a seeded variety the super at the time selected, and remnants of the originally installed 419. But when they converted, they kept the cool-season ryegrass rough because the greens committee liked the aesthetics — the contrast of green against dormant Bermuda fairways in winter. Problem was, the irrigation was designed for Bermuda wall to wall. So Landscapes put in a supplemental rough irrigation system that created a hard line between rough and fairway, because they have such vastly different water requirements. Essentially we gave John Nachreiner the control he needed to create the conditions members expected."

Added Nachreiner, "If you're putting water through irrigation heads that could be 85-90 percent efficient and they're only 65 percent, it makes sense to use that commodity in a better way. So we replaced the central control, all the heads and at same time put in a dual-turf system with supplemental heads around fairways to water the ryegrass rough."

The "conditions members expect" can be a moving target: Shady Canyon may eventually get rid of its ryegrass rough. Nachreiner resodded three holes last August with Bermuda rough; the membership is still mulling this decision, but the new irrigation works either way.

"To grow in the ryegrass without oversaturating the fairways, we needed more accuracy," Nachreiner says. "Even if we do go to Bermuda rough, we now have the versatility to keep the rough a bit more irrigated, more lush and dense, to contrast it with the fairways. To water the roughs independent of fairways — to give my south-facing rough some extra irrigation — is always a bonus. Most supers in the world would kill for that."

GETTING THE SAND RIGHT

Jackson Kahn's work at Shady Canyon has been done in several phases, the last of which — rebuilding the back 9 bunkers — will take place in 2017. In the last three years, Landscapes Unlimited has rebuilt the front nine bunkers, refashioned the fifth hole almost entirely, added a short-game area featuring three USGA greens and installed this highly targeted rough-irrigation system. Landscapes Unlimited also rebuilt all 18 putting surfaces, in reaction to another SoCal-specific, water-centric phenomenon.

According to Jackson, generally speaking there are only three sand sources available to golf course contractors in Southern California. The greens at Shady Canyon were built in 2001, using a larger,

PRESERVE *continues on page 72*

DEALING WITH INTERFERENCE

Brian Vinchesi, the 2015 Irrigation Association Industry Achievement Award winner, is President of Irrigation Consulting, Inc., a golf course irrigation design and consulting firm with offices in Pepperell, Massachusetts and Huntersville, North Carolina that designs golf course irrigation systems throughout the world. He can be reached at bvinchesi@irrigationconsulting.com or 978-433-8972 or followed on twitter @bvinchesi.

Last month I talked about the need to water accurately. Accomplishing this requires knowing the precipitation rates of your various sprinkler/nozzle combinations. That works great in theory, but there are other factors out on the golf course that will always require you to adjust your irrigation schedule. One of those, although not effecting the time to water, does affect the distribution of water being applied, and that is stream interference.

Until the early 2000s, stream interference was never a concern. Before then, sprinklers were not consistent in how they threw water. Although they were the same model sprinkler and nozzle, the throws were still slightly different. How the sprinkler is manufactured, as well as sprinkler spacing, leveling and grade all affect how the water stream leaves a sprinkler. In the past the sprinkler spacings were consistent, but would certainly vary a bit throughout the golf course or a hole even when staked at the same spacing. The result was that if you ran two sprinklers either beside each other or across from each other – such as in a double row fairway configuration – rarely would you see the streams of the sprinklers hit each other as their arcs bypassed each other. If the sprinkler was not set to grade or not level, the chances of stream interference were reduced even more.

With today's highly engineered and precisely manufactured sprinklers, better and more accurate staking and installation, as well as increased maintenance staff attention to sprinklers being level and at grade, the incidents of stream interference on golf course irrigation systems have increased dramatically. Don't think so? All you have to do is go out and look at your sprinklers operating. Correct nozzle/sprinkler spacing and maintained sprinklers result in consistent water throws. With the installation of three-row, five-row and wall-to-wall systems, the number of sprinklers on today's golf course has substantially increased and so has to the stream interference.

> "Why is stream interference even an issue? As sprinkler streams hit each other, the water stream is interrupted and the water does not end up where intended."

Why is stream interference even an issue? As sprinkler streams hit each other, the water stream is interrupted and the water does not end up where intended. This effects the uniformity of the sprinklers and results in poor coverage. You may not think it is a big deal, but if you see it occurring out on the golf course, you will be surprised at how much it interrupts a sprinkler's throw. Stream interference is repetitive as the sprinkler rotation speed doesn't change nor does it alter your schedule that much, so the stream interference continues each time the sprinklers operate.

The good news is if you recognize you are having stream interference, today's golf course irrigation control systems allow you to easily schedule around it. What you have to do is set up your schedule so sprinklers in close proximity to each other do not operate at the same time. For example, you may have a triple-row system broken into three scheduling areas, such as back nine fairways left, back nine fairways right and back nine middle sprinklers. These sprinklers would operate green to tee in sequence down the fairway. If you are running multiple sprinklers at a time, say one per program, the three sprinklers left, middle and right may be operating at the same time or two or three in a row, left, right or middle. That will result in stream interference. What you need to do is break up those areas scheduling-wise so no sprinklers beside each other will operate together.

This may sound easy, but it takes a great deal of thought to have your control system not have sprinklers operating beside each other. You need to write separate programs that keep the sprinklers spaced apart and the water spread throughout the golf course. On systems with ins and outs at the fairways and/or the greens, then it holds true for both the ins and the outs separately.

In today's water conscious age, it is important to be as efficient as possible with your water use. Preventing stream interference is another way to save water you probably never thought of, but it's easy to when you eat, drink and breathe irrigation. **GCI**

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Keep the conversation going

Not all renovation plans yield instant gratification. Just ask superintendent Ben Rink and the team at Champaign Country Club.

By **Guy Cipriano**

Ben Rink saves emails. The mundane. The long. The brief. The technical. When he needs a reference, or a midday chuckle, he visits the e-chives. Sometimes reading old emails can be – ready for a word we don't hear often in golf course maintenance – fun.

Champaign Country Club, where Rink has served as superintendent since 2003, completed renovations last year. The work addressed the practice area, drainage and bunkers. Email chains are descendants of renovations, and Rink started and extended numerous exchanges with golf course architect Mark Fine.

> "I put a lot of our old emails in an archive and it was a lot of fun to read them. It's just keeping at it. The alternative is that you give up and not make any improvements."
>
> - *Ben Rink, Champaign Country Club*

Improving Champaign Country Club's 112-year-old course represented an eight-year process. Rereading emails are part of Rink's post-renovation reflection. "It was a lot of fun to read them," he says. "It's just keeping at it. The alternative is that you give up and not make any improvements."

Watching members or owners approve a multimillion dollar renovation plan in January and the arrival of dump trucks and excavators in March contrast the renovation experiences of most superintendents. Plans are developed, committees meet, changes are made, bids are exchanged, outsiders are hired and superintendents play a waiting game. The economic downturn from 2008-13 prolonged the waiting at Champaign Country Club, a club wedged in a section of central Illinois where significant development stalled for reasons far beyond the control of anybody responsible for maintaining, operating or managing a private golf course.

Sometimes, in Rink's words, a superintendent must just keep at it. A mild form of renovation frenzy has reinvigorated hundreds of facilities the last two years. But nobody is certain whether the infusion of capital represents extended financial security or a temporary trend between recessions. If another recession begins, solid course improvement plans will stall or die.

Persistence among Rink, pro Lance Olson and general manager Chris Collins, a trio of veteran club employees, kept Champaign's plans alive, even in bleak economic times. Their triumph offers guidance for others who might encounter similar uncontrollable obstacles, frustration and skepticism when trying to improve their own courses.

Top: Champaign Country Club's 14th hole following a renovation. Below: The hole before the renovation.

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IT DOESN'T DRAIN

Rink started his current job Sept. 1, 2003. He realized on Sept. 2, 2003 what Olson started understanding shortly after he became Champaign's head pro in 2000: major drainage blunders had become common. The problems weren't a secret, and they provided fodder during Rink's first greens committee meeting. The entire course drained through one

pipe. The pipe measured 12 inches.

"When Ben came on board, it's a situation where you get used to the same kind of playing conditions you always had," Olson says. "It was, 'Well, if it rains, there's going to be water in the bunkers. If it rains, the ponds are going to overflow. If it rains too much, the fish are going to swim down Waverly Avenue.'"

Big storms caused bunkers to look more like stocked fishing ponds than playing surfaces. "It wasn't an issue with draining bunkers because they didn't drain," Rink says.

Champaign Country Club opened in 1904 and Tom Bendelow reworked the course in 1923. A 1968 renovation transformed the faces of the bunkers from grass to flash, bringing problems that became magnified by the time Rink arrived. Rink and Olson visited other clubs to examine restored bunkers, leading to internal conservations about the club's identity. Not only had Champaign's bunkers strayed from the classic look, they placed major strain on Rink's peak season staff of 15.

Following significant rain, workers mounted pumps on mechanical rakes, spending days trying to polish the unsalvageable. If the dousing occurred close to a tournament, Rink and Olson agreed to contest the event with water-filled bunkers so the maintenance crew could focus on other areas of the course. "I don't want to say we gave up on them," Rink says, "but we really didn't put a lot of effort into them." Still, labor and resources devoted to bunkers surpassed everything else in Rink's budget.

With no short-term fix available, Rink and Olson used knowledge obtained from visiting other courses and a relationship with a local shaper to experiment on the par-3 10th hole. The project consisted of reducing the size of the hole's three bunkers and installing grass faces. They picked the 10th hole for symbolic and logistical reasons. The hole is near the clubhouse and members could easily see the throwback appearance. The hole is also near access roads, allowing materials to be hauled onto the property without damaging other parts of the course. Rink, Olson and Collins received encouraging feedback regarding the new look, sparking hundreds of course and clubhouse conversations about Champaign's future.

The redesigned 10th debuted in 2005. The trio of managers let the redesigned hole simmer until December 2007, when Fine's firm created a preliminary assessment report after visiting the course multiple times. The report confirmed what Rink discovered early in his Champaign tenure.

"The course had been changed a lot over the years, like a lot of these older courses," Fine says. "It was kind of quasi-modern and quasi-classic. They knew they had to do something and that's why they invited us to take a look at it. We explained that the course can be a lot better, but it needs a fair amount of work. It will take a sizable commitment on behalf of the club to make it better and improve it. They fully understood that. There were no real surprises."

Top: Champaign Country Club's third hole before a renovation. Right: The hole during construction. Bottom: The hole following the completion of work.

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Champaign Country Club's 12th hole includes smaller bunkers and an approach that promotes low shots.

STAYING WITH THE PLAN

As menacing as the drainage and bunkers proved, the practice area was the first area the club wanted to address, Olson says. The club sits on just 95 acres – a total that includes the parking lot – and classic architects such as Bendelow didn't anticipate time and competitive demands transforming practice areas into valuable assets for clubs in markets such as Champaign-Urbana, Ill. Champaign Country Club competes with two other private clubs and four public facilities for customers in a market of 83,000 residents. "Everybody is fighting for the same dollars," Olson says. "There's probably one too many private courses and one too many public courses for everybody to be healthy across the board."

Champaign Country Club's three-acre practice facility lacked areas to hit practice pitch shots from prepared bentgrass to a bentgrass green, short holes for juniors to learn the game and targets to hone imaginative shots. A long-term future without those amenities would hurt the club's prospects of attracting time-crunched, family-first members.

Fine crafted a plan for the practice area in 2007. The plan sat because the recession started and then intensified.

Champaign Country Club started losing members. But Rink never lost confidence the club would endure the recession and emerge with an improved golf product. "Looking back on it, that downturn was sort of a blessing in disguise," he says. "It gave us time."

Here's how the club, Fine and his partner Scott Witter used the time: the club voted to begin a strategic improvement plan to guide future work in 2009; a strategic planning committee formed in 2010; the strategic improvement plan was finalized and Turf Drainage Company of America developed a long-term drainage plan in 2011; the club board of directors embarked on plans for the clubhouse and pool in 2012; and the strategic planning committee and board of directors hosted town hall meetings regarding golf course improvements in 2013.

"It could have died easily when we hit that downturn," Rink says. "It was a point of discussion just enough to keep things going. They were OK with spending money with Mark and doing some of the planning work. We knew we weren't going to get it done right away. In fact, we knew pretty much all along that this was not a project, it was a roadmap to get to an end to when as money became available, we would know how we were going to do it. We wanted to get a design together that we could then put on my shelf in my office."

The design sat until 2014, when the club hired GCBAA member Aspen Golf and Turf Drainage Company to execute the strategic improvement plan. Nine holes closed July 28, 2014; the other nine closed Sept. 21, 2014. Leaving nine holes open for two months during construction generated member curiosity and excitement. The final product left Champaign Country Club with a modern, repurposed practice area, 65 redesigned and rebuilt bunkers, and what Rink describes as "miles" of fairway and bunker drainage including two flood control pump stations.

Wheels and feet are one way to understand the agronomic differences in the course since the renovation. Champaign Country Club doesn't have wall-to-wall cart paths, and Rink looks below his vehicle to determine saturation levels. "My sense of firmness is under the wheels of my cart," he says. "There is far, far less standing water after a heavy rain." The renovation has changed how Rink approaches daily maintenance. Small, intricate bunkers with grass faces mean more hand raking and fly mowing. Formal drainage means less scrambling following heavy rain. The bunkers received immediate tests last year as a trio of storms each dumped three inches of water on the course. Rink's crew had bunkers playable by 9 a.m. the following morning. Olson judges how the course handles water by staring at members' shoes. "How dirty are they," he says. "We have a lot less mud on them."

Olson is observing more shoes since the renovation. A recovering economy and renovation buzz helped Champaign Country Club attract more than 100 new members in 2015, he says. Keeping stalled plans in the forefront has positioned the club to handle future climatic and economic uncertainties.

"It's a dramatic improvement," Fine says. "If you played the golf course before and after, it's night and day. Now all of the sudden you have a much better product offering and anybody who's looking to join a club is going to have to take a look at Champaign Country Club. You need to differentiate yourself and constantly be improving, and that's what Champaign did. My hat's off to them for having the patience and following through on it. It was truly a long-range plan that got carried out."

Rink has seven years of emails with Fine to prove how persistence can foster prosperity.

"It's ultimately up to your membership or owner or whoever is controlling the money whether it's going to get done," he says. "We felt like we had a pretty solid plan. There was a lot of education that took place. There was a lot of mutual support between Lance and I. When one of us was questioning whether it was going to get done, the other guy seemed to be a little more positive. We had a lot of one-on-one conversations figuring out how to keep it going. And seven years is a long time to keep that going." **GCI**

Guy Cipriano is GCI's associate editor.

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GREENSIDE HAZARDS

Jeffrey D. Brauer is a veteran golf course architect responsible for more than 50 new courses and more than 100 renovations. A member and past president of the American Society of Golf Course Architects, he is president of Jeffrey D. Brauer/GolfScapes in Arlington, Texas. Reach him at jeff@jeffreydbrauer.com.

I think most golfers judge a green primarily from its hazard choice and placement. Those are seen from the landing zone, and often even from the tee, giving golfers their first impression of the challenge ahead. Indeed, hazard arrangement can make a green hard, beautiful and/or unique, or "same old, same old."

Since I was a 12-year-old golfer and aspiring architect, I asked myself why so many greens I saw, in person or on TV, featured sand bunkers on both right and left? I had read many golf course design articles and all stressed strategy was more important than penalty, but similar bunkers on both sides suggested it was the other way around for most architects of the day.

In my college landscape architecture courses, I was taught to design using the natural qualities of a site to give each a unique sense of place, not found elsewhere. Yet the trend in golf architecture was to make all courses conform to a style, moving as much earth as required to make each hole look similar to the next. I was upset and perplexed at losing nice commissions for stressing variety over sameness to a committee who believed in "style consistency." "Shouldn't they all be of the same style?" they asked.

Not necessarily, if you want them all to be unique…

However, I found it was easy to get in some of those same repetitive human thought patterns, like brushing your teeth after the shower, never before, etc. And, I found my bunker patterns would get similar. I usually placed them for aesthetics, slightly favoring the look over strategy, difficulty and balance.

I first design the greens that have a solid natural feature and "sense of place," and then fill in the rest that by necessity required more "hand of man" to be good. Green sites without a pond, mature trees or some interesting contour to be the design keynote usually use sand bunkers for challenge. Notice I don't say "defense," a subtle theoretical difference that leads to … bunker left, bunker right. Sand bunkers are traditional, attractive and visually dominant, so much so that they are really "stop signs" telling golfers should NOT play, rather than guiding play intelligently.

If you can avoid repetitive thinking, there really is an infinite number of ways to place them around greens. Eventually, I reasoned, somewhat counter intuitively, that the best way to bunker each green uniquely was to start with a variety pre-determined "hip pocket" ideas and find sites and to suit them considering all facets of design. Topography typically suggests a variety of natural bunker locations, usually defined as locations a natural up slope facing golfers for visibility. It's possible to build big earth forms for bunker placement, but you can fall into those repetitive patterns more easily.

While following nature as much as possible, I seek differentiation by varying the number and type of greenside bunkers at each hole. I strive for some greens with no bunkers up to those with seven or eight. The most bunkers I ever put on a green was 11, on a par 3, which created a dramatic "sea of sand" effect, which can be overused."

If two greens have the same number of bunkers, they get totally different arrangements, mixing large, medium, small or pot bunkers. Some sizing rules usually apply – open areas tend to get bigger bunkers because of available room and "scale." However, sand bunkers provide visual scale and are good distance markers. They can be purposely over- or under-sized to fool the eye. Greens with no bunker can be the most difficult to judge the approach shot.

I like subtle and strategic interplay between different hazards. Placing them in varying locations – staggering them to front, back, either side, close to the green, far from the green, above it, below it or both on one side.

Knowing golfers instinctively play away from higher penalty and visually dominant sand or water hazards, I mix hard hazards with benign one (or none at all) on the other side. This creates both the temptation of par vs. the dilemma of possible double bogey, and that makes golf entertaining.

I also like the aesthetics and variety of other hazard types, and use mounds, grass hollows and grass bunkers, steep grass banks and fairway height "chipping areas." I start designing with my "hip pocket" list of those, too.

To further accentuate this variety, I pay attention to the sequence of the bunkering for both fairways and greens, striving to follow a multiple bunker hole with a simpler one. As with every other aspect of design, I go 'round and 'round, seeking the best design for each green, but tweaking for variety and balance. **GCI**

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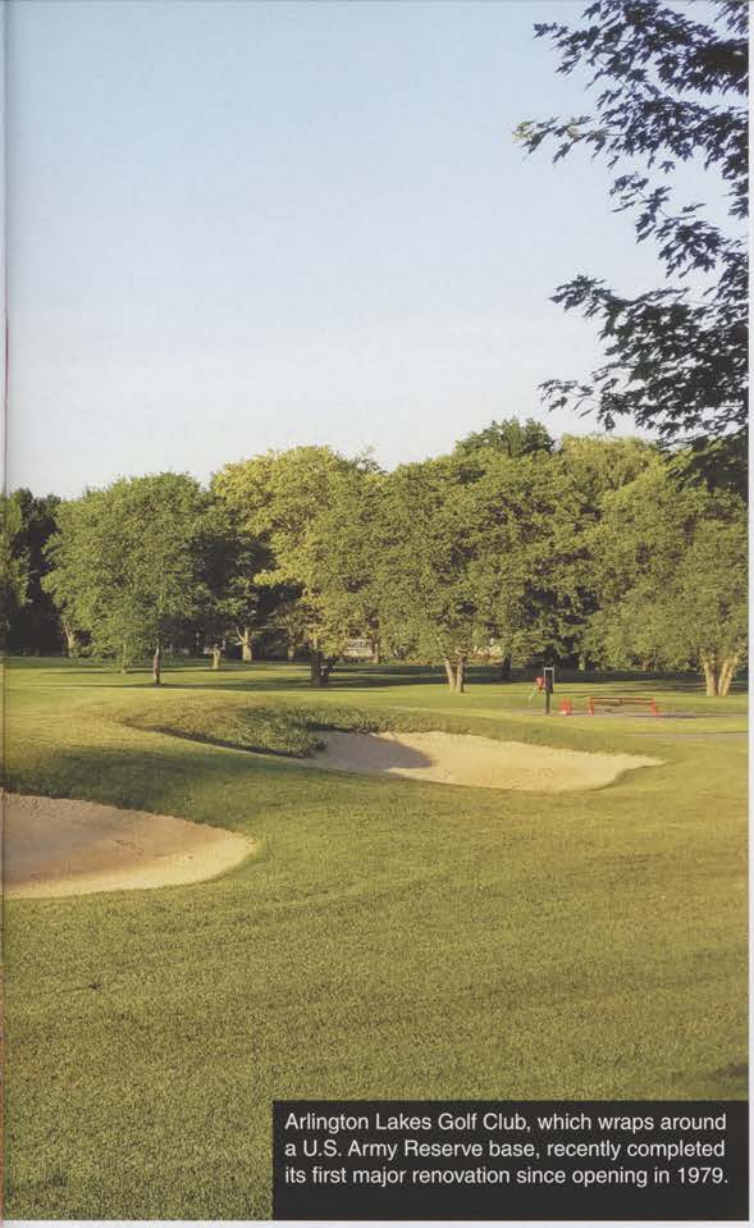
HARBORING BETTER GOLF

A suburban Chicago park district course with a Cold War past creates a fresh experience for a variety of customers.

By **Patrick Williams**

What do Nike missiles and Penncross bentgrass greens have in common? They have both seen their demise on the same patch of land.

In 1979, the park district of Arlington Heights, Ill., granted residents' longstanding requests to open a golf course on property that harbored the Cold War weapons. Eighteen bluegrass/*Poa annua* mix fairways were constructed across the 90-acre property of the David Gill-designed Arlington Lakes Golf Club — including two fairways built about eight feet above abandoned missile silos. Fast-forward to 2015, when V8 bentgrass replaced the Penncross putting surfaces, holes were flipped and rerouted, and 69 bunkers were removed. A redesign centered around improving player accessibility allows everybody to breathe a little easier now, including the jovial superintendent Al Bevers.



Arlington Lakes Golf Club, which wraps around a U.S. Army Reserve base, recently completed its first major renovation since opening in 1979.

When Arlington Lakes' maintenance garage was on the back nine, it took Bevers and crew a long time to get to the front nine for morning maintenance, especially considering the 5,400-yard, par-68 course wraps around a U.S. Army Reserve base. The garage hasn't moved, but the front and back nines have been flipped. "We can do everything and then finish up on the far end, and it saves us about probably an hour in the morning just on morning jobs, just getting things, boom, boom, boom," he says. "We're right there, we're done, we're out of the way."

The reason for the flip lies with local golf course architect Michael J. Benkusky, whose redesign plans took into account the course's short length and densely populated surrounding area. By flipping the front and back nines, rerouting a few holes and altering those holes' individual green and tee complexes, golfers don't have to walk as far as they used to, and more holes lead to the clubhouse. Arlington Lakes now offers three- and six-hole options, which, along with the reduction from 106 bunkers to 37 and the addition of new tees at shorter yardages, fit with Benkusky's goal of attracting more juniors, seniors and anyone else who wants to play a shorter, simpler round. "We're not looking for your scratch golfer in a sense, not that we don't get them occasionally," he says. "But no, we're looking for just the casual golfer."

Aside from a new irrigation system installation about a decade ago, the course had not seen any major improvements since it opened, says Tim Govern, golf operations manager. What began as a plan to protect the course as an asset ultimately became a mission to draw in new crowds such as families. And it has been successful. For instance, players are less frustrated now than before the redesign, when they volleyed golf balls between numerous run-down bunkers.

The old bunkers baffled Bevers. A single acre-and-a-half area contained 21 of them. "It was just mind-boggling how many bunkers there were and just some of them with a sliver of grass not even the width of a 21-inch mower in between them, but here they are," he says, heartily laughing. They didn't drain well, either. A 2 1/2-inch rain would result in three full days of crew pushing them up and pumping them out.

All of the course's current bunkers fit a new, flatter design, complete with drainage tiles and improved sand, Bevers says. The

PHOTOS COURTESY MICHAEL J. BENKUSKY

> "It was just mind-boggling how many bunkers there were and just some of them with a sliver of grass not even the width of a 21-inch mower in between them, but here they are." Al Bevers

reduced time spent on bunker maintenance has allowed the crew to focus on other projects such as divots and fairways, and Bevers can send a crew member out to roll, if necessary.

The $2.4 million project also included the wall-to-wall extension of cart paths, removal of 62 diseased and overgrown trees, and the grow-in of about the same number of healthy trees, Govern says. An additional $400,000 "facelift" of the clubhouse has further improved golfer experiences.

The contractor for the redesign, GCBAA member Golf Creations, began construction in early June 2015, says Matt Lohmann, project manager. Weeks of rain that month delayed the project slightly, but the company; its three subcontractors for cart path, pond and irrigation work; Benkusky; and the maintenance crew worked together to complete it in September. "I think the teamwork between the architect, the contractor and the owner — maintenance staff — was really good," Lohmann says.

For Benkusky and Lohmann, the project renewed aspects of a longtime relationship. Benkusky used to work for Lohmann Golf Designs, a company owned by Matt Lohmann's father, golf course architect Bob Lohmann. When Matt was a child, Benkusky took him to his first Chicago Bulls game. When he was in college, he worked on the Benkusky-designed Canyata Golf Club in Marshall, Ill. The Arlington Lakes project was the first Benkusky design contracted out to Golf Creations since Michael J. Benkusky, Inc. was established in 2005.

Throughout the redesign, Golf Creations crew and subcontractors spent a significant portion of time constructing new ponds, Lohmann says. "There's two ponds on No. 2 that were combined into one, so we basically excavated the

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area between the two ponds and connected those two ponds into one feature on hole 2," he says. "And then on hole 7, we expanded the pond about twice the size down the left side of the fairway."

Benkusky designed 10 of the greens, including the practice green, with brand new complexes according to USGA specifications. On the other nine greens, Lohmann and his crew stripped the sod off, poured about 2 inches of sand, adjusted the grades per Benkusky's instructions and reseeded.

In past years, between May and September, the maintenance crew sprayed for dollar spot every 10 to 14 days on the Penncross greens, Bevers says. "They would just get puffy and slow and you couldn't do anything with them," he says. "This new V8 — we're cutting it at just a touch below an eighth-of-an-inch at .118, and they hold up perfect. They love that low-height cut and they're extremely disease-resistant."

Also to Bevers' delight, contractors converted all of the course's former bentgrass tees and its newly constructed tees to a low-mow Kentucky bluegrass. The grass is still growing in, Bevers says, so crew are cutting it around nine-sixteenths-of-an-inch. Within a couple years, that height should come down to a half-inch. As with the greens, the tees are far less susceptible to disease than they were before.

Because the course was closed for the redesign, Bevers and his crew were able to help throughout the process. They removed the old bunker sand and used it for rough topdressing, as well as backfilled the cart paths along the fairways.

Now that the wall-to-wall cart paths are a course feature, crew can follow them to more easily complete tasks after heavy rains. "They're a blessing for myself, for the maintenance staff," Bevers says.

There is something else crew have to sometimes prepare for after heavy rains — when the fairways above the missile silos cave in. "Every two or three years, one of the cover plates that they put over one of the vent fans or something like that rots through and you'll get a big rain," Bevers says. "You'll come in in the morning and there will be a 15-foot hole in the middle of the fairway with everything washed in."

Aside from the occasional missile silo-related mishap, the crew at Arlington Lakes Golf Club can better balance their work post-redesign due to the course's own caving in to a changing industry. **GCI**

Patrick Williams is a GCI contributing editor.

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FOCUS ON PLANNING, NOT PLANS

Henry DeLozier is a principal in the Global Golf Advisors consultancy. DeLozier joined Global Golf Advisors in 2008 after nine years as the vice president of golf for Pulte Homes. He is a past president of the National Golf Course Owners Association's board of directors and serves on the PGA of America's Employers Advisory Council.

Gen. Dwight D. Eisenhower, who served as Supreme Commander of the Allied Forces in Europe and planned the successful invasions of North Africa, France and Germany during World War II, didn't put much stock in plans.

"Plans are nothing," Ike once said. Planning, however, was an entirely different matter for the man who would become our nation's 34th president. He believed "planning is everything." In other words, the value really derives from the disciplined process that produces the plan. Furthermore, a plan that has not been preceded by sufficient planning may not get you where you want to go.

Are you planning for the future of your facility or club in ways that produce the right plans to guide your actions? Before you try to jump to the final product (the plan), consider a few basic but critical planning steps.

AGRONOMIC PLANNING. Many states in the U.S. and most Canadian provinces have begun the progressive reduction of pesticides on golf courses and sports fields. Is your course anticipating the almost certain changes that are coming? Your planning process also should address water and water-taking, fertility, pesticides and chemical use and storage, tree replacement and removal, mechanical care and upkeep of maintenance equipment, and employee training and development.

CAPITAL IMPROVEMENT AND INVESTMENT PLANNING. Golf courses and private clubs have insatiable appetites for capital. As a result, clubs must maintain a robust and thorough roster of capital assets, ranging from community infrastructure and buildings to rolling stock and maintenance equipment to furniture, fixtures and equipment.

Typically, capital and investment plans are the work of the controller and the finance committee. But expansive-thinking clubs also include in the process management, staff and the people who actually use and operate the capital assets. The more inputs provided to the capital asset roster, the better the eventual capital plan. The controller should issue clear and unequivocal guidance concerning the active definition of capital assets to ensure board-based understanding and compliance.

When planning for future capital needs, take into account: capital items owned by the club; standard useful life estimates (available through the American Institute of Certified Public Accountants); life-cycle projections for golf course assets, including greens, tees, sand bunkers, irrigation systems and drainage (available through the American Society of Certified Golf Architects); and actual standard unit counts of assets to ensure alignment with utilization needs and patterns.

CRISIS PLANNING. What happens in the event of a disastrous or tragic event at your club? What specific actions should employees take, and in which priority order? Which staff members are authorized to contact and deal with police, emergency responders and fire departments? Who contacts the insurer? Who drafts responses to media questions and acts as a spokesperson for the club? Who manages the subsequent media cycles? All of these questions should be anticipated and answered during a detailed planning process and obviously before any crisis.

Resources in answering these questions include your insurance carrier and agent, local public services of fire, health and public safety, and experts available through major professional associations such as CMAA, GCSAA and PGA.

MARKETING PLANNING. One of the regrettable truths revealed by the Great Recession is that most golf courses and private clubs do not understand their markets well enough to inform their most critical decision making. Few conduct a business-like market analysis of existing customers and prospective market segments outside of the front gate.

Lacking a thorough and current understanding of their markets, most clubs execute misdirected, ineffective and potentially costly marketing efforts. Top-performing clubs have studied and measured their market areas. Among other benefits, this research helps them understand feeder markets (which may be out of state and beyond) that can sustain growth and reliable financial performance.

Armed with the information uncovered during the planning process, you now have the ingredients of a comprehensive business plan which supports your overall strategic plan. While he may not salute your plan, Ike would surely be impressed with the hard work and critical thinking that produced it. **GCI**

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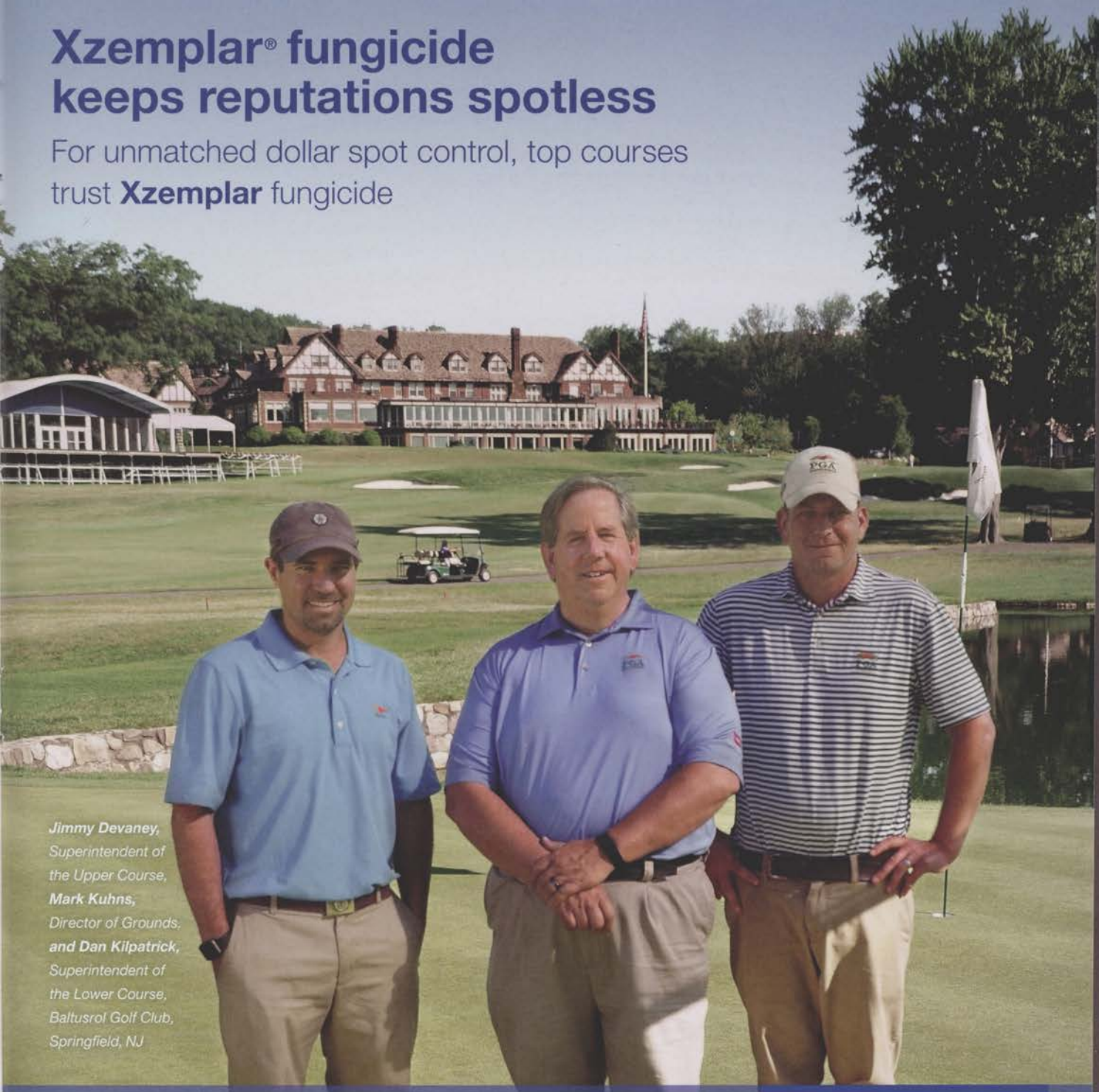

Jimmy Devaney, *Superintendent of the Upper Course,* ***Mark Kuhns,*** *Director of Grounds,* ***and Dan Kilpatrick,*** *Superintendent of the Lower Course, Baltusrol Golf Club, Springfield, NJ*

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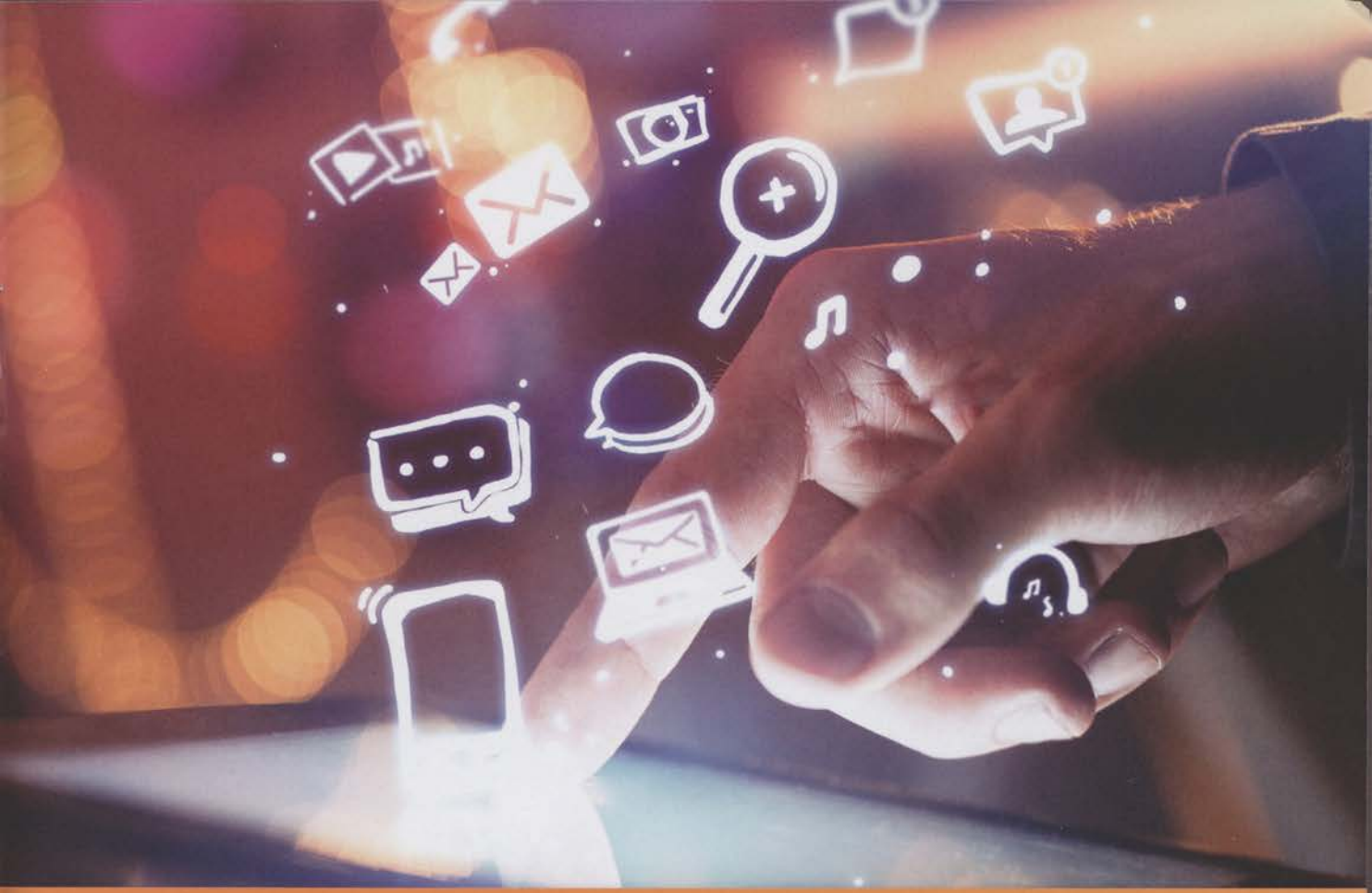
The Golf Course That Never Sleeps

A renovation helped a New Jersey municipal course achieve a major feat. *Now comes the next challenge* — **handling 70,000 rounds per year.**

By **Guy Cipriano**

The City That Never Sleeps lurks less than 20 miles from Galloping Hill Golf Course. Anybody can play Galloping Hill almost anytime, thus making it The Golf Course That Never Sleeps.

Northern New Jersey boasts an abundance of private golf courses and only one facility like Galloping Hill. A well-plotted renovation allowed the greenspace along the Garden State Parkway to become the first public course to host the New Jersey State Open this past summer, a milestone 95 years in the making.



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The 14th hole at Galloping Hill Golf Course experienced significant changes following a renovation involving Rees Jones Inc. and Total Turf Golf Services. The busy course became first public facility to host a New Jersey State Open this past summer.

Golfers living near New York City without private club memberships are a hardy species. When the weather clicks, and sometimes when it doesn't, Galloping Hill will host 70,000 rounds in a calendar year. Before proceeding any further, stop and consider that total: 70,000 rounds at a facility in a region with three months where the average temperature doesn't eclipse 40 degrees. "This has always been a machine," Armando Sanchez says.

Sanchez is the director of golf operations for Union County, New Jersey, which started a bold process in 2009. The county wanted to add luster to a short-circuiting machine that 250,000 cars pass each day. County leaders agreed in 2010 to invest $17.6 million into Galloping Hill. Plans included constructing a clubhouse expansive enough to host banquets and weddings and serve as the New Jersey State Golf Association headquarters and adding a building to complete a learning center.

The plan also involved transforming Galloping Hill into a course comforting regulars and testing elite players. The machine needed to be practical and high performing because the NJSGA wanted to bring its signature event, which has been contested at prestigious private clubs such as Plainfield, Baltusrol and Ridgewood, to a course enjoyed by the masses. Sanchez says former NJSGA President John Murray considered conducting the New Jersey State Open at Galloping Hill, the Garden State's version of bringing the U.S. Open to Bethpage Black, the mighty municipal course on Long Island.

Galloping Hill, though, couldn't sleep during renovations. Union County was down to two golf courses after it shuttered Oak Ridge in 2008. The county privatized its remaining courses in 2010, beginning a multi-year agreement with KemperSports. The agreement has since been extended.

Adding Russ Harris to the Galloping Hill staff was another key decision during the early phases of the transfor-

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Steve Weisser, Armando Sanchez, Russ Harris, Greg Hufner and Mark Arrimour were part of the team assembled at Galloping Hill.

mation. Harris, a northern New Jersey native, spent eight years as the assistant superintendent at county-owned Ash Brook and then two years as Galloping Hill's assistant superintendent. Sanchez elevated Harris to head superintendent in 2011. Nobody needed to explain the stakes or obstacles. Harris has a deep personal connection at Galloping Hill. Working at the course as a teenager sparked an interest in golf course management.

"Losing my shoes," is how Harris explains his early memories of Galloping Hill. "I literally remember walking a foot off the fairway and losing my

shoes because that's how wet the place was," he adds. "The first thing we did was turn the water off. I'm learning more and more everyday about how much farther you can push it, how much drier you can maintain it, pushing 70,000 rounds per year. If we are wet, that's when we see more damage."

Irrigating less reduced the daily damage inflicted on the course, but the county needed outside assistance to create a championship course. Led by architect Steve Weisser, New Jersey-based Rees Jones Inc. started developing a long-term plan in 2011. A key part of the plan included involvement from GCBAA member Total Turf Golf Services, which had worked with the county on improvements on Galloping Hill's nine-hole learning course and practice green. Experiences with municipal golf projects allowed Total Turf to wade through the bid process.

> "Our main thing is the speed our maintenance team has to get out there and get off the golf course. We are never going to get out of the way of play. It's impossible for us here. We don't have a maintenance day. We don't have a maintenance half-a-day. 5:15 in the morning you have to get on the golf course and essentially have all our turf mowed and be off the golf course by 8 o'clock. It's just getting better and better at that."
>
> —*Russ Harris, Galloping Hill*

Renovations, especially when public money is involved, are always tense. And this one proved demanding because a builder would be forced to work around hundreds of golfers each day. "We were absolutely not closing," Sanchez says.

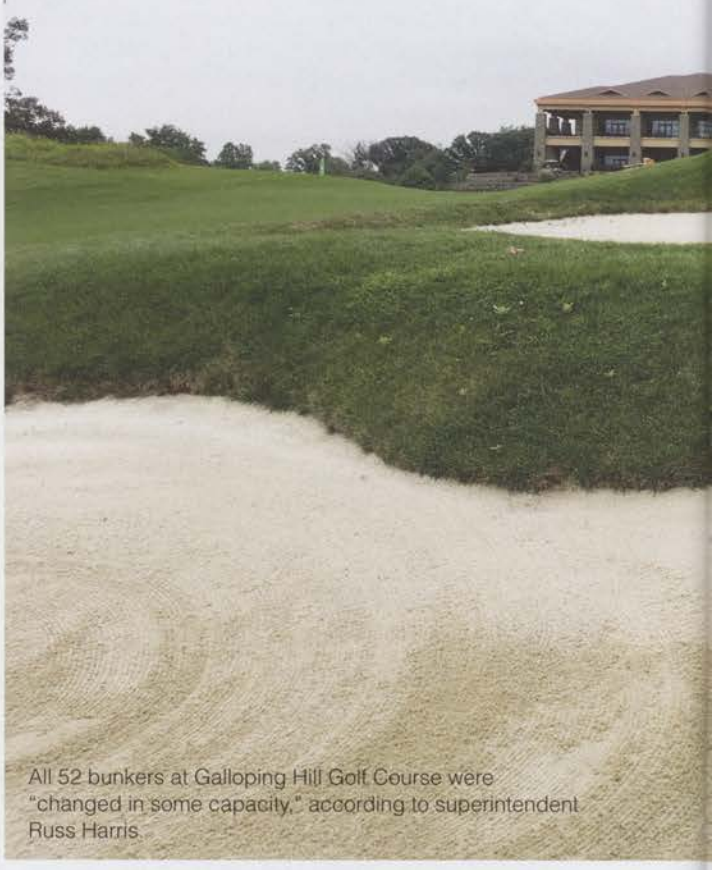
Renovating while staying open has become the industry norm. Total Turf vice president Greg Hufner says 90 percent of the company's projects are now completed without closing the course. Unless crews are building a new golf course or overhauling every green, operators and members are leery of closing during a project. "It wasn't that long ago that people didn't seem to say much about starting a project in August and closing," Weisser says. "Nowadays it doesn't happen much anymore. Everybody wants to have the golf course and the work done at the same time. They want to live in the house while it's being redone."

If lulls exist at Galloping Hill, they begin in October, and work started in mid-October 2014. Only two holes, Nos. 5 and 16, experienced significant disruptions, according to Hufner. Both holes received rebuilt greens as part of the renovations, while fairway approaches were rebuilt on multiple holes, including No. 16.

All 52 bunkers were "changed in some capacity," Harris says. The bunker rebuild included installing the Better Billy Bunker system, another step in making Galloping Hill a drier course than the place Harris visited as a child.

The winter of 2014-15 proved brutal, although work commenced with two uninterrupted months of progress. Crews returned to the course in late March, and work was completed by mid-May 2015.

"We weren't just taking a public golf course and redoing it for a tournament," Weisser says. "Everything was done to make the whole thing work – just basically reclaiming the golf course

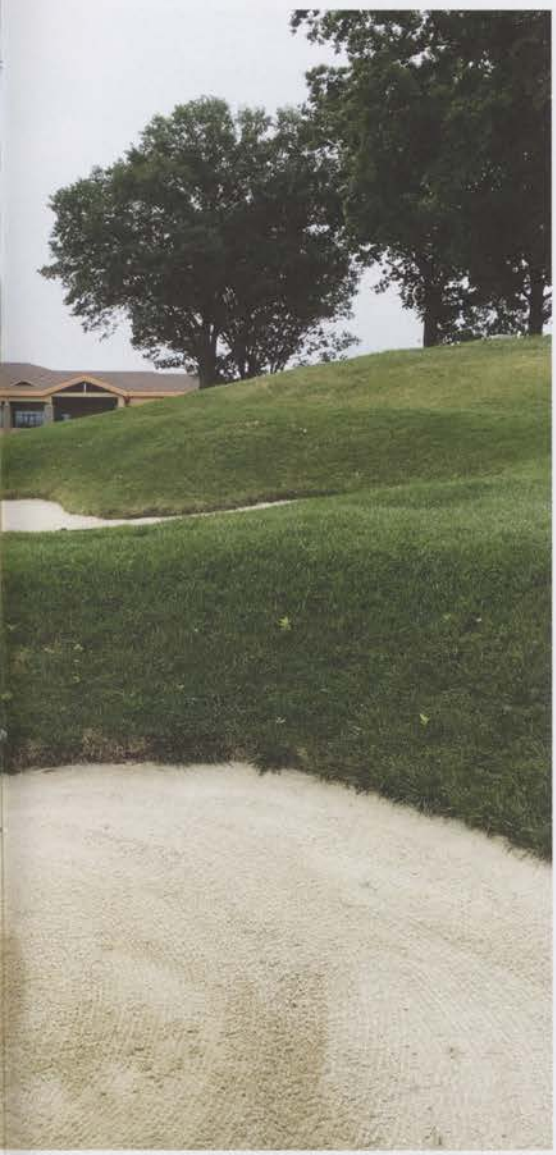


All 52 bunkers at Galloping Hill Golf Course were "changed in some capacity," according to superintendent Russ Harris.

that was there, taking out trees, expanding the turf areas. We sort of added in the challenge for the state open, but realistically it's for getting golfers through here day after day and taking care of it whether it's things that people don't really see like drainage. Now they have the rewards of it. Now we have something that they can use day after day."

The improvements are helping Harris achieve his biggest maintenance goal: creating efficiencies to handle frantic play. The Galloping Hill crew often resembles a NASCAR pit crew. Every second matters when the machine rolls.

"Our main thing is the speed our maintenance team has to get out there and get off the golf course," Harris says. "We are never going to get out of the way of play. It's impossible for us here. We don't have a maintenance day. We don't have a maintenance half-a-



day. 5:15 in the morning you have to get on the golf course and essentially have all our turf mowed and be off the golf course by 8 o'clock. It's just getting better and better at that."

Galloping Hill, which was New Jersey's eighth public golf facility when it opened in 1927, has been modified multiple times, including in the 1990s. Willard Wilkinson, Robert Trent Jones Sr., Alfred Tull, Stephen Kay, Rees Jones and Weisser are among the architects to work at the course. Harris, though, is the only superintendent to prepare the course for the state's best players.

Play was limited to 100 rounds per day during the 10 days leading up to the New Jersey State Open, and the event exceeded internal expectations. Harris says the period offered glimpses of what his team can accomplish when it receives slight respites from filled tee sheets. But everybody associated with the current work – GCBAA member Winterberry Irrigation also has performed work at the course – hints Galloping Hill's best moments are looming. "You can't fix 40 years of problems in six," Harris says. "We knew that from Day 1."

State open conditioning levels magnified the severity of a few greens, and Sanchez says addressing those greens along with further tree removal and drainage additions are among the future improvements being discussed. Weisser and Total Turf President Mark Arrimour, whose companies are linked to numerous high-profile projects across the country, lauded Union County for its commitment to not only pursuing an ambitious project but protecting an investment.

"One thing that's different between this project and other municipal projects is the after care," Arrimour says. "The county gives Russ a budget and Russ performs the work. They have an infrastructure now and a budget to maintain it versus some municipalities where we redo bunkers and you go back two years later and they look terrible. That's a big part of it that they don't understand. When you redo it, if you are going to spend a lot of money to redo it, then maintain it." **GCI**

Guy Cipriano is GCI's associate editor.

THE BEST OF THE LAST 50 YEARS

Monroe Miller retired after 36 years as superintendent at Blackhawk CC in Madison, Wis. He is a recipient of the 2004 USGA Green Section Award, the 2009 GCSAA Col. John Morley DSA Award, and is the only superintendent in the Wisconsin Golf Hall of Fame. Reach him at groots@charter.net.

As I walked along the rows of old tractors at the numerous shows I attended late this summer and early autumn, I thought about how much golf turf management has changed from my days as a college student to my retirement years of today. As such, it would be fun to attend an antique turf equipment show. Such an event would really bring our progress into focus, just like the steam shows do for production agriculture. So, here are my opinions – far more subjective than objective. Many will consider my list incomplete, and they would be right. So in no particular order…

IRRIGATION. I come from the era of the night waterman. It was difficult finding a person to do the task in the summer, and it was even worse finding a capable person for the spring and fall. It was lonely work, made less so when we mounted a tractor radio on a Cushman truckster to keep the waterman company. It was hard work, too, especially if one had to roll up a mile or so of 1-inch hose for roller base sprinklers. As a college student, I worked on the golf course that installed the first automatic system in the state. That course went from unirrigated fairways to a new deep well, asbestos-cement pipe and electro-mechanical controllers. It was a major move, but when viewed from the systems of today, it was pretty unsophisticated. Computerized central controllers and satellites, along with variable frequency pumps, are marvels few can appreciate. These big tools are even more useful when tools like moisture meters are employed. Progress has been critical because water is the most important input in golf turf management (again, my opinion).

TRACTION UNITS. I love tractors. It is why it is hard for me to see them for the dinosaurs they have become. We had three Fords, all with the same transmission. Two were diesel, one was gas. I bought a Ford 2110 new in 1974, and in all of its years of service it never was parked outside. We never had the valves ground and it was reliable beyond what one would hope for. My successor sold it during my first year of retirement; they never used it and it took up too much storage room. It is hard to argue that. When you mow roughs with Worthington 5-gang Airfield Blitzers and fairways with two sets of 7-gang Jacobsen pull frames, you need three tractors. The first move to change was the availability of F-10s and Parkmasters – no tractor required. Then, along came lightweight mowing. At one point we parked the tractors and mowed fairways with seven Greenskings. Now it's the bigger and better and still lightweight fiveplexes. Tractors just aren't used much anymore.

SAND TOPDRESSING. I recall listening to Dr. John Madison speaking at the GCSAA conferences and even once at our Wisconsin Golf Turf Symposium, telling us about the use of straight sand for topdressing golf turf, especially putting greens. His radical ideas weren't so radical when history tells us about Old Tom Morris instructing his right handyman, David Honeyman, Sr., "More sand Honeyman." Madison's books and lectures led to important improvements in golf turf. And with this change in turf culture, topdressing equipment has evolved and improved with the practice.

AERIFIERS. From open camshaft machines like the early Ryan Greensaires and the tow behind large area Ryan Renovaires, progress has been great. Early in my career we were so desperate to get a good aerification on fairways that we attacked them with four Greensaires IIs fitted with the largest hollow tines we could find. Progress was slow – one or two fairways per day – but we brought up a lot of soil and prepared a good seedbed for the bentgrass seed we spread every year. The leveling effect of dragging the cores was useful as we lowered the height of cut on those fairways. It was such a low-tech process that all we had to thoroughly pulverize the cores was a walk behind Ryan Mataway. As time went on, I believe we ended up with four GA-60s and even bought a Floyd-McKay deep drill aerifier for greens and tees.

SHOPS. We went from a small, unheated metal building with an outhouse to a new carefully designed large maintenance facility. It was more than dramatic, and I appreciated this improvement every time I walked into it. Many of the courses in our state have gone from old dairy barns and garages to something like ours. Wow! And inside these building significant changes are also visible, especially

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hoists and lifts, revolutionary sharpening equipment and air tools. Many golf courses now employ a mechanic or an equipment manager.

COMMUNICATIONS. A colleague of mine managed a course on a huge piece of property, and a three-hole run was laid on 40 acres. Many times he complained of his difficulty in keeping track of employees and communicating with them. That all changed with portable and affordable radios. They solved a big management problem for us, and it's only gotten better with the flood of technology. These days, if an operator has an equipment problem, he merely calls the shop for help on his cell phone. Even a low-tech guy like me is impressed.

PUTTING GREEN EQUIPMENT. I attended the first Jacobsen College Student Program in the summer of 1968 and had a chance to see one of the three first triplex greensmower prototypes. It was a machine with wide, small-diameter tires and the appearance of a praying mantis. We thought, "goodbye walking greensmowers!" Labor savings were easy to calculate and it seemed to be the wave of the future. Well, the future arrived and the next step was back to the future. Walkers, dozens of versions of them, returned along with many rolling equipment choices. Add in aerification options and the result has been wonderful improvements in putting surfaces.

A lot of things haven't changed, though. The rules of golf have been pretty stable. Cup cutting equipment is about the same as it was when I started. The work itself is still challenging, interesting and even fun. Oh, and despite all the improvements, about the same percentage of players still grumble about green speed. **GCI**

BACKED BY HIS MENTOR

By Trent Bouts

More than 70 people turned out for Mark Hoban's first organics and native grasses field day at Rivermont Country Club in Johns Creek, Ga., this past summer. But for a while, Hoban wasn't sure if anyone was going to turn up. Anyone, that is, except his mentor and a legend of the superintendent profession, Palmer Maples Jr.

Maples was the first and, for some time, only person to sign up for the event promoting interest in a more organic approach to golf course maintenance. At the least it was a wonderful gesture by Maples, who at 84 is long retired and not likely to be putting any new turf tricks into practice.

But the fact that he did turn up, traveling from his home in Missouri, underlined two of the great truths about the profession that will be as important 50 years from now as they were 50 years ago – curiosity and relationships matter.

Maples made the trip because he is fascinated by the work Hoban and a scattered, but growing, band of others are doing. He also wanted to support Hoban, who was just starting in golf course maintenance when he worked for Maples at The Standard Club back in the '70s. "Mark was one of my golf course sons," Maples says.

Maples, of course, remains a giant in golf course maintenance circles. A member of the Georgia GCSA Hall of Fame and Georgia Golf Hall of Fame, he was president of the Carolinas GCSA (1967-69) and GCSAA (1975). In February, he plans to don his white jacket and escort another of his "golf course sons" Bill Maynard, CGCS, to the front of the room when Maynard becomes GCSAA president.

Superintendent Mark Hoban received a boost when his mentor Palmer Maples Jr. attended an organics and native grasses field day at Rivermont (Ga.) Country Club

"It was quite an outing," Maples says of the field day at Rivermont. "It was very interesting, well-attended and I thought it was interesting that a lot of people came from quite a ways away. Clearly, they wanted to at least form an idea of what could be done with organics and I know that's what Mark wanted to achieve."

The idea for a field day came after a number of vendors of organics asked if they could bring superintendents by to see the results Hoban was achieving. The field day began with a formal presentation in the clubhouse followed by a tour of biological trials on greens, compost trials on fairways, University of Georgia fertilizer trials on fairways, native grasses, wildflowers, worm farm, and compost tea brewers and extractors. **GCI**

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Winter desiccation 1


Winter desiccation 2

THREE KEYS TO A SUCCESSFUL WINTER SHUTDOWN

Before blowing out their irrigation systems and shutting down their courses, superintendents in the North should follow these guidelines.

Patrick **Williams**

The answer to the question of how to prepare for winter, even in the North, is highly specific based on region. Peaks, valleys, oceans, lakes and latitudinal and longitudinal coordinates divvy up the golf courses that should consider one management practice over another. Here, turf experts offer their advice on what superintendents across the North can do.

PHOTOS COURTESY NICK CHRISTIANS, IOWA STATE

PROTECT AGAINST DESICCATION AND FREEZE INJURY

Dry and windy conditions in areas such as Western Iowa, Nebraska and farther west toward the Rocky Mountains can lead to desiccation, says Dr. Nick Christians, professor of turfgrass management in Iowa State University's Department of Horticulture.

Laying down covers and performing light topdressing are two methods superintendents can use to protect their turf against desiccation, Christians says. Budget is a major determining factor regarding which route to pursue. Covers are a better practice than topdressing, but they are more expensive.

Winter watering is also a major practice in drier areas, Christians says. "It's so dry that you'll lose the grass if you don't get some water on it," he says. "That's true in Colorado and Wyoming and Western Nebraska and places like that. You've got to put some water on them in the wintertime or you'll lose them."

Desiccation is less of an issue in areas around Ohio than it is out West, says Dr. Karl Danneberger, professor in Ohio State University's Department of Horticulture and Crop Science. But some superintendents might want to topdress fairly heavy late

in the season for another reason: freeze injury. Unlike topdressing for desiccation, topdressing for freeze injury is not directly related to budget concerns. While *Poa annua* is susceptible to both desiccation and freeze, bentgrass is more effected by desiccation than freeze injury, Danneberger says. The answer to the question of whether to topdress would be largely determined by what a specific superintendents' topdressing program looks like for the rest of the year, says Bob Vavrek, director of the USGA Green Section's Central Region.

In certain regions, such as the central part of Iowa where Christians conducts research, turf can suffer from desiccation one year and from snow mold another. Last winter was wet there, and this year is shaping up to have similar results – conditions Christian says are good for superintendents. "If they go into the fall in good, wet conditions, that is a better guarantee they're going to get through," he says. "If they go when it's really dry, going into winter, then they've got to more carefully prepare for desiccation."

If superintendents expect dry conditions and choose to fight desiccation by applying covers, Christians says, they should apply a fungicide in the event that the cover increases the turf's susceptibility to snow mold.

APPLY FUNGICIDES FOR SNOW MOLD

In Michigan and Wisconsin and northern parts of New York and Ohio, snow mold treatments become the most important uses of fungicides on golf courses, Danneberger says. "I've known guys to miss it," he says. "They've lucked out. Sometimes the snow will disappear and they'll get a chance to go out and spray. But that's real critical."

Many superintendents around the Great Lakes treat fairways for the disease. To the south, in areas such as Columbus, where Ohio State is located, superintendents more often limit applications to greens and tees, Danneberger says. In those areas, pink snow mold can grow without snow cover.

"Nearly all of the country can experience pink snow mold, and for the Pacific Northwest and much of the North pink snow mold can be observed beginning in October," says Dr. Paul Koch, assistant professor of plant pathology at the University of Wisconsin-Madison. Throughout the rest of the country, pink snow mold more often develops between December and February. Gray or speckled snow mold can begin growing in October, but it is not usually visible until the spring.

In general, superintendents should not treat for snow mold before the first frost, but they should treat before snow cover if they are in an area where disease pressure is high, Koch says. "The snow mold fungi begin to germinate and grow when soil temps reach about 50 degrees Fahrenheit, so an application three to four weeks prior to your final application can act to reduce snow mold inoculum at an early stage," he says.

Many combinations of fungicides can provide quality control and fit different budgets, says Koch, who advises that superintendents speak with representatives.

Although fungicide application dates and rates are highly region- and weather-specific, there is one general truth, Vavrek says. "Pretty much every state would at least probably treat greens, tees, for snow mold," he says.

MAINTAIN SOIL FERTILITY

As with any other time of year, superintendents will benefit through the winter by balancing their soil fertility ahead of time, says Dr. Aaron J. Patton, associate professor of agronomy at Purdue University. Patton recommends applying nitrogen in the fall. Standard application rates are approximately a half-pound per thousand square feet for short-cut turf and three-quarters-of-a-pound to a pound for rough.

Depending on the time of year and the region, superintendents might apply fertilizers in granular form, Vavrek says. Conversely, some superintendents might not put down a late fall application at all.

The dates between fall fertilization and dormant fertilization vary from region to region, Vavrek says. "You're going to see a big difference in a state like Illinois," he says. "The days they're going to recommend in Evansville or let's say, Carbondale, Illinois, are going to be different than Chicago."

In areas that consistently have snow mold, such as Northern Minnesota, Northern Wisconsin, the Northeast and at high altitudes in the Rocky Mountains, superintendents should be particularly careful not to overfertilize, Christians says.

Researchers in Ohio State University's Department of Horticulture and Crop Science generally support late-season nitrogen fertilization, Danneberger says. They have seen enhanced root growth and greening in the spring. "If you get on really sandy mediums and things like that, they may say it leaches," he says. "But as a general rule, I like late-season fertilization."

If a course's soil needs potassium, a pound per thousand square feet is a good amount, Patton says. "That's kind of known as a winterizer-type element, but most research with potassium shows that if your soil tests don't indicate you need potassium, there's really not a benefit to those late fall potassium applications," he says. "So I just would encourage superintendents to apply potassium based on what the soil tests say they need." **GCI**

Patrick Williams is a GCI contributing editor.

FIVE THINGS SOUTHERN COURSES SHOULD AVOID HEADING INTO WINTER

For year-round courses, fall means ramping up for the winter season. By targeting pests and pathogens and maintaining best management practices, superintendents far South can accommodate increases in play and those in the Transition Zone can remain flexible to constantly changing conditions.

Patrick **Williams**

As autumn leaves fall, superintendents in the South begin to worry about dealing with winter problems while accommodating more golfers. Experts offer advice on what some of these problems are and how to avoid them.

SPRING DEAD SPOT

Although it is aptly named, spring dead spot begins infecting roots in the fall. That is when superintendents should apply a preventative fungicide to treat against the disease, says David Y. Han, extension specialist associate professor in Auburn University's Department of Crop, Soil and Environmental Sciences. "You just have to go with something systemic," he says. "I know a lot of people these days are using the DMI class of fungicides."

Superintendents often pay more attention to above-ground appearance than they pay to roots, says Dr. Steve Kammerer, regional director of the USGA Green Section Southeast Region. Roots are affected by water movement, which becomes compromised when organic matter builds up.

Fighting against spring dead spot means supporting root growth, Han says. "The healthier the root system is, the more fungal infection it can withstand before you actually see symptoms," he says.

Other measures lower chances of the disease appearing, such as maintaining quality aeration programs on fairways and checking pH levels, Han says. Superintendents should also avoid late-season nitrogen applications on fairways where they have had previous problems with spring dead spot, while monitoring potassium levels to avoid deficiencies.

OVERSEEDING

Overseeding is stressful on Bermudagrass, says Dr. Aaron J. Patton, associate professor of agronomy in Purdue University's Department of Agronomy. The overseeded cool-season grass places extra shade stress on the Bermudagrass; it takes long for the cool-season grass to die and for the Bermudagrass to green up. Additionally, the process is expensive.


Spring dead spot

As an alternative to overseeding, some superintendents are painting dormant Bermudagrass, Patton says. "In some areas of the Carolinas that's become pretty popular, even into Georgia and those areas, as a way to keep part of the course, at least, looking green during the winter, so it looks like what golfers are used to, but they're actually just looking at the color applied over the dormant Bermudagrass," he says.

Some courses, such as coastal resorts that see heavy play in the winter, don't have much of an alternative to overseeding, Han says. But it in general, overseed-

PHOTO COURTESY DAVID Y. HAN, AUBURN UNIVERSITY

Winterkill

ing is not the best practice. "It really does make a difference in the spring not having that *Poa trivialis* there to compete with the Bermudas coming out of dormancy," he says.

WINTERKILL

Golf courses with ultradwarf Bermudagrass in the Transition Zone are prone to winterkill and would benefit from ordering snow covers, Patton says.

Covers raise the temperature of the turf when hard freezes occur, which is usually around 25 degrees, Han says. "The last really cold winter we had around here was – I guess it would be the winter of '13-'14, and courses that covered lost a lot less grass on the greens than courses that couldn't cover," Han says. "The only courses in Alabama that lost entire greens were ones that could not cover; they didn't own covers."

Superintendents in the Transition Zone should often pull covers off during the day, though, because temperatures can fluctuate from the upper teens and low 20s at night to 45 degrees and sunny during the day, Han says.

If they don't have snow covers yet but are considering them, superintendents would want to order them ahead of time, Han says. They are available in a variety of different materials. "A full set of covers for 18 holes can cost $40,000 or $50,000, but it's well worth it," Han adds.

NEMATODES

September and October along with April and May are integral times to target nematodes, says Dr. William T. Crow, landscape nematologist in the University of Florida's Entomology and Nematology Department. In areas where warm-season grasses go dormant, superintendents should treat for nematodes in the fall to improve grass health throughout dormancy and into the spring. "If you're in areas where the grass doesn't go dormant, like Southern Florida, you're trying to manage your nematodes because you're going into the big season when you're going to get a lot of play and things really need to look good," he says.

The damage that nematodes cause to roots can make them more susceptible to Bermudagrass decline and potentially Pythium root rot, Kammerer says. "By controlling or minimizing nematode damage, root pathogens are not as damaging," he adds.

PERENNIAL WEEDS

The fall presents an ideal time to control perennial broadleaf and grassy weeds, says Dr. Matthew T. Elmore, assistant professor and turfgrass extension specialist in Texas A&M University's Department of Soil and Crop Sciences.

"The weeds are most obnoxious during the summer, so there are a lot of herbicide applications made in the summer," Elmore says. "But in the fall, especially for weeds like dallisgrass, Virginia buttonweed and some of those more perennial weeds, fall applications are actually more effective than summer or spring applications."

Research Elmore and colleagues have conducted on dallisgrass shows that programs used to treat the weed are most effective once the average temperature remains below 72 degrees for a few consecutive days. Researchers have not identified exact temperatures for many other perennial weeds, but in general, fall is the best time to treat them.

Patrick Williams is a GCI contributing editor.

PHOTO COURTESY DAVID Y. HAN, AUBURN UNIVERSITY

5 STEPS TO ACHIEVING BETTER FALL ROOTING

Following these tips, superintendents can hone in on the part of the plant they can't see.

Patrick **Williams**

Somewhere underground, a sprawling organism trenches in, staving off efforts to come to the light. At least that's the hope for superintendents, who don't want a shallow root system to jeopardize their turf's resistance to winter elements. To keep roots deep, researchers say, they can adhere to the following recommendations.

INCREASE MOWING HEIGHTS

The turfgrass principle of increasing mowing heights in the fall goes back decades, but is still important today, says Dr. Keith Karnok, professor of turf management in the University of Georgia's Department of Crop and Soil Sciences. The higher the top growth is, the deeper the root system will be. "If you can mow it just a little bit higher, there's more leaf material up there for the leaves to intercept the sun, to make the carbohydrates that will then go to the root system and be stored," he says.

Bermudagrass fairways in the Transition Zone are susceptible to winterkill, says Dr. John Sorochan, distinguished professor of turfgrass science in the University of Tennessee's Department of Plant Sciences. Superintendents can sustain significant root growth on those fairways by increasing mowing heights to around three-quarters of an inch or a little bit higher. "That helps, one, insulate the crown of the grass a little bit, but more so it encourages the taller the grass, the longer the roots, the more rooting, so for the winter storage of nutrients and carbohydrates to go into those growing points below ground," he says.

Although golfers often express concerns about higher grass, it is worth it, Sorochan says. "The superintendent needs to do what he can do to protect the grass and have it come back the next year," he adds.

GIVE THE ROOTS ADEQUATE NUTRIENTS

Root-feeding fertilization on putting greens can go a long way to maintaining root growth, says Dr. Douglas Karcher, professor in the University of Arkansas' Department of Horticulture. Superintendents can apply either a spray or granular fertilizer. "Make sure that it's not a nitrogen-only, that it includes all nutrients that might possibly be limiting growth, and so (superintendents) would need to have a soil test and have an idea of what needs to be applied," he says. Potassium and iron can become deficient in sandy putting green rootzones, he says.

Generally, right before or after aeration would be the best time to fertilize, Karcher says. However, roots remain active late into the fall, longer than shoots. "Even when it's

gotten really cold in late fall and we're not mowing much grass and we're not getting a lot of clippings in the greens mower baskets, those roots are still growing almost up until the time when the soils are starting to freeze," he says. "So that's something that can be done later in the fall— a good complete fertilization using quick-release nitrogen sources."

Roots can remain active late into the fall, according to the University of Arkansas' Dr. Douglas Karcher. "Even when it's gotten really cold in late fall and we're not mowing much grass and we're not getting a lot of clippings in the greens mower baskets, those roots are still growing almost up until the time when the soils are starting to freeze," he says.

DON'T APPLY TOO MUCH NITROGEN

Fall fertilizer application rates vary depending on grass type, region and other factors, but superintendents should be careful with their nitrogen applications because too much nitrogen could slow root growth, Karnok says. "If you can hold back on your nitrogen some, your roots will be better off for it, which means you're holding back the top growth from growing rapidly, so the carbohydrates are going to be stored in the plant or they're going to root growth," he says.

Many superintendents who lose turf in the summer aim to recover by applying heavy nitrogen heavily, Karnok says. "They say, 'Well, I've lost so much grass, I've got to get this grass to spread back over, and the only way I'm going to do that, short of reestablishing, is get it to grow faster,'" he adds. If superintendents need to recover from summer losses, they can choose to apply extra nitrogen so long as they effectively maintain growth through other processes. If recovery isn't a concern, they can save themselves trouble in the long run by applying less nitrogen.

CONSIDER IRRIGATING DEEPER AND LESS FREQUENTLY

Although it is common to apply light and frequent irrigation in the absence of rainfall throughout the summer, following aeration in the late summer or early fall superintendents should consider switching to a deeper, less frequent cycle, Karcher says. "Once roots are 5 or 6 inches deep, then you can water to that depth," he says. "Then you can go every second or third day. By doing that, you will keep the surface a little drier between irrigations, and that will encourage even more root growth."

Because conditions vary among courses, superintendents will need to determine for themselves how to best alter their irrigation cycles to fit fall conditions, Karcher says. "A lot of superintendents now have a TDR moisture probe, so if they're monitoring their trouble spots on their greens— the spots that tend to dry out the quickest — they should know, 'Ok, it's not drying out as fast and we're holding some moisture in here a little longer. Now we can maybe go an extra day between irrigation events,'" he says. By irrigating less frequently, superintendents will maintain the higher oxygen levels within the first few inches of the rootzone.

USE WETTING AGENTS TO FIGHT DRY SPOTS AND DESICCATION

Often, sands in the rootzone of putting greens become coated with what Karcher describes as a "wax-like" organic substance, and those sands become hydrophobic over time. A common issue, dry spots can appear on any green that is prone to wetting and drying cycles.

Localized dry spots on greens are easy to detect in the summer because those greens are quickly drying out, Karcher says. Although dry spots aren't as evident in the fall, they are still there. "I would encourage a superintendent to go ahead and treat with a wetting agent through the fall just to make sure that their entire rootzone is holding water because roots will not grow well anywhere that is deficient in water," he says. "By just continuing with a good wetting agent program into the fall, they will maximize their fall root growth."

Wetting agents can benefit superintendents through the winter. Preliminary data indicate early winter applications help reduce desiccation injury on ultradwarf Bermudagrass greens, Karcher says. **GCI**

Patrick Williams is a GCI contributing editor.

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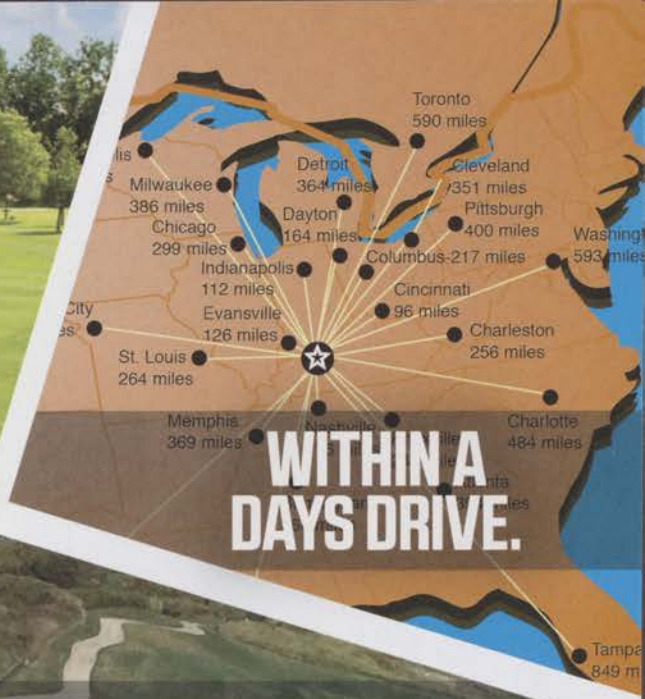

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SILENCE SAYS IT ALL

IN BUNKER MAINTENANCE

Raking bunkers for aesthetics and playability has always been a bit of a balancing act for Crooked Stick Golf Club superintendent, Jake Gargasz.

These days though, he and his crew have been able to focus their efforts solely on bringing out their bunkers' beauty.

As part of bunker renovations that began in 2014 and wrapped in 2015, Gargasz decided to fill the 92 bunkers on the renowned Pete Dye-designed course with Best Sand Tour Grade Signature Blend. The change in sand has made the task of raking 120,000 square feet of bunkers less time consuming than ever before.

"The part I like about the sand itself is that it's pretty self-sufficient," says Gargasz, whose crew rakes bunkers two or three times a week depending on maintenance schedules. "It never hardens to the point where you are out there raking it to make sure it is playable regardless of whether rain beats it down or anything like that. You are still getting your club through without feeling like you are hitting hardpan."

After studying the sand at the 2014 PGA Championship site, Valhalla Golf Club in Louisville, KY, Gargasz settled on the Tour Grade Signature Blend from Best Sand. He knew that the proper sand "can make or break" a bunker project; and the blend didn't disappoint. The resulting silence from players was a sure sign he'd found the ideal match for Crooked Stick.

"Once we put in the new sand, it not only helped us from a maintenance standpoint to give a better product, but it also doesn't require as much of our time," Gargasz says. "That's been huge on our part. On top of that is enjoyment and satisfaction from the membership. It used to be a daily occurrence to hear a complaint about a bunker because it was either too hard or too soft, or this, that or the other thing. I don't have any comments now. From my standpoint, no comments are good comments. For me, that's in a nutshell how I look at it."

Crooked Stick's rebuilt bunkers, with enhanced drainage and new sand, ultimately allowed the course to survive the downpour during the BMW Championship. It was the third leg of the PGA Tour's FedEx Cup Playoffs, and the first time they had returned to Carmel, IN since 2012. Though the course got 3 inches of precipitation, delaying play on Thursday and Saturday, the tournament was able to finish on Sunday without a single complaint from the world's best players.

"From my experience, once the rain hits, [sand] kind of locks up until you get that initial rake going," Gargasz says. "That's definitely the part I like the best about this sand. It still plays the same whether it's dry or wet. It has consistency from bunker to bunker and also day to day."

*"**It used to be a daily occurence** to hear a complaint about a bunker because it was either too hard or too soft..."*

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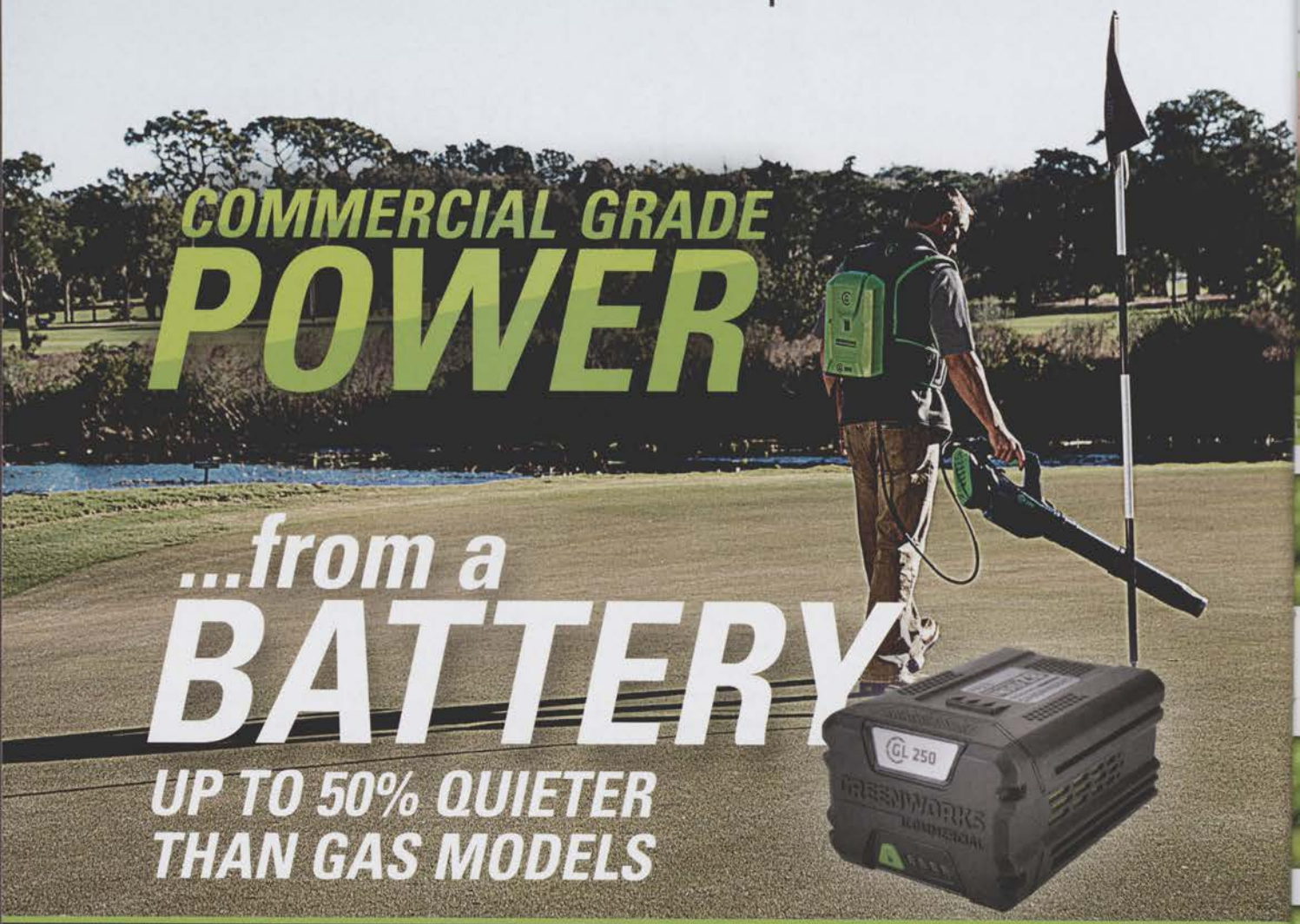

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Because there is no gas going through the engine, cordless outdoor power equipment requires lower maintenance. No carburetors to service, no lines to be replaced, no oil to change, no replacing spark plugs, no cleaning air filters... means no down time. With cordless outdoor power equipment, the tools are ready to work when you are.

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Cordless outdoor power equipment starts with the push of a button, or squeeze of a trigger – no more pulling a cord. Start and restart easily. When brushless motor technology is involved, cordless outdoor power equipment drastically reduces vibrations as compared to gas-powered equipment. Lighter-weight tools with reduced vibrations means less user fatigue, resulting in extended use and an easier week of work. When you're using these tools 8-12 hours a day, this is a huge benefit. When you make a living with your tools, you want something that you can rely on, and will deliver the power and performance you need. Thanks to advancements in lithium-ion battery technology and brushless motors, today's cordless outdoor power equipment can deliver just that. Cordless tools give you reliable power without the hassle of gas.

COMPARING BATTERY RUN-TIME RATINGS

When Shopping For New Batteries For Your Fleet, Compare Run Time Ratings To Make Sure You Get The Best Value

By Fred Wehmeyer, Senior Vice President/Engineering
U.S. Battery Manufacturing

Purchasing golf car fleet batteries is no easy task. Fleet managers, as well as individual golf car owners, typically want to spend less but also get the best value. Smart buyers will compare batteries to see which gives them a balance of both. With so many choices, it's important to make an apples-to-apples comparison.

First, make sure you're comparing batteries with the same internal construction (flooded vs AGM vs gel). Also, make sure the voltage output is the same and the capacity ratings are similar. This is where it gets confusing because battery manufacturers don't always use the same testing criteria for ratings and cycle-life data. For example, two similar batteries can show cycle-life data that may not be an accurate comparison because they are often based on selective data from the manufacturer.

DEPTH OF DISCHARGE

Typically, cycle-life data is obtained by discharging the battery to a fixed depth of discharge (DOD) until failure. DOD is the percentage of amp-hour (AH) capacity discharged from the battery on each discharge. Most battery manufacturers recommend a 50 percent DOD for optimum cycle life vs runtime, but most cycle-life charts are based on an 80 percent DOD. The problem is that cycle-life data can be quoted at a wide variety of DOD ratings, which can reflect a longer cycle life for one battery type over another. This makes for a inaccurate comparison. When comparing cycle-life data, obtain the data using the same DOD.

AMP-HOUR RATINGS

AH ratings are often used to compare similar lead-acid batteries and can also be misleading. For example, a 6-volt battery may list its rating as 200 AH at the 20-hr rate. This means the battery will provide 10 amps of current for 20 hours until the battery is fully discharged or "spent." A common mistake is assuming a battery with a 200 amp-hour rating will provide 200 AH at all discharge rates. Enter Peukert's law, which states that battery capacity decreases as the rate of discharge increases. If the same 200 AH battery is fully discharged at a higher rate over five hours, the battery may deliver only about 150 AH at 30 amps. The relationship between battery capacity and the rate of discharge is not linear, so it is important to find the rated capacity at the discharge rate for the application in which you plan to use the battery. Most manufacturers publish tables of ratings vs discharge rate, or discharge time, for each battery type.

RUNTIME RATINGS

Even though manufacturers list various AH ratings, it's often difficult to know which ones to use to make the right comparison for your application. In fact, it may be more accurate to use the runtime ratings in minutes, which is typically found on the battery manufacturer's spec sheets and websites. For example, U.S. Battery publishes ratings that show how many minutes a battery can provide at 25, 56, and 75 amp discharges. Comparing the rated runtimes in minutes offers a better idea of the performance you can expect when comparing two similar batteries. These runtime ratings are based on the actual discharge currents seen in typical applications and may be more applicable than the amp-hour ratings. For example, RV and marine discharge rates usually fall into the 25 amp range while most golf car discharge rates fall into the 56–75 amp range (56 amps for 48-volt cars and 75 amps for 36-volt cars).

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WHO SAYS MOWERS CAN'T HAVE STYLE?

Paul F. Grayson is the Equipment Manager for the Crown Golf Club in Traverse City, Mich., a position he's held for the past decade. Previously, he spent 8½ years as the equipment manager at Grand Traverse Resort & Spa. Prior to that, he worked as a licensed ships engine officer sailing the Great Lakes and the oceans of the world.

Some fancy tires on mag wheels showed up in my shop the other day. People just drop stuff off to see what I will do with it. So I wondered what would they look like on the equipment? One of the advantages of having old equipment is that it can be customized without having to worry about voiding the warranty. Here they are on #12, Crown's rough trim mower. I was surprised by how much better the mower looks. Maybe chrome exhaust should be next?

The magnet coil in #4 mower parking brake burned up and the springs in it set the parking brake. Because the mower was still running, the driver drove the mower with the parking brake engaged back to the shop. Once shut off and restarted, it would not move. The brake test in the startup routine was telling the computer onboard that there was no brake so the mower refused to be driven. To move the mower from the parking lot into the shop I needed to put it on roller skates (car dollies) and drag it in. Once in the shop, I put it on the lift and pulled the old brake off the end of the main drive motor, ordered a new brake, and was going to wait for parts. Meanwhile, the hydraulic-driven back up greens mower blew an "O" ring and the driver made four stripes of hydraulic oil on a green before he realized it, proving the urgency of getting the no-hydraulics mower back in service as soon as possible. My E-Z-Go RXV golf car at home has a brake like this, so I took the brake off my golf car and put it on the mower to get the mower running again.

CLEANING A BRUSH

I have observed that drivers take better care of machinery that looks nice. A little touch up paint here and there actually cuts down on my work load. I use oil-based paint to prevent rust on steel, so I need an economical, fast and easy way to clean brushes or rollers. The parts washer in my shop has about 20 gallons of low odor paint thinner in it because it is inexpensive, non-corrosive, a great degreaser and dries quickly. Pigment sinks to the bottom of the tank and the clean liquid is re-circulated. That makes it a great place to clean paint brushes. I am not a naturally neat person so there is still the problem of me getting paint all over myself when I paint. To solve that problem, I keep my painting clothes (an old military uniform) in my car to wear when I am in a mood to paint things. There are very few other occasions for me to wear camo in civilian life. It was an honor to serve.

GROW YOUR OWN

For the Crown Golf Club to continue past the lifetime of its current employees, it will need skilled people from the next generation to be the master mechanics and equipment managers for their generation. All of our current employees will eventually leave, some sooner, others later, eventually all. Companies are immortal and will live on. It is a fact of life. In the orchards nearby, I can see the trees are in rotation. The orchard has trees of a variety of ages. They take out the batch of trees that are the oldest and have reached the end of their career to plant new ones in their place. It takes about four years before the new trees start producing. Are you thinking four years ahead like the orchard people do? Sponsoring community programs like 4-H technology clubs in your neighborhood is one way to make sure you have a pool of skilled people to choose from when you need to hire a skilled person. To do my part in bringing the next generation up to speed, I lead the 4-H MakerSpace Club in Traverse City, Mich. I have a picture of a 4-H MakerSpace Member learning how to tune up a small engine because he wants it to power his bicycle. Eventually this is the same person the Crown might hire to tune up and sharpen our chainsaws. Is your maintenance shop a place where the next generation can discover their science, technology, engineering and math talents? 4-H wants to create a STEM club in your neighborhood. To do this they need a maintenance shop where kids can learn how to use tools. If you are interested, 4-H will cover the required liability insurance and has training for volunteer instructors. Like the orchards, the Crown is starting to grow future employees years before we need them to be producing. You could do the same thing. **GCI**

Terry Buchen, CGCS, MG, is president of Golf Agronomy International. He's a 41-year, life member of the GCSAA. He can be reached at 757-561-7777 or terrybuchen@earthlink.net.

Travels with Terry

Globetrotting consulting agronomist Terry Buchen visits many golf courses annually with his digital camera in hand. He shares helpful ideas relating to maintenance equipment from the golf course superintendents he visits – as well as a few ideas of his own – with timely photos and captions that explore the changing world of golf course management.

NEW BEDKNIFE RACK

Recycled used Toro 5410 bedknives were used by first "taking" them together and then permanently welding them in place. 3/8-inch by 3-inch bolts were welded into the screw holes. The rack was bolted to two 1-inch by 6-inch boards that were attached to the metal wall studs with 1.5-inch self-tappers. The used bedknife in the center was added for support. The rack dimensions are 22 inches wide by 26 inches tall and the new bedknives can be hung or placed horizontally on the bolts. Bob Pruneau, equipment manager, at The Links at Brunello in Timberlea, Nova Scotia, Canada, designed and built the rack. Chris Wallace is the superintendent. It took about a half-hour to build, and the parts and supplies were in inventory.

THE FRANKENFAN

"Frankie," as he is affectionately known, was one of many Lesco Oscillating Fans used at the Carolina Golf Club in Charlotte, N.C., when Matthew Wharton, CGCS, MG, took over in 2005. All of the fans were replaced with 50-inch Turf Breeze Fans except for one. Kenneth Bailey, Jr., former equipment manager, took the one remaining Lesco Fan in 2010-11 and installed a new hardwired oscillating motor, cut down the mounting pole to a manageable size, welded some angle iron at the base and bolted it to an old Smithco Green's Mower Trailer left over from days gone by. Bailey then used green-colored paint supplied by Turf Breeze so it matched all of the other fans. "Frankie" is used during high humidity on certain greens that have microclimates. It is powered by a North Star 2700 PG Portable Generator on the other end of a green from where the Turf Breeze Fans are mounted. The parts cost about $150 and the labor time was just under two hours.

MORAGHAN *continued from page 18*

most notably the ability to maintain the finished product properly and economically, plus the financial impact on the club in both the short and long term. Let others be blinded by the thought of a shiny new toy: You think about what it will cost to keep it shiny a week, month, a year down the road. And whether new members and guests will want to play (and pay for) it.

Is the architect planning to be on-site regularly, tweaking and reviewing every step of the way? Or will he/she be an absentee artist, doing a fly-by every few weeks to wave a magic wand and bestow a blessing? Someone must be accountable for the design and the execution of the plan. You'd better know who that's going to be before any work begins.

Are there plans to redo the practice range? Other facilities? Will your maintenance budget — buildings, staff, equipment — grow with the expanded responsibilities?

Who will monitor the costs? Who has the power to say "stop" or "no" if one of the design ideas proves exorbitantly expensive to build or maintain? If that person has to be you, will pulling the emergency brake lead to you losing your job?

These are just some of the questions you should be asking before any work starts, not when it's underway or, worse, when it's all done. Don't accept, sign off, or pay for any part of the design or execution that isn't totally acceptable to you. Don't say yes to something you know is wrong, even to quiet one or a dozen members whining and cajoling. But if you say no, be prepared to back up your reasoning with cold, hard facts and costs.

As the superintendent you have to be both 100 percent on board with the project as well as a constant voice of reason and asker of questions. Because when the work is done, the target will be on your back as the person responsible for maintaining the new creation.

When the "wall" is built, you want to be on the inside, doing your job and doing it proudly. **GCI**

PRESERVE *continued from page 23*

more homogenous, rounded sand that met USGA specifications and performed just fine for several years.

"However, for the first several years as they were topdressing with this larger aggregate parent material and the members were not pleased," Jackson says. "So what happened is typical: the superintendent tries very hard to appease the membership and, in the interest of play issues, not agronomic issues, changed the practices. He started using a finer sand with tighter capillary pore space. When you create a finer sand layer above a more coarse sand layer, you essentially seal the green off over time. The water couldn't release through the profile, which ultimately inhibited root development, led to wet conditions (which promoted *Poa annua*), and greatly impacted conditioning."

The solution: Jackson, Nachreiner and Landscapes Unlimited rebuilt all 18 greens, coring them out to a depth of 8-9 inches, leaving the original, deepest sand layer and restoring the profile using uniform sand components. Using GPS mapping, the greens were put back largely to their original contours, "with some improvements," the architect says. "We also greatly benefitted from the advice and experience of Bel Air superintendent Brian Sullivan and Dr. Trey Rogers, head of the turfgrass program at Michigan State, who consulted on the project."

"The sand is something that we watch closely now," Nachreiner says. "When you look at the science of USGA greens, you want to maintain the same particle size distribution as your original construction mix. Today we test every load of topdressing sand to make sure it's the same sand we built the golf course with. We learned our lesson there." **GCI**

SEWICKLEY *continued from page 16*

Next year, Pinckney adds, will represent "a learning curve" for his crew. Developing the ideal soil mix to promote healthy *Poa* and installing hookups for SubAir Systems as part of the renovations provide further protection for issues that might arise.

Early in his involvement at Sewickley Heights, Cervone says the club emphasized it relishes slick greens and the flavor of its putting surfaces. But subtle work with percentages and slopes will offer more potential pin placements. Cervone has worked with Aspen on multiple projects, and came close to working with Pinckney on a renovation in the early 2000s. Living in Western Pennsylvania allows Cervone, who was involved in numerous fast-paced projects during China's golf boom, to be on site two or three times per week.

Operating on expedited timetables is the norm for Aspen, which sent a team of 30 workers led by project manager Ken Morgan to Sewickley Heights. The team also includes an employee solely dedicated to coordinating GPS measurements.

"I have been on several projects where we have gone in to augment an existing green and stripped it and relayed sod, but never something to this degree," Cervone says. "I think the club should be applauded. Everybody has embraced it and it's certainly worthy of getting it out there to let people know what we are doing. It's unique for sure." **GCI**

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GOLF'S NEW FRONTIER

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Take a look at social media and you'll find many of your colleagues are pushing dirt, hauling sand, laying pipe, and seeding rebuilt greens and fairways. For an industry some pundits say is dying, there sure is a lot of life in the construction business.

What's most impressive is much of the remodeling and renovation is focused on making intelligent changes to the golf course. We're installing bunkers that need less maintenance and resist wash-outs. We're planting turf that require fewer inputs. We're reconfiguring irrigation to conserve water. We're adding tee boxes to give players of differing skill levels options. We're investing in boring but important stuff like improved drainage.

Contrast this with our last big remodeling boom which was driven by length. Super-duper titanium drivers and ProV-type balls made it "critical" to stretch courses out to 7,800 yards or whatever and bunkers located 250 yards from the tee were "obsolete."

This is another example of how a tiny fraction of golfers have historically driven decision-making. They are the noisy single-digit handicappers who dominate the conversation about how the course should be set up. It's justified because they play a lot and probably spend a lot. But, consider the average American golfer.

There are 25 million or so Americans who play golf. Only 2 million of them have GHIN handicaps (about 1.5 million men and 500,000 women). Of men registered with GHIN, the average handicap is about 26. About 30 percent of players with a GHIN handicap are single-digit players. That means about 600,000 Americans have a single-digit handicap.

That's 2.5 percent of all golfers.

Unless you're at a place that regularly hosts majors, allowing 2.5 percent of your customer base to dictate how your course should play is the tail wagging the dog. Along the way, this mentality got many clubs into trouble with both debt and poor remodeling.

That's why it's great to see so many of our friends from the GCBAA and ASGCA busily engaged in very practical projects around the nation.

I'll give you an example. About two miles from my front door here in Cleveland is the entrance to Canterbury Golf Club. The famed Herb Strong course hosted numerous majors over the years and is now home to one of the Web.com Championship events. Just a few days after that DAP Championship concluded, the folks from Frontier Golf, a GCBAA member contractor, showed up to start installing Better Billy Bunkers and fixing structural problems. Not sexy, but very important to the members' enjoyment and the overall quality of the design. They're not trying to make the course tougher, they're just making it better.

We're big fans of the GCBAA and members like Frontier and that's one of the reasons we devote this issue to renovation and construction every year. We want to highlight the great work they do. But, we also want to help GCBAA with other goals – like their awesome Sticks for Kids program which gets junior clubs into the hands of children. One of the ways they fund that amazing effort is through a now legendary auction at their annual summer meeting. Members and suppliers donate really cool trips, rare shotguns, vast amounts of good wine and other cool stuff. Predictably, we donated a page of advertising in this issue.

Now, I wasn't able to attend this year's GCBAA meeting but apparently they opened the bar early and really poured 'em stong, because they raised a ton of money for Sticks for Kids at the auction. And, astonishingly, our friend Jason Sloan from Frontier Golf – the same guys doing the work right down the street from my house – bought our donated ad page for a redonkulous sum of money.

So I said, "Dude!! Why??" Here's Jason's reply:

"The GCBAA Auction is not just about purchasing items, trips or advertisements (as it was in our case); but it is about trying to promote and grow the game of golf through the GCBAA Foundation's charity Sticks for Kids, which the proceeds of the auction benefit. When you consider the value of the advertisement, and even more importantly the value that the auction purchase will provide to the foundation's charity, the growth of the game of golf and especially to aspiring youth golfers, it was a no-brainer."

Personally, engaging a GCBAA-member company like Frontier to do the practical projects we need to keep golf going in the right direction is also a no-brainer. Let's continue to remember the other 97.5 percent and what we can do to provide them with fun, fitness and a love of the game. **GCI**

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