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FIND A SIZE FOR ALL

This month's Q&A with five golf industry builders is a pretty revealing read about the state of the industry from a different industry segment. Many of their observations, anecdotes and gripes mirror those superintendents from coast to coast have shared with us over the last year.

One of those issues is labor, which some builders indicated was the biggest business challenge they've faced over recent years. Jim Glase may have summed it up the best: "I think the biggest change now is it's tough to find people who are going to do physical work and spend 10, 11, 12 hours a day working outside when they want to sit behind a desk or sit behind a computer and work six or seven hours."



Mike Zawacki

Editor

Does that sound familiar?

Worker retention was another sore point with builders. They lamented young workers can't be counted on to stick around much longer than a few years, just as the

investment of time, training and mentorship begins to bear fruit. In fact, industry veteran Allan MacCurrach recounted his "90-day rule," essentially a sink-or-swim policy that once weeded out the weak candidates and helped build a strong corporate culture. Today's work environment, he's learned, is much different: "I tried sticking to that rule and it got pretty lonely because there weren't many folks around anymore. We had to get off that rule. It's a huge problem. But it's a huge problem in almost every level of employee you are talking about."

I've been fortunate to attend the Syngenta Business Institute on several occasions. It's a specialized MBA-style short course for superintendents held over the course of three days at Wake Forest University. Interpersonal communication and dealing with generational differences is one of the more actively discussed topics with attendees both in and out of the classroom. One of the messages that the instructor conveys is the importance of understanding how younger generations approach the workforce, to accept the fact that they won't change, and to adjust your management style to their viewpoints and values.

I would say 99 percent of attendees, including myself, react with abject horror at the implication of hierarchical anarchy in the workplace. Why should I, a superior, kowtow to a subordinate. It's an assault on our egos – "Hey, I've done the time and I've earned this. You, newbie, haven't." It's an affront to the long-held belief – "Just be happy you have a job."

Sorry, but the simple truth is we need to evolve management styles to fit the demands of today's incoming labor force. Today's youth are notorious for breaking paradigms, a fact anyone born before 1985 can't seem to grasp. The incoming labor force (millennials) are multitaskers who bore easily. They need constant feedback and recognition. They desire a balanced lifestyle and aren't interested in 50- to 60-hour work weeks. Most will not hesitate to leave a good-paying job for one that offers a flexible schedule, greater appreciation, and is more aligned with their goals and values.

It's a difficult pill to swallow, but it's a dose of open mindedness that we're all going to have to take if we ever expect to work together. Generational differences don't have to tear a company – or a maintenance crew – apart. Rather, make the effort to really understand your employees, their desires and goals, how they prefer to work and communicate, and how best to apply their strengths to your operations. On the flip side, be more open with them about your management style, job expectations, and the skillsets you hope a candidate or employee can bring to the position and the overall group.

In today's workforce, one size no longer fits all. Instead, open yourself up to their values and figure out how to guide them through their daily actions and, ultimately, a longer and stronger future with you. GCI

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NOTEBOOK



There are three possibilities that could derail economic growth: a presidential term ending in turmoil, the U.S. making policy mistakes and geopolitical turmoil.

Bits from the **builders'** meeting

By Guy Cipriano

HERE'S ANOTHER SIGN the golf market can be declared steady: an economist opened the educational portion of the Golf Course Builders Association of America summer meeting and nobody left the Charlotte hotel ballroom grimacing.

The presence of an economist once frightened people whose livelihoods depend on golf facilities making capital investments, but nothing in Bernard Baumohl's address suggests immediate pain looms for the golf market. Baumohl, the chief global economist at The Economic Outlook Group, revealed three scenarios for 2017-18, with the one most likely to occur boosting GDP by 2 to 4 percent. "Frankly, the economy is in pretty good shape," he says.

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NOTEBOOK

Baumohl's assessment of two contrasting groups, Baby Boomers and millennials, offers optimism for the industry. Baby Boomers, Baumohl says, are selling possessions and downsizing their homes because they are focusing more on fitness and travel in retirement. And instead of seeking "fine dining and fancy cars," Baumohl says millennials are showing a penchant for "experiential" spending. The trends are encouraging for golf, an activity where an experience provides a fitness element. Moreover, a large segment of the golf economy is devoted to travel.

Despite the positive signs, Baumohl revealed three possibilities that could derail economic growth: a presidential term ending in turmoil, the U.S. making policy mistakes and geopolitical turmoil. The dour portion of Baumohl's presentation consumed less than 10 minutes of the allotted hour.

Economic stats can rattle the brain, the part of the body the self-proclaimed "oldest living student of golf course architecture" explored in his presentation. Golf Digest architecture sage Ron Whitten followed Baumohl by introducing the differences between left- and right-brain design. His words and accompanying images incited numerous chuckles and stares of astonishment from a group responsible for implementing architects' visions.

Left-brain architecture, according to Whitten, is

organizational and analytical and requires habits and routines, while right-brain architecture is creative and spontaneous and requires a sense of humor. Alister MacKenzie was a left-brain architect; Donald Ross was a right-brain architect.

Understanding the forms of architecture provides insight into the maintenance needed on a course, and Whitten says, "right-brain courses require a lot of hand maintenance." Still, by the end of the presentation, it became obvious neither a technical nor artistic course is easy to maintain.

Past American Society of **Golf Architects President** Erik Larsen didn't describe himself as a left- or rightbrain architect, but he did introduce tactics for monetizing land within a golf course. Working with owners, developers and home builders, Larsen has found ways to create additional real estate options for clients. Options include reducing golf course acreage on a property and trimming nine holes from stagnant or struggling 27and 36-hole facilities.

"I think we have something here," says Larsen, who joined BrightView Golf Maintenance earlier this year as its Southeast business development executive. "Is it a long-term solution? Who knows? It depends on golf play ... But this is a life preserver and allows you to take a step ahead and gives you a chance to make improvements."



NOTEBOOK

Tartan Talks No. 15

How does a golf course architect approach the creative process?

Jim Engh answered this question and numerous others in his appearance on the Tartan Talks podcast. Engh hasn't designed a golf course in the United States since opening Minot (N.D.) Country Club in 2015, but he's staying busy with active projects in Vietnam and Mexico.

Working on challenging sites is nothing new for Engh, who has performed the bulk of his U.S. work west of the Mississippi River. "For some reason, I have had a lot of rugged, mountainous settings thrown my way," he says.

Learn how Engh designs courses in tough spots and why he doesn't follow some of the "unwritten rules" of golf course architecture by entering <u>https://</u> goo.gl/U1jUf4 into your browser.





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Extra listening

Our podcast library has recently expanded, with the Club at Carlton Woods Fazio Course superintendent Tim Huber, former assistant superintendent turned T-shirt designer Joseph Coonick and National Club Association executive director Henry Wallmeyer joining Superintendent Radio Network. The episode with Huber, "Handling the big storm," describes the scene in Houston following Hurricane Harvey, and how Huber and his team quickly returned the course to a playable condition.

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FACTS ON LITHIUM-ION FOR GOLF CARS

or decades, deep-cycle flooded lead-acid batteries have been the most cost effective means to power electric golf cars. With the success of Lithium-ion batteries in many devices and now in vehicles like Tesla cars, many have looked into what Lithium can do to reduce costs for the golf course market.

Those anxious to make the conversion have put out information from the lithium industry, showcasing the cost comparisons and the advancements this technology brings. According to battery technology publications and many battery manufacturers, however, these comparisons leave out critical information for any golf course management team to make a proper comparison.

In a recent article in the Summer 2017 edition of Battery and Energy Storage Technology Magazine, technical editor Dr. Mike McDonagh points out the half-truths put out by the lithium industry. "Energy densities of current lithium-ion battery chemistries are given at around three to five times the gravimetric and volumetric energy density of lead-acid at the cell level, which in part, explains why the older technology has been all but ignored," said McDonagh. "Factor in the connectors, spacing in a battery pack, the control and safety equipment, battery management system, fire control, and cooling equipment which are required for the safe operation of larger lithiumion batteries, and the net result is that an installed working lithium-ion battery will have a

working capacity less than one-half its nameplate value."

Applying this to a typical 48-volt golf car, Fred Wehmeyer, Senior VP of Engineering for U.S. Battery Manufacturing, says that there's a discrepancy. "When you compare a 240 Ah - 48-volt (11,520 Watt-hr) lead acid battery and a 60 Ah - 48-volt (2880 Watt-hr) lithium ion battery, the lithiumion battery has a definite weight savings of 422 lbs. at the lower capacity," says Wehmeyer. "Even without the thermal and battery management safety features, the cost of the lithium-ion pack averages out to \$0.42 - 0.52 per watt-hr vs \$0.07 - 0.10 per watt-hr for a lead-acid pack. The lithium battery has only 25 percent of the energy of the lead acid battery and can cost up to 50 percent more," says Wehmever.

Translated to the actual driving range of a typical golf car, Wehmeyer suggests that the lithium battery would have 25 percent of the driving range of the lead acid battery. Driving range directly affects depth of discharge (DOD) and as McDonagh pointed out, comparisons are often done in laboratory conditions. "The performance data given in comparisons between lithium-ion and flooded leadacid batteries are often done with a single cell," said McDonagh in his article. "The data very conveniently ignores the additional architecture required for safe operation in most installations and it is safety that manufacturers claim are their greatest concern."

Aside from costs, there are also environmental issues to

LiFePO4



According to Wehmeyer, it's important for anyone making a comparison to add in all of the costs. "A single LiFePO4 cell has a nominal voltage of 3.2-volts, thus requiring eight cells in series for a 24-volt battery pack - double that for a 48-volt system," said Wehmeyer. "The average retail price of one 100 Ahr (amp-hour) cell is \$155, putting the pack cost around \$2480 for an average golf car. A compatible BMS and charger cost \$290 and \$1075 respectively. Altogether, a conversion would cost \$3845 and will provide a reported 2000 cycles at a lower energy content of 5120 watthours, versus 10.500 watt-hours for a comparable flooded lead-acid battery pack costing about \$800. The lead-acid battery would provide twice the runtime for 1/5 the cost."

"When you take into account environmental cost and safety, on top of the performance issues, the lithiumion case over lead-acid doesn't stack up to anything as manufacturers would have you believe," said McDonagh in his article. "You need to look very carefully at their numbers. Lead-acid is a safe sound and, sadly, overlooked technology that's 150 years young and completely recyclable."

While no one is condemning the use of lithium-ion, battery industry officials simply want to make the golf course industry aware that there's still more homework to be done before lithium-ion can be safely and efficiently adapted to use in this market.

For more information, visit www.usbattery.com.

OUTSIDE THE ROPES

OLD SCHOOL IS STILL COOL



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

admit to being old school. But as I recently learned the hard way (thanks, Irma), old school is still cool.

Like many others — including, I'm sure, many of you — I am glued to the Weather Channel when a storm approaches the Southeastern United States, where I live. I look at the ever-changing models, listen to the experts, try to track the spaghetti lines of possible paths and pretty much ignore all of them.

If I want to know what's really happening, I go outside and see for myself. Fortunately, Irma's models "shifted" and Hilton Head was spared this time.

Before you think this is going to be a rant against technology, hear me out. I'm all for computerized irrigation systems, spraying units, Subair components for water removal, electronic task boards, apps of the day and iPads mounted on the dashboard of your utility cart. All these devices help us to be more efficient and better informed (certainly vs. those who pay us!), and are key to our success.

However ... You should not be so dependent on tech that you forget why you're in this business. Golf is a sport played outdoors, and if you're going to achieve the best possible conditions on your course, you must get off your phone, away from your computer, out from behind your desk and get outside for yourself.

Models and data are fine. But what

has driven our industry for years and must continue to lead us is a collection of experiences and influences. What happened last year and the year before that, how can we be prepared for it this year and if it comes, fix it? What influences us to make the decisions and take the actions that we do?

Some of that can be found in computer models and other technologies to support our efforts. Data in, data out. Input the information into the system and let the computer do its work and program a response, then react to the results.

But our business is not a video game. It's not enough to have proficient thumbs. Golf is a touchy-feely, get your hands dirty sport. You need to get your feet on the course, not just your fingers on a keyboard. See the problem and fix the problem means "hands-on!" Don't look for a result on your screen.

It's one thing to engage our brains looking at screens and digesting readouts. But we also have to give our gray matter other information to process: Smelling when a storm is coming, pushing our fingertips into the dirt and brushing our palms over blades of grass; feeling how the turf reacts to our footfalls and seeing, with our own eyes, treetops moving in the wind, the ripples on the pond, the hole flags flapping.

Tell me all you can about isobars and wind-chill factors and Buford scales. That information is one-dimensional like the screens we see them on—and only has true relevance when run through the computer inside our head where it mixes with what we've come to know from our years in the field.

I recently sat down with two 20-somethings from a major golf maintenance data-influencer company who were highly proficient at using their thumbs and playing with their phones and telling me what was to come. But they had no idea what to look for on a golf course once they left the office. Neither was a golfer and both had blank stares on their faces when I suggested that maybe they ought to get outside once in a while and look at grass instead of graphs.

What's your favorite time on a golf course? Mine is first thing in the morning, as the sun rises. Do you think a screen will ever provide the same feeling? I doubt it.

No app on our smartphone will replace your senses. And what happens when the power goes out, your computer crashes or the cell network goes down?

Use these tools to your benefit, absolutely. But remember, they're just tools, which means they're only as good as the workman wielding them. Pay attention to the data but don't let it dictate your every action: Use your head to interpret and analyze the data, applying it to what you know, which is every inch of your golf course.

"A wise man seeks counsel" goes the saying. I advocate collecting as much information (in all forms, electronic or otherwise) as possible. Just as a golfer checks the wind, uses a rangefinder or walks around the green trying to determine which way the "grain" is growing, you should gather the information but don't got lost in it. The regions of the brain that we don't use end up getting pruned off.

It's experience and influences that allow you to process that incredible flow of data and figure out what it means, how it applies to your particular situation. Those are not assets that you plug in or print out; they're encoded in your (MORAGHAN continues on page 63)

TARANT TALKS

Join Superintendent Radio Network for its monthly "Tartan Talks" podcast series examining the work, ideas and careers of American Society of Golf Course Architects members. Podcasts are available through www.golfcourseindustry.com, iTunes and GCI's bi-weekly Fast & Firm enewsletters.





CONSTRUCTION CONVERSATIONS

Five golf course builders. Five perspectives on the jubilation, challenges and future of the industry's dirtiest jobs.

By Guy Cipriano

olf course builders can relate to superintendents in multiple ways. For starters, an improved economy yields steady work – and tremendous labor challenges. Outdoors work. Hourly wages. Competition from other industries. Generational changes. Sounds familiar, right? Once they field a reliable crew, a builder must deal with unpredictable weather, limit distractions to play, and manage the expectations of owners and committees.

Builders also must be adaptable. The Great Recession forced them to change their business and management practices. Savvy builders emerged from the slowdown with fewer competitors and steady work.

Humility permeates when a group of builders fill the same room, like they did for the 2017 Golf Course Builders Association of America summer meeting in Charlotte. The educational portion of the meeting included a candid conversation about golf course construction in 2017. Realizing humble people are more revealing when flanked by their peers, I suggested conducting a panel discussion. GCBAA executive director Justin Apel and his team found a quintet of

COVER STORY

willing participants representing companies of varying sizes: Total Turf Golf Services' Greg Hufner, ACC Golf Construction's Chris Harz, VM Golf Services' Mike Perez, Glase Golf's Jim Glase and MacCurrach Golf's Allan MacCurrach. The participants are based in multiple regions, with Glase and MacCurrach living in Florida, Hufner in Pennsylvania, Perez in Texas and Harz in Colorado.

The panelists tactfully handled themselves, providing a slew of anecdotes, lessons and strategies designed to help, and perhaps inspire, others in the industry. Nothing I asked fazed this group. Answering a few post-lunch questions doesn't feature the same complexities of rebuilding 18 holes for an owner or membership unwilling to close the course for even one day during the peak season.

HOW HAS THE BUSINESS CHANGED SINCE YOU ENTERED IT AND HAVE THE CHANGES BEEN FOR THE BETTER OR FOR THE WORSE?

GREG HUFNER: It's the same problem every business is having - people aren't coming into it. Golf course superintendents have the same issue. The loss of H2B this year has had a huge impact on our business. One of the things I struggle with the most is trying to relate to millennials. People that come out of college, have degrees, expect to make a certain amount of money and want a big, fancy title. I find myself trying to adapt. It has been difficult even though I'm not that far away from them.

CHRIS HARZ: The biggest change I have seen is how schedules have gotten more condensed. The owners and architects



walked away from work based

on owner group schedules.

JIM GLASE: What has changed the most are the people that you get to work for you. When I first started in the business, I actually worked in a union and you had plenty of people. You never had a problem finding people. I think the biggest change now is it's tough to find people who are going to do physical work and spend 10, 11, 12 hours a day working outside when they want to sit behind a desk or sit behind a computer and work six or seven hours.

Glase, and bottom from left, Mike Perez, Chris Harz and Greg Hufner.

ALLAN MACCURRACH: I was working with Pete (Dye) and was pretty passionate, and it was a lot of fun. As the little business kind of matured, I spent a lot of time picking up the damn phone and hearing problems about this employee or this client or this thing. It changed for me a lot and, fortunately, I was blessed to have a guy come into my business named Brian Almony and it took the whole thing from me. I got back out into the field. I kind of changed my own role in the business. But how has the business changed? It has just changed immensely. It has drawn back a little bit from the time we were building a lot of new golf courses and the national brands. As the industry has gone along, we have become a lot more regionalized. People have started to draw circles in their own competitive regions and that's also a result of employees not wanting to leave the house too much.

WHAT IS IT LIKE MANAGING YOUNGER WORKERS, AND WHAT STRATEGIES HAVE YOU IMPLE-MENTED THAT ALLOW YOU TO CONNECT WITH YOUNGER WORK-ERS?

GREG HUFNER: None of the strategies have worked. If anybody has any, I'm all ears. It's difficult. I'm not much older than them, but to relate to what they are thinking is the hardest thing. Everyone comes into this business and thinks it's glamorous. Yeah, you're building a golf course and that's great. But then they spend two months in a hotel and worrying about their cats at home. It's difficult



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and we all go through the same challenges. There are some guys who love it. They love being out there actually building something from start to finish. That's what I love most about this business. You can walk on a site full of trees and two months later you have a nice short game area where you start to see the fruits of your labor. But millennials, in particular, want things right away. They are not necessarily patient enough to see how things go.

CHRIS HARZ: Retention has been the hardest thing for us. You get one good, young kid or two or three good kids, they are there for a year and starting to make some real progress, and then because the unemployment rates are so low, there are a lot of great offers out there. We're getting a lot of young talent scalped away from us. But we try to offer as much as we can upfront. It seems like nowadays millennials want more and more up front. They always have a cell phone, they have a computer, we pay them pretty darn well. You get a new truck for the most part. We don't put them in a 1997 Ford F-150. They get a nice F-150. There are some entitlements you have to give them and hopefully they appreciate that.

MIKE PEREZ: We try to take good care of our people. We do have to go through five workers and we train them, and hopefully we get one or two that move up the ladder. But my mentality is take good care of people and the good ones will stay.

JIM GLASE: We don't really have many young people who work for us. We tried to hire people.



Of our 14 to 15 best people, they have all been with us for at least for 15 years. I have two sons in the business and they are the only young people we have hired and stayed with us.

ALLAN MACCURRACH: Early on we had a great policy. We had a 90-day rule for everybody we hired. And after 90 days, you either got a raise or you got let go. It was a work ethic, culture, attitude standpoint. You just go to the file cabinet or fax machine, and pull out the next one. We were able to build a good, solid culture. I tried sticking to that rule and it got pretty lonely because there weren't many folks around anymore. We had to get off that rule. It's a huge problem. But it's a huge problem in almost every level of employee you are talking about.

IT'S NOT JUST BUILDERS. SU-PERINTENDENTS ARE HAVING TROUBLE FINDING LABOR, THE CLUBHOUSE STAFFS ARE HAV-ING TROUBLE FINDING LABOR. IS IT THE PAY? OR DOES IT GO DEEPER? IS THERE A NEGATIVE CONNOTATION THAT GOLF IS FIGHTING WHEN ATTRACTING WORKERS?

CHRIS HARZ: Even guys who have been with the company for a long time don't want to do golf jobs. We are a multidisciplinary company that does civil work and golf. You get on a pretty premium wage job and an operator is making \$28, \$29, \$30 an hour and a laborer is making \$21, \$22 an hour. You're going to have a hard time to convince those guys to go back to golf work for \$14 an hour. They just don't want to do it. When we do golf work, you pay a premium to keep your guys wanting to do that and we do that, too.

JIM GLASE: I don't think it's a problem with pay. Most of the people we start are somewhere between \$12 and \$13. And for our area of Florida, that's a good amount of hourly pay. It's hard work, it's long hours, you're outside and it's hot in Florida. It's just not easy. People look for something that's a little bit easier.

ALLAN MACCURRACH: I think it's 4.3 percent unemployment. When we were building 300 new golf courses a year ... new work definitely has a sexier connotation than renovation work does. And Tiger Woods. And the whole upswing we experienced. Golf was a shining rock there for a while. I don't know if you can say golf and sexy, but it had a nice connotation to it. Today's young folks work to live. I hear that all the time. You have to cut back. You can't live to work. You have to work enough to live. It's the whole mindset of these young folks.

HOW TOUGH ARE SOME OF THE TIMETABLES NOW AND WHAT ARE SOME THINGS YOU DO TO TEMPER EXPECTATIONS?

GREG HUFNER: That's the hardest part of the job - to manage people's expectations. Unfortunately, for us a lot of the work in this country is dictated around the golf schedule. Florida is busy in the summer because it's too damn hot to golf. The North is busy in the winter and fall because nobody wants to play when it's too cold. The schedules have gotten condensed. We did a project two years ago in Colorado where we built 20 golf greens in 45 days. We can do it, but they paid for it. The reality sets in

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when they say they want to do something in 90 days and then they see cost of building it in 90 days. We can pretty much do whatever – we all can – it's just whether the customer is willing to pay for that service.

MIKE PEREZ: With us being a smaller company, those kinds of projects are hard to handle. We have two, three crews and for us to try to complete a project in a small amount of time, it becomes hard for us.

JIM GLASE: We don't really guarantee any timetable. We have a hard time down in Florida with the weather. If it rains, there are times we have no idea how long it's going to take. The month of June, we got over 30 inches of rain and probably missed five, six days of work. And when we went back and did those five, six days we missed, we had to do everything over, so right there we missed 12 days. We're on a job right now where we are two, three weeks behind. We can't guarantee when we are going to finish. We told them we are going to finish when we could and we put two crews in there.

HOW DO YOU ENDURE LEAN PE-RIODS AND HOW DO YOU HANDLE PROSPEROUS PERIODS? WHAT ARE SOME THINGS YOU DO TO STAY HUMBLE THROUGH THE

HIGHS AND LOWS OF THIS BUSI-NESS?

GREG HUFNER: This business will pretty much humble you. I don't think you have any problem staying humble. As a company, we are pretty diversified. We're not just in golf course construction. We do some sports field work and we have a fairly large commercial landscape division of our company, which helps provide some recurring revenue if golf ever dries up again. One of the things we did as a company prior to the slowdown was geared more toward renovation-type work. We kind of prided ourselves on being able to do the big jobs - the multimillion-dollar jobs – but we also focused on going back to our customers, the people who want to do the \$25,000 and the \$50,000 jobs. We treat them just as well as the golf course that wants to blow the place up.

CHRIS HARZ: Diversification. When '08 happened, my boss came to me, 'We don't have enough golf market business to justify your salary so you have to learn how to do something else.' With our company being a big civil contractor, we started learning how to do bridges and roads and that retrains you and you start to get humbled when you don't know anything about what you are doing. We

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COVERY STORY

did sports fields, big parks, so it's not just golf and bridges. We finished a couple of big university projects for synthetic fields.

ALLAN MACCURRACH: When things went really bad, I decided it was time to diversify, but I decided at the same time everybody else did so it was brutal. We never did a lick of anything outside a golf course. We looked at building a cemetery. That didn't work. We looked at a lot of different things. And, ultimately, we survived because the company was really well capitalized and all of our equipment was paid for. I sat my senior guys down and showed them how much money was in the bank, and said, 'When that's gone, we're done.' I think they appreciated the fact we showed them the complete number and the total net sacrifice I was going to make. We didn't buy any new equipment for three years. We basically squeezed all the capital out of our equipment and survived.

WHAT DOES THE FUTURE HOLD FOR YOUR COMPANY? WHAT DOES THE FUTURE HOLD FOR THE GOLF BUSINESS, AND WOULD YOU RECOMMEND GETTING INTO THIS SEGMENT OF THE GOLF BUSINESS IF A YOUNG PERSON ASKED YOU ABOUT IT?

GREG HUFNER: I'm pretty optimistic with where the state of the industry is at. But in the back of your mind, you're always worried. You never know. I would encourage people to get into this business because I think if it's something your passionate about and love, it's not work. It has provided a good life for a lot of us. I think it can provide a good living for some other people.

MIKE PEREZ: Having started my company in 2008 when it was really, really slow, every year after that it has been better and better. I'm really looking forward to that. Now that I'm seeing some bigger projects come in, I'm happy to be here and looking forward to 2018.

ALAN MACCURRACH: This renovation wave we are on is getting hot and crazy. It kind of feels like we are partying like it's 2006. I think in '09 and '10 we were doing renovations to things that were broke and it kind of made sense, starting with structural renovation and kind of crept from the whole thing based on irrigation, bunkers that were bad, a few businesses didn't work and could use a renovation to move themselves in a particular market. But some of these renovations and the scale of the renovations we are doing today are almost euphoric. It's the same way I felt in 2006. You see the volume and the money and the before-and-after pictures, and you kind of just scratch your head. But I think the health of the industry short term is great. 2018 is going to be great. As far as encouraging somebody to getting into this, absolutely. It's been so good to me it would be hard-pressed to not say it could be good for the next generation that's going to come in. GCI

Guy Cipriano is GCI's senior editor.

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SURGE N STORM REPAIR

Builders and architects offer guidance on the challenging decisions facing courses following a natural disaster.

By Guy Cipriano

urricane Harvey altered courses in Texas and Louisiana. Hurricane Irma battered Florida and parts of Georgia, South Carolina and Alabama. The two storms affected golf operations in states with a combined 2,300 courses, a total representing 16 percent of the nation's golf supply.

Economic damage caused by a pair of high-pressure haymakers separated by less than two weeks will reach nearly \$300 billion, according to an AccuWeather projection. The storms put an immediate strain on the golf industry as courses scrambled to concoct recovery plans and reopen.

"Planning is usually the first

thing we always talk about in any scale of renovation project or improvement project," says Nick Mazzella, business manager for GCBAA-certified builder Aspen Corp. "There's always a great deal of planning before you get started and unfortunately storms don't afford you a lot of time to plan."

Often, it's reactionary behavior when dealing with storms, Mazella says.

"It's always a race to get the golf course opened again so revenue can continue to go through the facility," he adds. "But sometimes you need to make structural changes that are underneath the skin of a golf course that have been affected, as well. You don't always have the luxury to go in there and do a quick cleanup job and get golfing again."

Majors storms present recurring problems in some regions. Hurricane Irma produced major storm surges that slammed courses still experiencing lingering effects of Hurricane Matthew, which made landfall in 2016. Meanwhile, in Houston, Hurricane Harvey developed into the third major flood event in the last two years. "The sad thing is there are a number of courses that may not reopen," Houstonbased architect Jeff Blume says.

The timing of the hurricanes compound problems in golfrich areas such as Naples, Fla., a snowbird haven with the highest concentration of private golf course in the nation, according to National Golf Foundation data. Multiple major renovations in the region had neared completion when Irma arrived. Naples brims with golf activity October-April.

"They get a ton of rain down there seasonally and we are used to doing our construction and building during this rainy season," says architect Drew Rogers, who has multiple active projects in Naples. "You know it's going to happen. You expect it. You expect setbacks, you expect damage, so do the

LOOK LOCAL

Houston-based architect Jeff Blume encourages facilities to work with builders and architects who understand their course and the region's golf market.

"You think about when a hailstorm comes through, you get roofing companies coming from everywhere," he says. "One happens in Texas and you get a guy come down from Ohio for two weeks and then he's gone. The same thing with golf courses. If I'm advising club and it wouldn't have to be me - I would say hire somebody that knows your facility. Either that or somebody who knows your area so they understand the innerworkings of what happened in the flood."

contractors, and you plan for it.

"When things start piling up and it's persistent wet weather and then you get hit with extremes with some of these storms, you can't really plan for them," he adds. "You just kind of have to swallow the bitter pill and dig your heels in and clean it up afterwards."

WHAT NOW?

Damage assessment is the

"IT'S ALWAYS A RACE TO GET THE GOLF COURSE OPENED AGAIN SO REVENUE CAN CONTINUE TO GO THROUGH THE FACILITY, BUT SOMETIMES YOU NEED TO MAKE STRUCTURAL CHANGES THAT ARE UNDERNEATH THE SKIN OF A GOLF COURSE THAT HAVE BEEN AFFECTED AS WELL. YOU DON'T ALWAYS HAVE THE LUXURY TO GO IN THERE AND DO A QUICK CLEANUP JOB AND GET GOLFING AGAIN." - NOK MAZZELLA, ASPEN CORPORATION first step in any post-storm rebuilding process, according to builders and architects who have worked with facilities following natural disasters. Courses involved in construction will likely be protected by a builder's risk policy, but the situation is trickier for facilities undergoing normal operations at the time of a hurricane, flood or tornado. Historic floods also have caused major problems for numerous inland courses, especially those in low-lying areas.

"With the way any insurance company works, unless you go through the federal government and FEMA, a club can't insure that big of a property against that big of a flood event," says Brian Vitek, a project manager for GCBAAcertified builder Landscapes Unlimited. "There's no insurance barrier that would do it. Then it becomes more of an assessment for the club, kind of like what you would do with an insurance company."

In most cases, the superintendent is responsible for the immediate inspection of the site and initial debris cleanup. But some weather-related disasters require outside help, and qualified builders and architects offer assessment guidance.

"Most certified builders are very good at being able to figure out a good fix for whatever situation you have," Vitek says. "We are all very good at working with clients at fixing the issue in a manner that benefits them because we have different construction techniques throughout the U.S. So, if you are as big as most certified builders are, you have seen a lot of things related to golf."

Reputable builders are inundated with calls following storms that cause widespread damage such as Irma and Harvey. Aspen, for example, started receiving calls from previous clients less than 48 hours after Harvey left Houston, Mazzella says.

Harvey and Irma coincided with an uptick in golf construction and some companies had their fall 2017 calendars filled by the end of last fall. Devoting even "one or two guys" to operating equipment on a stormrecovery project would impact previously scheduled jobs, one builder told GCI. Cool-weather courses often try to complete as much work and interrupt as little play as possible during September, October and November.

Regionalization became a common response to the Great Recession among golf course builders, decreasing the volume of companies with national presences. The few remaining national brands employ project managers throughout

A superintendent helps the recovery by using regular crew to clear debris from areas where people and equipment need to reach, remove silt and replace sand in bunkers that aren't severely damaged, and perform regular maintenance on unaffected turf before receiving supplemental labor and equipment from a builder.

Trees and bunkers are the most vulnerable course features during a hurricane or tornado, while erosion along creeks and streams become major issues following a flood. Topography often determines the extent of the damage, especially during inland flooding, says McDonald & Sons senior project manager Kyle Trazskos.

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the country who serve as the primary contact for superintendents and facilities seeking storm recovery assistance.

"The phone rings early and often," Mazzella says. "We will have more than we can handle with essentially these two storms and with everything else that we had on the books. Most builders are very busy with the regular schedule right now and to find a builder who's able to mobilize quickly and respond quickly to a storm situation is hard. We had some resources available and they were dedicated very quickly."

REPAIR OF REBUILD?

McDonald & Sons, a GCBAA certified builder, handled the construction on The Old White TPC at The Greenbrier, a resort wedged between southern West Virginia mountains. A storm later described as "1.000year flood" by climatologists destroyed large sections of the course in the summer of 2016. Resort officials quickly decided to rebuild the entire course to ensure the PGA Tour's Greenbrier Classic returned to the region in 2017. The project included a series of ambitious

30

deadlines, with rebuilding the greens in time to properly seed the surfaces becoming the first construction priority.

Rebuilding The Old White TPC required a series of fluid actions by architect Keith Foster, forcing a construction team of McDonald & Sons and Greenbrier employees to react to in-the-field decisions. "We didn't have time to draw it up," McDonald & Sons senior project manager Kyle Trazskos says. "It was kind of paint it up in the dirt and build it. Every week you're previewing where you are going, getting a game plan, building it and approving it. It just kind of moves."

Quickly returning the course to a revenue-producing condition drives post-storm decisions, although the situation at The Greenbrier offers an example of a facility exploring all options. The storm allowed The Greenbrier to examine its place in the competitive resort marketplace, and a full rebuild led to the restoration of The Old White TPC and new-look Meadows course.

A similar situation occurred at Coal Creek Golf Course, a public facility between Denver

PARTNERING TO Reduce flooding

Golf courses are starting to play vital roles for sprawling communities looking to reduce flooding concerns, says golf course architect Jeff Blume.

Blume has recently worked on partnerships involving the City of Sugar Land, a Houston-area suburb, and a pair of private golf courses, Riverbend Country Club and Sugar Creek Country Club. Both courses underwent physical changes to provide storm water retention for the city, which has a dearth of undeveloped land.

As the golf course architect, Blume balanced the needs of city planners, civil engineers, and club officials and members, to identify out-of-play areas to provide the additional storm water storage. The city paid for the easements. The partnerships often lead to clubs assessing – and possibly enhancing – other parts of the course.

The desire to add storm water storage also spurred the recent overhaul of The Preserve at Oak Meadows, a suburban Chicago facility owned by the Forest Preserve District of DuPage County. The Greg Martin-led project was featured in the July issue of GCI. Enter <u>https://goo.gl/PmjdTK</u> into your web browser to read the story.

"I'm seeing a lot of that start to happen and it's not just Houston," Blume says. "In the West they were talking about turf reduction because of droughts, so they respond to and it spreads across the country. It's the same thing with flood issues. It's good for golf, because the municipalities will pay for this work because they need the storm water mitigation. A lot of times the clubs can't afford to pay for the work, so it's a win-win for both. The municipality pays for it, they get their storm water storage and the golf course gets renovated to make it more competitive in the marketplace."

and Boulder, Colo. A raging flood damaged course features, produced major erosion, and clogged drainage and irrigation pipe in September 2013, two years after the creation of a long-term master plan. The flood expedited the plan's implementation, and the revamped and modernized course reopened in June 2015. "The entire master plan got done in one process instead of getting phased out," Vitek says.

Sometimes, Mazzella simply says, "nature does the demolition for you." And, in the today's golf market, nature is demolishing more at once than anybody imagined.

"You have to have some humility," Rogers says. "You're never going to beat Mother Nature. You never know when she's going to inflict her wrath on you. You have to look at each other and say, 'We can't control this. We just have to work hard to put this back together again.' There's no finger-pointing, there's no placing blame. You just have to suck it up and get back in there, and get things back to normal. Sometimes that road is a long and an expensive one, which is tough for a client. It's tough for me to witness with my clients. You don't ever want to see them go through those hardships.

"But they are the reality of having a golf course and certainly when the golf course is in a location where it's susceptible to flooding or certain damages associated with large storms," Rogers adds. "You're going to encounter them sooner or later. If it happens to your house, when the roof blows off, we just put it back on. It takes a little time, it costs a little money, but you get back after it." **GCI**





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> Kelly Shumate, Director of Grounds for Greenbrier (left) and Josh Pope

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STRONG-ER BUNKERS

A Golden Age course with a major championship history completes a long-awaited project.

By Guy Cipriano

ears of careful pitching and planning didn't prepare the Canterbury Golf Club turf team for the equipment caravan it witnessed last September. A club that nearly had everything – major championship history, soothing land in the shadows of downtown Cleveland, golf-loving members and one of the best collection of Herbert Strong-designed greens – was beginning the physical process of correcting a painful secret by embarking on a bunker renovation. "I honestly didn't believe it was real until I saw the equipment come down the driveway,"

superintendent Mike LoPresti says.

Canterbury's bunkers had been architecturally and structurally failing for decades. LoPresti understood the plight immediately after arriving from famed Oak Hill Country Club in December 2011, yet he followed a tradition of overcoming infrastructure challenges to produce solid conditions established by longtime superintendent Terry Bonar. When grueling days of pumping, pushing, shoveling and sand swapping ended, LoPresti quietly documented the strain the bunkers placed on his team.



Cleveland averages 40 inches of annual rainfall, so bunker washouts and contaminated sand are as common in the region as losing professional football seasons.

Assistant superintendent Alan Hammond, who arrived in 2013 from Oak Hill, lives near the club and experienced dozens of deflating pre-renovation mornings, passing a greenside bunker protecting the left side of the ninth green on the way to the club's maintenance building. The saturation in his yard and the bunker's condition often foreshadowed the workday. "I could look into my yard and see puddles, and I knew what we were facing today," he says. "It was like, 'Aww man, these guys don't know what they are in for. It's going to be a long, long slug."

LoPresti, Hammond and the crew slugged it out, using nearly every available resource to repair the course's 107 prerenovation bunkers following significant storms: 60, 80, 100 hours ... whatever it took. LoPresti and Hammond worked alongside their employees in the bunkers because every hour mattered, and the team often returned the bunkers to a playable condition before most members noticed the severity of the problem.

Once he settled into his Canterbury tenure, LoPresti started gently decreasing the ferocity of bunker maintenance. The tactic was difficult because of a superintendent's prideful nature, but it proved important for the course's future.

'When I first got here, I was like, 'What are we going to do? We have to fix these,'' he says. "And I would throw everybody at them. After I was here for a few years, sometimes I would leave them so the members would understand how bad they could be. What's often the case in this industry is that we get out early, get out of everybody's way and fix everything before people have an opportunity to see. I think that helped open some people's eyes to how bad they really were. It's a good opportunity to explain what the whole situation is."

Bruce Hepner, Canterbury's consulting architect since the late 1990s, worked on a long-range plan with the club, scoring victories over the years such as modest tree removal, returning greens to original sizes, improving the irrigation system and renovating tee complexes. The work strengthened what Hepner considered a Golden Age gem with "great bones," but some of the external features remained feeble. Canterbury opened in 1922, and Hepner says based on his research bunkers were modified multiple times by different architects, although some of Strong's original designs remained. "It was quite eclectic with all the different shapes and sizes," Hepner says.

The Great Recession stalled bunker renovation discussions, but that didn't stop outsiders, including Golf Digest architecture sage Ron Whitten, from chattering about Canterbury's bunkers. Whitten told Hepner, "there wasn't a golf course in the country that needed a bunker job more than Canterbury," which has hosted the U.S. Open, PGA Championship, Western Open and U.S. Amateur. "It was the missing piece of the puzzle,"



GET AHEAD

Frontier Golf project manager Jason Sloan urges clubs considering major work to arrange the services of a builder "as soon as possible."

"Our schedules can fill up quickly as more projects are being bid out in more advance of the anticipated start date than when things were slow, especially large projects, which can leave clubs wanting smaller projects in a tight spot," he says. "And with the current labor shortage that we are experiencing as an industry right now, contractors are not able to easily add crews to our operations to accommodate additional projects."

Incorporating the builder into the planning stages and contacting suppliers to ensure key materials such as sod are readily available are among the other advance steps a club can take to ensure a successful project, Sloan adds. Canterbury Golf Club superintendent Mike LoPresti started securing supplies in 2015, shortly after members approved a major bunker renovation, helping the club control costs once construction commenced last fall. When it comes to sand, Canterbury benefitted from being a short drive from a Chardon, Ohio, production facility.

"What I always tell clubs is that you have to organize a project two years in advance to really get it efficient and to get the good prices," says architect Bruce Hepner, who oversaw the work at Canterbury. "We put it out to bid the year before so we had nothing but the best contractors. We get very competitive bids from them all. We pick a contractor a year in advance, so they are organized, we're organized and we're off to races when we show up. We all know what we are doing."

Hepner adds.

As he waited on the club to approve the project, Hepner studied hundreds of bunkers, including the ones in early photographs of the Canterbury grounds. Strong's original bunkers included sharp edges and fingers surrounded by penal turf. The bunkers strayed from their original form, becoming simpler and rounder over the years. Simple, though, led to complex maintenance, and Hepner worked to make them "func8:00 AM / Brown patch spotted on 9th green.

6:30 AM // Sprinkler stuck on fairway 5.

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tional first and then add a lot of character to them."

The style Hepner devised included sod faces throughout the course, but also a few bunkers that included steep sand flaring. Using what he calls "old-world construction," Hepner focused on the areas outside bunkers to ensure water from greens and surrounds flowed away from the hazards. Canterbury also installed a modern liner in the bunkers. Hepner doubled as the shaper, a tactic he deploys on many of his projects. GCBAA certified builder Frontier Golf served as the builder, mobilizing a crew in Northeast Ohio last

September following the conclusion of the Web.com Tour's DAP Championship, the first televised tournament hosted by the club since the 2009 Senior PGA Championship. The course remained opened during construction, allowing members to play their final 2016 rounds while witnessing the metamorphosis.

Heavy, slow-draining clay soils halted construction even after last fall's minimal rains, Frontier Golf project manager Jason Sloan says. The project also included adding six miles of drainage throughout the course and renovating more than 20 tees. To accommodate

★ TRY IT OUT – OR NOT?

Showing vs. telling members the magnitude of a problem led to Canterbury Golf Club improving the bunkers on its par-3 11th hole before embarking on a course-wide bunker renovation.

The Canterbury turf team completed an in-house renovation of the hole's six bunkers in the spring of 2015. The renovation included installing the same modern liner Superintendent Mike LoPresti wanted to use on the entire project. The 11th hole was the only hole with renovated bunkers when the club and PGA Tour announced a three-year agreement to bring a Web.com Tour finals event to Canterbury. The 2016 DAP Championship was the last event played at Canterbury with the previous bunker style. The renovation started less than three weeks after the tournament concluded. "No. 11 had the worst

bunkers infrastructurally before the renovation, so we used that as an example to show the members how good they can be," LoPresti says. "That helped a lot to sell the whole project."

Bruce Hepner, Canterbury's consulting architect since the late 1990s, has mixed views on club's completing pilot projects.

"I don't do it very often," he says. "I usually try to build enough trust with the membership to say, 'Hey, you have to do it all at one time.' I have seen too many pilot holes where it didn't turn out very good, so they didn't do the bunker job at other clubs. It's a little risky, but it was something that Canterbury needed. The membership needed it to sell the whole project. It worked really well there."



repositioned fairway bunkers, the Canterbury crew moved irrigation lines and heads, a task led by second assistant superintendent Terrance DiLoreto.

"It is always a unique experience to work on a historic golf course dating back to the Golden Age of golf course architecture," Sloan says. "It is a pleasure and an honor that we take very seriously, as we know our work becomes part of a rich and significant history of the golf course."

Work started in a far corner of the cozy property, and by winter, construction reached the center of the club, where the paved driveway, parking lot and maintenance facility converge. The project finished this past spring. Canterbury received more than 1 ½ inches of rain in a short period on Memorial Day and Fourth of July weekends. Member-member weekend was even wetter, with the club absorbing 4 ½ inches in three hours.

"Last year we would have had to make a decision: Are we changing cups and cutting greens, or are we fixing bunkers?" LoPresti says. "This year it was just a normal day."

Multiple years of weather data is needed to fully quantify labor savings, although LoPresti says it now takes three to four employees and less than two hours to fix bunkers following significant storms. Avoiding major washouts allows Canterbury's specialized employees to execute detail-oriented tasks, Hammond adds. The new design requires more fly mowing, a process that has become more efficient as the crew learns the nuances of the 102 bunkers. **GCI**

Guy Cipriano is GCI's senior editor.
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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.

ne Harvey "before and after" aerial photo showed a golf course under water, while surrounding homes were relatively high and dry. That low-lying course functioned just as land planners envisioned, storing floodwaters to protect valuable real estate above. While great in urban planning theory, it's not a great reality for courses in floodplains, who deal with irregularly scheduled revenue losses, and continually increased maintenance and repair costs.

While no design couldw withstand hurricanes like Harvey and Irma, they raise the question of how design can mitigate flood damage? Here are tips to deal with flood damage.

BUSINESS PLAN

- When projecting rounds, revenues and expenses, include typical lost play days over the long term. You may not have the rounds potential of nearby courses.
- Keep all as built plans on second floor, store off site, and have digital copies.
- Check your insurance policy. I have seen some courses better insured for dining room theft than loss of golf course use, which is sometimes limited to tree loss only.

UNDERSTAND REGIONAL HYDROL-

OGY – Hire an engineer or look at a USGS quad map to understand your

watershed and flood potential, if not known already. Each course has unique hydrology and related problems.

In terms of golf course design:

GREENS, TEES AND FAIRWAYS – Raise as far as practical, ideally consistently elevating, if practical:

- Greens to 12 18 inches above the recorded 100-year flood elevation so all USGA method layers are protected. If not practical, attain at least 25 or 50-year levels.
- Tees to 10, 25 or 50-year levels.
- Fairways to 2, 5, or 10-year flood levels, while leaving (or lowering) roughs, lakes, and less critical areas to act as detention reservoirs.
- Where it's not possible to raise fairways, re-grade them with 3 6% minimum slopes to drain quickly.
- Design irrigation and drainage systems with discharge values to allow lowering of lakes to increase storage capacity before a known rain.

CART PATHS – Your paths are your main access routes, and higher paths gets you back out there sooner. Consider raising them as high as feasibly and aesthetically possible, being sure to take care of resulting drainage issues. This also reduces future minor drainage additions as silt builds up along grade level paths.

DRAINAGE – Many golf course drainage systems are undersized, with small pipe and catch basins, which tend to clog

easily. Consider:

- Larger drain pipes, which provide/ allow:
 - More capacity, (surprisingly so.... an 8-inch pipe has 4X the capacity of a 4-inch pipe)
 - Flatter grades to achieve "selfcleansing velocity (3 feet per second). A handy rule of thumb for estimating minimum pipe slope is "5/pipe diameter" (i.e., ⁵/₄" = 1.25% minimum slope, ⁵/₆" = 0.5%, ⁵/₂" = 0.4%, ⁵/₅" = 0.33%, etc.)
- Larger catch basins, whether flood prone or not, since catch basins (not pipe size) are usually the limiting factor in drainage capacity, even before clippings clog them up.
- Use engineering formulas to size pipe - Turf can die within 3 days when flooded in hot weather, so I design all pipes to drain a 100-flood within 3 days, where practical.
- Add 48-inch manholes every 300-500 feet on long drainage trunk lines, which are big enough to allow man and roto rooter down to clean the system when required.

SLOPES AND CHANNELS – Bare ground erodes when water flows exceed 1.5 – 3.5 feet per second, depending on soil type. Well turfed swales resist erosion when flow is twice as fast, depending on grass type. Armoring your channel banks with erosion control netting, or using rip rap or gabion walls, on fast flowing banks can reduce flow damage. These can be ongoing projects.

SLOW FLOOD WATERS DOWN – When designing Indian Creek in Carrollton, Texas, architect Dick Phelps realized the raised greens and tees formed the nucleus of a continuous dyke. He filled gaps with mounds and ridges, forming a "sneaky" and aesthetically pleasing flood control berm to control flood waters under a 10-year storm. (BRUAER continues on page 63)



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SAVE YOUR SYSTEM

Experiencing tricky spots in your turf that are too wet or too dry? Your irrigation system may need a nozzle upgrade.

By John Torsiello

rrigation nozzles are sometimes overlooked in the broader scheme of golf course water management, which could be a critical mistake for superintendents.

Extremely worn or clogged nozzles greatly affect uniformity and turf health, especially if many nozzles are impacted, says Ian Williams, Rain Bird's national specifications manager-Golf Division.

Extreme misting is a sign of excessive case pressures, Williams says, adding those fine particles are lost to evaporation and susceptible to wind.

"This isn't a result of nozzle wear as much as it is a sign that the pressure is higher than manufacturer recommendations," he says. "There could be an issue with the pressure regulation in the sprin-

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kler if it is a valve-in-head."

Smaller pop-up sprinklers are more susceptible to higher pressures because they are designed to operate at much lower pressures than what exist in a golf course system and therefore must be regulated, he says.

Faulty or old irrigation nozzles use more water, which raises the precipitation rate and increases the water window, says Brian Vinchesi, design engineer for Irrigation Consulting Inc.

"This will lower the uniformity of the sprinklers and cause coverage issues," Vinchesi says.

In addition to impacting water distribution, a worn nozzle contributes to an increase in sprinkler flow and discrepancies in the irrigation central control systems sprinkler flow database. Faulty irrigation nozzles could lower system operating pressure, which has a negative effect on water distribution, or could trip a low-pressure safety control that causes a pump station to shut off, says Paul Roche, a principal at Golf Water, a golf course irrigation design and consulting firm.

"More commonly, though, is the increased precipitation rates which make the target area wetter, and poor water distribution that contributes to wet and dry areas within the sprinkler pattern," Roche says.

Because many are made from plastic, OEM golf sprinkler nozzles tend to wear out quickly, says Mark Faris, Underhill International sales and marketing director. He advises superintendents to check sprinkler nozzles every 24 months via a DU (distribution of uniformity) catch can test. Bad nozzle DU performance will require



When to replace

There is no perfect scenario for when to replace faulty, worn or outdated nozzles, irrigation experts say.

Nozzles should be replaced when water usage increases to achieve desirable turf conditions, and when playing conditions and turf quality become unmanageable, some experts say. Others add it's a matter of having the budget and time to undertake the change.

"There is no set time to replace nozzles," says Paul Roche, a principal at Golf Water, a golf course irrigation design and consulting firm. "A before-and-after water distribution audit test can reveal when you should be considering changing your nozzles. A regular program of inspection and water distribution audits will help determine if you need to replace your nozzles. If you are having water distribution issues, ask your sprinkler manufacturer if they have any new and improved nozzles that you should be considering."

Nozzle wear is a factor of water quality, nozzle design, the material, velocities through the nozzle and total gallons dispersed over time, says lan Williams, Rain Bird's national specifications manager-Golf Division. "Nozzle technology and design has changed so much over the years so that even a poor water distribution audit of a 15-year-old system may not be the result of nozzle wear as much as large spacing or just poor nozzle characteristics," he says. "I have seen sprinklers as new as 10 years old replaced with another option and performance greatly improved, even without changing spacing or locations. Clogs or small debris lodged in the nozzle can be easily serviced and returned to use."

If superintendents are replacing plastic OEM nozzles, then changing nozzles may be done as early as one to two years into the irrigation system's operation, depending on the facility's water quality, says Mark Faris, Underhill International sales and marketing director.

the irrigation system to be left on longer, he says.

"This would cause other issues because some areas would be overwatered and other areas would be underwatered," he says. "The net effect is a negative water savings and poor agronomic conditions. Another negative factor would be poor course playability."

Visual inspections show a superintendent the obvious, like damage and wear, but it will take catch-can testing or auditing to determine the DU, says Brent Harvey, owner of Brent Harvey Consulting. "Of course, large uniform circles of wet or dry areas that correspond to your sprinkler spacing is another strong indication that improvements are necessary," he says. "Nozzles may be the first and least expensive option available for poor DU golf courses."

Faris advises superintendents to conduct an irrigation audit to reveal nozzle issues.

Irrigation systems dispersing water with high concentrations of suspended abrasive material will require more frequent reviews than systems using potable water, says Jim Wright, product marketing manager for Toro Golf Irrigation.

Select a few representative locations for testing and perform an initial flow and radius test to use as a benchmark, Wright says. "With poor water [quality], test the same locations at two-year intervals that can be adjusted over time based upon results," he says. "If you are using potable water, every five years would be sufficient."

Nozzle wear appears as higher overall flows and dry areas close to the sprinkler, Wright

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says. "The inner nozzles that cover this area have features to place the water in specific locations," he says. "If these features wear, they will reduce the amount of water falling close to the head and push it further out."

Wear also shows as a shortening of coverage radius. "Main nozzles have stream straighteners (thin fins) that remove the turbulence and straighten the stream to achieve the greatest distance," Wright says. "With excessive wear and reduced turbulence reduction the distance of throw will be reduced."

One of the best ways to assess sprinkler nozzle performance is to conduct a water

Taxing audit

Performing a nozzle audit is essential to maintaining irrigation efficiency, and it should be part of staff scheduling. The time required to check irrigation nozzles depends on the system and the number of sprinklers, says Brent Harvey, owner of Brent Harvey Consulting,

 \bigcirc

"Some systems in the Southwest can have up to 3,000 sprinkler heads." Harvey says. "That's going to take some staff. By the time they are done, it could be time to start again. If you have 800 sprinkler heads, it is easier to accomplish."

Mapping nozzles may not save time when conducting an audit, but it will certainly save time when recording issues that should be addressed, adds Harvey. "Good documentation of your existing system is important to staying organized, whether you have 800 or 3,000 sprinkler heads," he says.

A sprinkler inspection can take from a few hours to half a day, depending on the system's size, Rain Bird's Ian Williams says. Problem sprinklers can be flagged and returned to for servicing after the inspection is complete. A more detailed water distribution audit can be performed on an area in about one to two hours.

"A high percentage of modern irrigation systems have some sort of record drawing of what was installed, whether on paper or a GPS map residing in the central control software," Williams says. Software stores critical information for each sprinkler, including nozzle type, pressure and site of the sprinkler that identify it within the software. "During inspections, notes can be made at each sprinkler and any changes to the nozzle can be updated in the app without having to upload to the central control," he adds. "A GPS map can help locate sprinklers in the field. Having a map available can make sure none are skipped during inspection."

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distribution audit. Even more revealing is a before-and-after audit of the same area with existing conditions and after service, Roche says.

In modern systems, handheld controls – such as radios, phones or tablet devices – allow superintendents to activate sprinklers as they advance from one station to the next. "A distorted pattern, interference of the stream (typically from a low head), or an arc setting out of adjustment is usually quickly identified," Roche says.

Although time consuming, inspections can take place any time of the day and even during periods of light rain, when nozzles can be inspected and 66 Of course, large uniform circles of wet or dry areas that correspond to your sprinkler spacing is another strong indication that improvements are necessary. "

- Brent Harvey, Brent Harvey Consulting

there is good visibility on the sprinkler pattern.

"Simple service, such as confirming and replacing nozzles (if needed), correcting tilted rotors, ensuring arcs are set correctly and cleaning sprinkler screens, can have a very positive impact on water distribution," Roche says. "Some course management teams elect to inspect three to six holes every month, so the entire property is inspected at least once each year."

Roche reminds superintendents that one of the biggest impacts on water distribution uniformity is spacing. "A sprinkler cannot be expected to provide good water distribution if it is not located in the right place. Good performance should be expected when spacing is uniform and consistent, that the hydraulic network is sized correctly. In most cases, a sprinkler nozzle cannot overcome poor spacing."

Proper irrigation is vital to well-conditioned turf, and it is imperative, experts say, that nozzles be checked regularly and replaced when the situation calls for it to insure a uniform flow of water to the golf course. **GCI**

John Torsiello is a Torrington, Conn.-based writer and frequent GCI contributor.

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Lasting impressions

Three years ago, *Poa* cast a dark cloud over Andy Jorgensen's tournament prep and Katana saved the day. Now the versatile herbicide is part of his weed-control program.

By Rick Woelfel



ndy Jorgensen had a problem. Katana solved it for him. As superintendent at On Top of the World Golf Club in Ocala, Fla. Jorgensen tends to three 18-hole courses, two private, one semiprivate. The courses host a combined 120,000 rounds per year.

In March of 2014, Jorgensen was preparing for a tournament and found himself dealing with *Poa annua* issues. "We were having issues with treating *Poa annua* in the winter," he says. "We were having (herbicide) resistance issues and we really needed to switch to something that gives us a much quicker kill."



Jorgensen

A product rep suggested Jorgensen try Ka-

tana, a PBI-Gordon herbicide. He agreed and was immediately impressed. "We sprayed about two weeks prior to the event. It knocked (the *Poa*) down," he says. "It definitely knocked it out to where it wasn't visible anymore for the tournament. That's really what turned me on to it originally. Ever since we've been using it throughout the winter to try to clean up

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any breakthrough we get with the *Poa annua*."

Katana (Flazasulfuron) was introduced in 2010 as a control mechanism for Poa and other assorted issues. Since his first experience three-and-a-half years ago, Jorgensen has been impressed by its versatility. "We've adjusted over the last couple years," he says. "I think our program is pretty good. One thing that we did this past summer; a rep said it was also good for sedge control. So we did a little trial on traces of sedge with it. It actually worked really well for sedge control so we found some other uses for it."

Jorgensen applies Katana at a rate of 2 oz. per acre, ideally in December. "We try to catch (*Poa annua*) preventatively when the plants are still pretty small. But we've sprayed all the way up into March with some pretty healthy adult plants out there that are difficult to control. Katana knocks it out every time. Ideally we get it out earlier, the sooner, the better."

In addition to *Poa*, Katana controls tall fescue, ryegrass, sedges (yellow, purple, globe The golf courses at On Top of the World Golf Club in Ocala, Fla., host a combined 120,00 rounds per year. Superintendent Andy Jorgensen uses Katana as a method to control *Poa annua*.

and kyllinga) and *Poa Trivialis*, as well as some broadleaf and grassy weed control, says Jay Young, PBI-Gordon's herbicide product manager.

Jorgensen is impressed Katana is not as temperature sensitive as some herbicides. "With a lot of products, you must have warmer temperatures," he says. "With Katana, you don't have to have that."

"Katana shows very good activity when temperatures are cooler compared to other products used for the same weed control, making it a very good option for golf courses," Young says. "For those few courses that still overseed, Katana can also be used to transition out overseeded Bermudagrass."

Young notes there are no known resistance issues with Katana, but the product is only effective with certain species of turf. It can only be used on specific warm-season turfs," he says. "Bermuda, buffalograss, zoysia, centipede and seashore paspalum. Not all cultivars of approved warm-season turfs have been tested. It cannot be used on bahiagrass, carpetgrass, and St. Augustine."

Regardless of the agronomic challenges he may face at On Top of the World Golf Club's three courses, Jorgensen is enthused about having Katana in his arsenal.

"The product works," he says. "There's no doubt. It's faster than any other product on the market."

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LIVING WITH REALITY



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.

eality is often cruel and many times it just sucks, but we must deal with it as part of everyday life. What is real and what we perceive or want to be real are not necessarily the same thing. Usually reality is the harder of the two. The good thing about reality is that it is factual.

So, what does this have to do with irrigation? Well, today I am going to bitch about unrealistic expectations coupled with unrealistic budgets. Expectations are unrealistically high for budgets that are unrealistically low. Why do I bring this up? Lately, I am seeing irrigation system budgets that won't buy nine holes of new irrigation, let alone 18.

Now the domestic irrigation market is red hot. It's a contractor's market. There is more work than there are qualified contractors to install it. Material pricing for the non-hard goods (pipe, wire, fittings, valve boxes) are climbing. Having a hurricane wipe out a large percentage of the resin production for both PVC and HDPE didn't help matters. As far as the sprinklers valves and controllers (Hunter, Rain Bird and Toro stuff), that pricing isn't climbing as much as the manufacturers continue to be hugely competitive with each other, keeping those prices artificially low. Bottom line: already expensive irrigation systems are getting more expensive quickly, but the average board or owner - and to a

large extent the superintendent – have no idea how expensive.

Many irrigation designers budget based on the number of sprinklers to be installed. In most markets, the designer will know what the installed price per sprinkler is inclusive of pipe, wire, fittings, controls, valve boxes, sprinklers, etc. Therefore, once there is an "approved" sprinkler layout for a 9-, 18-, 27- or 36-hole course, then a relatively accurate budget can be established. Say the design is 1,400 sprinklers at \$1,300 each - that's \$1.82 million. You then add on other items, like pump station, pump house, wet well, lightning protection, demolition, electricity and the rock to give you the total project budget.

So here are a few examples of my frustration. A superintendent and designer develop an irrigation plan that meets the requirements of the golf course and the wish list of the maintenance staff, approximately 2,025 sprinklers. Irrigation system costs \$2.75 million; total project budget \$2.79 million. Budget is provided to the board and they say the project cannot exceed \$2 million. So, what happens to make the \$2 million budget? First, out goes the new pump station and its associated electrical work and permitting. Accessory items, lightning detection, and water transfer piping, valves and controls - gone. Demolition of the old system is now on the turf maintenance staffs list of

to-do's. This brings the cost down a little, but not near enough to meet the budget. So next out comes sprinklers. In this case, some 681 sprinklers to be eliminated from the wish list. Not a great situation, and it will be noticeable out on the golf course.

You meet the available funding, but the staff does not get what they think they need, so the course will spend \$2 million and not meet expectations.

Would they be better off waiting until they can have more funds available in a few years?

A designer sits down with a prospective superintendent client who wants an irrigation system and asks he/she where the club is in the process. Typical response: "Just starting," "Know we need one," "Few years out."

Next question: "Have you provided the board with any cost estimates?" Response: "Yup, told the board about \$1.5 million." Uh oh! That's not enough for this 18-hole course by about \$1 million.

The coverage layout and design for another 18-hole course is \$4.2 million. The board would like it to be only \$3 million. Superintendent says it cannot be done for that amount. One reason is that 20 to 25 percent of the budget is for rock removal – that number is fixed. Second, a reduced system will not provide the maintenance staff the tools to maintain the golf course the way the board wants. Board replies, "Bid it and see what happens." A solution, but is it realistic?

The point here is you must prepare your board, city or owner for the large cost of an irrigation system with a number that makes sense right up front as they are tasked with figuring out how to pay for it. The sooner you provide a realistic number, the better so they can plan to raise the available funds and set realistic expectations. Believe me proper budgeting up front saves a world of surprises, negotiating and discomfort down the road for everyone involved in this project. **GCI**

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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.

few years ago, when unemployment levels were double what they are today, most businesses could afford to dismiss this question as moot. People hurt by the recession and struggling to find employment wanted to work for anyone. That's no longer the case.

Labor is a serious challenge for many golf course owners, superintendents and club managers. At most golf-oriented clubs and courses, labor costs range from 52 to 55 percent of the overall operating budget. That alone makes recruiting and retaining capable workers a top priority. Beyond the financial implications, there are the service and reputational significance that make staffing your most important management issue.

You've probably heard that in many competitive industries there's an ongoing "war for talent." The competition for employees with talent, skills and experience recognizes that the best people usually make the difference between business success and failure. If you're in a tight labor market, or one with multiple club and course options, instead of asking if people want to work for you, the better question is "Do the right people want to work for you?"

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More and more of our clients are telling us that they're feeling the pressure to be an appealing place to work in order to attract top talent. In a recent Wall Street Journal interview, the head of one of America's largest employment agencies said many people now view jobs as temporary until their employer proves itself worthy of their time, energy and skills.

Being honest and showing a positive attitude helps employers stand out from the crowd, according to Bob Funk, CEO of Express Employment Professionals. Prospective employees have their own set of criteria. They want to work in a job where they matter, where they feel they can make a difference, and where they will be treated with respect. Interestingly, seldom is compensation the most common attribute that attracts – and keeps – someone.

Countless surveys of what matters most to employees offer multiple options. Boston Consulting Group surveyed more than 200,000 workers to identify the following 10 factors:

- 1. Appreciation for your work.
- 2. Good relationships with colleagues.
- 3. Good work-life balance.
- 4. Good relationships with superiors.
- 5. Company's financial stability.
- Learning and career development opportunities.
- 7. Job security.
- 8. Attractive fixed salary.
- 9. Interesting job content.
- 10. Company values.

COMMUNICATE DRUG POLICIES

It is difficult to locate prospective workers who consistently show up for work on time, learn the job and adapt to your culture. There is also the prickly problem of drug testing.

Thorough advance communications with prospective employees is a key. The employer should tell the candidate what the drug testing requirements are and which drugs are being screened. Other tactics for pre-screening include searching for low-income workers through temporary services; engaging faith-based organizations to source employees from their congregations and asking established workers to help identify prospects.

ATTRACTING MILLENNIALS SIMILAR BUT DIFFERENT

Gallup research found that millennials largely want the same things from their employers as most generations. They look for growth opportunities, great managers, and jobs that are well-suited for their talents and interests.

But there are some differences that employers should consider, including the fact that they're job hoppers. The Gallup study found that 21 percent of millennial workers left their job in the last year to do something else, a number that is more than three times higher than that of non-millennials who report doing the same.

"At their current stage in life, millennials fundamentally think about their role as a stepping stone and a growth opportunity. But they also want to feel deeply committed to their role and to work for a manager who will invest in their development," according to the survey's authors.

Although income is not among millennials' top five factors when applying for jobs, it still matters to them. Their particular interest in compensation is no doubt related to high levels of student debt and low wage growth during their early career years. **GCI**

2017 PREP GUIDE

2018: Are You Ready?

s 2017 comes to a close, we're left to ponder what 2018 will bring. We might have a mild winter, an early spring, and the turf pro's dream summer. Or just the opposite: summer could be a Pythium spore's dream, extra warm and humid. Or we might have a zombie apocalypse, where the undead wander the land, slowly dragging their feet across our greens and leaving divots everywhere. This uncertainty is why proper planning is so important.

A cool summer sounds lovely to both you and to Dollar Spot, so be ready for it with Kabuto[®] Fungicide SC. Kabuto offers both preventative and curative control of Dollar spot, and it can be applied up to eight times a year as part of a resistance management program.

If you're in a part of the country where a hot, humid summer is likely, Segway[®] Fungicide SC has you covered. Segway delivers consistent and rapid control of Pythium root dysfunction, blight, damping-off, and root-rot.

And, to help you be prepared for future fungi, PBI-Gordon is introducing a new tool in 2018: Tekken[™] Broad Spectrum Fungicide. With one punch, Tekken will change the way Supers fight turf disease.

Our zombie apocalypse control product is still in the idea stage. We'll keep you posted.

PBI-Gordon is honored to once again join Golf Course Industry in bringing you this Fall Turf Planning Guide. We hope it'll help you prepare for the coming season, whether it's a dream or a nightmare.

Sincerely,

Jim Goodrich Product Manager Fungicides, Insecticides, and Plant Growth Regulators

inside

EOP

SAFETY

EQUIPMENT

SPECIAL EDITORIAL SECTION SPONSORED BY







S MAXIMIZE Your EOP!

This fall, get the most bang for your buck from your Early Order Programs.

By Anthony L. Williams

his fall, is your intent to spend less money with Early Order Programs (EOP), or to invest in better products or other needs? Or both?

Since the beginning of the EOP era, there has been an

ongoing debate on whether the goal of a successful EOP program is to spend less money or to invest the EOP savings into better products or other operational needs, more effectively spending the same amount of money.

The truth is that it varies



from property to property and from season to season. Sometimes it is all about the savings and other times it is about upgrading to better fungicides or herbicides.

I asked a few of my superintendent friends this burning question about savings vs. reinvesting, and my unofficial nonscientific poll brought back some very interesting results. Amazingly, 100 percent of the superintendents that I polled said, "I want the freedom to be

able to choose all or part savings or reinvestment based on our situation at that time" and "EOP intelligently used gives me those options. It creates flexibility and stability within the chemical budget."

So apparently the old question is not really an either-orsituation, but rather it's more about creating opportunities to do more of what is needed depending on the fiscal and agronomic pressures present.

I recommend that coupling a strong Integrated Pest Management (IPM) program that captures accurate thresholds and actions data when used to facilitate an EOP seems to generate the right balance of information to make informed decisions on whether you should take the EOP savings to the bottom line to improve profit or reinvest in better higher quality products.

For example, if you had significant breakthrough on your fall/winter pre-emergent appli-

The important thing to remember is that successful EOP programs require a large dose of teamwork and partnership to maximize the value of the program."

cation, you may want to invest in a different active ingredient to control fall/winter weeds at a more acceptable level. However, if your property is having financial challenges and every dollar is needed to make it through the season to next year, then the choice is simple: Save the money.

No one knows your operation better than you, so at the end of this question, is the advice to use EOP wisely and give yourself options to either save or reinvest and make that choice with full confidence knowing the whole of your operational situation better than anyone on the planet.

When weighing EOP, what factors besides price are you looking at? So what other factors are there to consider besides price?

When it comes to EOP, price is often just the start of negotiations and I always suggest that you look at the total value of your individual agreements. I know that many people who do not utilize or see value in EOP programs say something like, "it is only a few percent cheaper than if I wait and only buy what I need in the month for the month." Depending on how well you shop and secure options, this could be true. However, I have had many years where we covered 90 percent of our chemical line

items through EOP and saved tens of thousands of dollars and benefitted from other perks of strong EOP partnerships. Here are a few things to look for in maximizing the value of an EOP beyond obvious pricing advantages.

- Delayed terms of payment. EOP invoices due in May, June or July of the following financial year improve cash flow.
- Special delivery dates or product warehousing or storage.
- Gift cards or other loyalty items for spending at agreed upon levels.
- Free attendance at regional EOP/product trade shows or education.
- Program warranties. Buy partnered products, apply at recommended rates and intervals, and should the product fail to perform, free additional product will be provided to ensure satisfaction. An example would be

products for pre-emergent weed control backed by post-emergent products provided free if outbreaks or weed pressure occur. Insurance to reduce the risk of trying new or different technology during an EOP buying period.

Product support. How strong are the vendor representatives and the relationship to the club and/or superintendent? Can they be a resource toward the success of the product or assist in problem solving?

The important thing to remember is that successful EOP programs require a large dose of teamwork and partnership to maximize the value of the program. It is quite common that price is only the first consideration when choosing EOP products and programs. EOP should be as unique as the superintendent and the property that he manages.

My 35 years in the business have shown me that solving the riddle of EOP is sometimes as simple as asking a few fellow superintendents for some advice. One great way to do that is call a few local superintendents, schedule a pre-EOP lunch and exchange some ideas. A well-timed call to an EOP vendor may even be willing to pick up the bill for lunch in exchange for a few minutes of face time. **GCI**

Anthony Williams, CGCS, is the director of golf course maintenance and landscaping at the Four Seasons Resort Club Dallas at Las Colinas in Irving, Texas.



SAFETY FIRST

Post-season SAFETY

As the season winds down, safety expert Mickey McCord offers pointers on how to ramp up your training this fall.

By Mickey McCord

any aspects of your work as a golf course superintendent are dictated by the season. I don't mean golf season, I mean the meteorological seasons. Not just the dates on the calendar, but first frost, last frost, soil temperatures, number of growing degree days, daylight hours and other weatherrelated factors that change as earth makes its annual trip around the sun — a busy season and what is often referred to as the offseason.

When it starts, and just how

"off" your offseason is, depends on where you're located, but many superintendents are about to enter the fall season. This usually means less time spent on routine maintenance, and more time for projects, equipment maintenance and restoration. It also means you'll have time to catch up on various administrative tasks such as budget preparation; employee evaluations; inventory and ordering chemicals and supplies; evaluating and updating safety programs. But before I go any further, I want to be perfectly clear on this — safety training



is not an offseason task. The full benefits of safety training are only realized when you hold regularly scheduled training sessions throughout the year.

OK, so safety training is important throughout the year, but there are some other safety practices that are well suited for your offseason. For any program to be successful over the long haul, it should be evaluated periodically to identify what's working and what's not. One of the best ways to evaluate your safety program is to review your record of accidents and injuries through the year. You are keeping a written record of work-related injuries, aren't you?

OSHA FORMS 300, 300A AND 301

The Occupational Safety and Health Administration says keeping track of work-related injuries and illnesses, and annually reviewing that record, can help you prevent accidents in the future. That is one of the reasons OSHA requires employers to fill out form 300 for any workplace injury that results in:

- · Days away from work.
- Restricted work or transfer to another job.
- Medical treatment beyond first aid.
- Loss of consciousness.
- A significant injury or illness diagnosed by a physician or other licensed health care professional.

I know what you're thinking, "oh no, not another government form to fill out." But contrary to what you'd expect from government paperwork, this one is organized and easy to fill in. You simply record the name of the person injured, when and where the injury happened, the nature of the injury, and if any work days were missed. Keep in mind, some injury or illness information can be considered personal and confidential. There are guidelines for protecting the employee's privacy, including leaving their name or other identifying information out of the report for certain qualifying injuries.

You're also required to compile an annual summary form 300A, and complete an Injury and Illness Incident Report on form 301. If you're not familiar with OSHA form 300 and related forms 300A and 301, you can download the forms and find more information at www.osha.gov/recordkeeping.

The Injury and Illness Incident Report, form 301, is a little more involved than the 300 log, but not any more complicated. Form 300A, the Summary of Work-Related Injuries and Illnesses, is just a tally of the total number of injuries and days of work missed from the 300 log.

When evaluating your programs, you need accurate data, and the more information you have, the better. These forms provide the information you need to identify hazards, train employees, and reduce accidents and injuries.

If you have less than 250 employees, you don't have to submit these forms to OSHA, but Injury and Illness Incident Reports, form 301, must be kept on record for five years, and the annual summary, form 300A, must be posted and available for all employees to review from Feb. 1 to April 30 following the year reported.

WRITTEN PROGRAMS

Written plans and policies are a cornerstone of a comprehensive safety program. You probably already have policies in place addressing each of these safety issues, but you may not have bothered to formalize that policy by writing it down. The offseason is a great time to do that. It might seem like a lot of trouble, but taking the time to write something down shows a level of commitment beyond just saying it.

Start with a written Safety Policy Statement that outlines your commitment to safety. It basically says, "We take safety seriously and will provide a safe work environment, follow safety regulations, and train our employees to recognize and reduce workplace hazards." You'll also want to include sections on employee expectations, conduct and discipline; accident investigation and hazard correction; and record keeping.

Your written Fire Plan includes details about physical structures, potential fire hazards, fire prevention policies and instructions on what to do if there is a fire. These are all things you've probably thought about. Now take a few minutes, write them down and share them with your crew.

There are five parts to a Hazard Communication Plan. You probably have the first four covered, but many superintendents are not aware of the written plan requirement.

1. Keep a written inventory of all hazardous materials.

- 2. Have proper labels on all hazardous materials.
- 3. Have SDS sheets available for all hazardous materials.
- 4. Train your employees to recognize and handle hazardous materials they may encounter while performing their job.
- 5. Have a written Hazard Communication Plan.

Your written Hazard Communication Plan simply ties this all together. It's a clear statement of how you will comply with the program, where the inventory and SDS book is located, and who is responsible for administering the program.

Finally, a PPE Assessment is a list of the Personal Protection Equipment required to operate each piece of equipment or perform a specific task. Operators manuals for each piece of equipment will have a section on required PPE. Make a chart or spreadsheet with jobs on one side and a list of required and recommended PPE next to each job. I've seen a PPE assessment laid out with pictures, and it's a very effective way to communicate.

There are many benefits to evaluating a safety program and writing clear policy statements during the offseason, but the most important benefit is the clear message you send to your crew that you care about them and want them to go home each day in the same healthy condition they started it. **GCI**

Mickey McCord is the founder of McCord Golf Services and Safety, providing safety training for superintendents and turf maintenance crews.



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THE FULL Fall Treatment

From greens mowers to hand-held trimmers and everything in between, there's a laundry list of equipment to prep for the offseason.

By Paul Grayson

o make sure I don't miss any equipment I am using, my numbered Equipment List to check that end-of-season action is taken for each of the machines listed on it.

As each of our riding reel mowers (greens, tees and col-

lars, fairway, and rough) finish mowing for the last time, I bring them through the shop and take the reels off. The loose parts get put in a soup can that rides on the floor boards. That way the parts I will need six months later to put the reels back on stay with the mower

they fit.

The reels get put into neat rows to be picked up during the winter by the service company that will spin grind them, replace the bedknives, and replace all the bearings and seals. The bearings seem to last about a season-and-a-half, so changing them each winter eliminates them failing during the season.

Each time I work on a machine I record the engine hours and compare it to the sticker that says when the next oil and filter change is due. Any at or past the mark get an oil and

THE NEW GUY PACKS A PUNCH



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- Kabuto[®] Fungicide SC: Excellent control of dollar spot; Can be applied up to eight times a year as part of a resistance management program.
- NEW Tekken™ Broad Spectrum Fungicide: One application rate to control dollar spot, anthracnose, and brown patch, plus the most problematic diseases in turf; Lasts up to 28 days.

Be ready for anything 2018 throws at you: Make Segway, Kabuto, and new Tekken part of your turf disease defense plan.



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Let there be light

This will be the first fall and winter with the new LED shop lighting. The bulb color is "Arctic White" and should chase away the blues for anyone using the shop during the shortened daylight hours. The bulbs are expected to last 25 years and use only a fraction of what the fluorescent lighting they replace was using. They run on 110 V AC and need no ballast. All together this should reduce the maintenance workload for the club's one-man repair shop.

filter change. This reduces the number of seasonal oil changes I need to do at the end of the season.

Every fuel tank gets a shot of fuel treatment in the last few days. The machines get moved a few times before the final dense packing parking for the winter, which allows the fuel treatment to be drawn into the complete fuel system making the machine easier to start in the spring.

Utility vehicles get used a bit more into the fall season. They too are on engine hour meter oil change program so they do not need to have their oil changed unless they are due.

Other machinery that has been out for the last time, like the aerifier, topdresser and sod cutter, get their shot of fuel treatment and final battery charge.

This year I don't have to do anything to the two beverage carts. The maintenance of them has been removed from my department and is now handled by the leasing company and the drivers. In the past, a lot of my time had gone into keeping the old beverage carts running. That is what makes leasing new equipment with a service plan economical.

The tractors live outside behind the building so I must not forget them when distributing the fuel treatment. The fuel treatment I use is good for both gasoline and diesel fuel so only one type is required to do all the fuel tanks I own. The assorted collection of fuel cans need to be filled in the fall in case they are needed during the winter, and fuel treatment is added to preserve the fuel until spring in case they are not used before green-up activities.

The plow truck, the rough mower (#12 with a cab), the Cushman dump truck, two tractors and a Ditch Witch live outdoors and need their fuel treated. Running it for a short while after adding the fuel treatment will also make sure that it ends the season with a fully charged battery.

Batteries are charged so they don't freeze and left in their respective piece of equipment, ensuring the equipment can be started during the winter if it needs to be moved for any reason. I have extra cans of starting fluid stocked in the shop to help start any engine that is reluctant because of the cold.

As soon as the mowing is ended, the #12 rough mower needs the mowing deck swapped out for the street sweeper brush for winter snow management. It is great for clearing light snow and will be needed in the spring to get the road sand and gravel out of the grass and back into the

Small portable and hand-held equipment

Because most of the equipment will be in cold storage, serious attention needs to be paid to anything that may have water trapped in it. It is best to open things like the trash pump to drain and dry out – and leave them apart until needed in the spring. The high-pressure washer needs to be stored in heated storage because I am not sure how you could get all the water out that would freeze and break it.

Like the larger stuff with engines, all fuel tanks need to be full and fuel treatment added then run a little bit to get the fuel treatment throughout the fuel system before putting them away for the winter.

Hedge trimmers, weed eaters, chainsaws, backpack blowers and leaf blowers have two cycle engines and no crank case oil to change. If they were in good working order in the fall, they should start right up in the spring.

The high-pressure washer, trash pump, walk-behind blower and walk-behind rotary mowers all have four-cycle engines with oil that needs to be changed in the fall.

A new spark plug for each portable engine in the spring will ensure that the machines will be at their best.

Most of the hand-held and portable equipment is made by foreign countries for the world market where ethanol is not added to their gasoline, meaning they are not made with ethanol safe materials. After several costly repairs, all gasoline at the Crown Golf Club is now Recreational Fuel containing no ethanol so there will be no confusion as to which fuel is for what machine.

Garage bicycle hooks screwed into the underside of the beams of the cold storage mezzanine allow the small portable engine driven tools to be hung up at about eye level. This organizes them and gets them up off the floor so they are not under foot or run over when the larger machines are being moved around.

The gas cans are raised up off the floor on a half-wide palette pushed up against the wall. This keeps the bottom of the fuel cans dry and creates a designated parking place for them.

shoulder of the road.

The seven-deck rotary rough mower gets a set of freshly sharpened blades.

The tree spade is parked in the weeds and receives a shot of fuel treatment. Mothballs need to be put in the cab and under the hood because rats like to make it a home in the winter and they gnaw on the ignition wires like it is red vine licorice.

If you're running out of time for repairs, any that can wait until spring need a note taped to them as a reminder of what needs to be done to it. When dealing with anything that has a battery in it, the batteries need to be in a charged state to keep from freezing. Because the machinery in cold storage might need to be moved in the winter, it is best to keep it in running condition and not take the battery out. **GCI**

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.

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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.



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.

FERTILIZER SPREADER EASY TRANSPORT

This Scotts Accu Pro 2000 Rotary Spreader is transported easily without tipping over on this 2006 Yamaha G22 Golf Cart. A 12-inch by 16inch by ½-inch thick solid steel plate with rounded corners for employee safety (recycled from a Ping golf club display) is welded to a 3-inch door hinge that is bolted (¼ inch) to the floor so that it can lay flat when not in use. It took about 1¼ hours and \$10 for materials. Jeff C. Murdock, superintendent, and Dennis Jablonski, retired mechanic, at the Purple Sage Golf Course in Evanston, Wyo., conceived this great idea that has been in use for eight years. I first learned about this idea from David Phipps' blog.



GRASS CATCHER ALTERNATIVE BRUSH

nstead of using a brush assembly mounted in front of the grass catcher, a standard door mat (\$15 each) obtained from Bed Bath & Beyond was pop-riveted without glue to the bottom of the grass catchers on six John Deere 220E Walk Behind Greens Mowers. The door mat is cut to 21 inches and mounted on some used grass catchers acquired from the local distributor. It follows the greens

contours and brushes the green, standing up the turf without any damage whatsoever and does a very nice job of reducing grain. The only caveat in using them is to blow the brush off between each green to keep it clean. They are used randomly whenever the greens are getting a little grainy. They last about one season and have been in use the past two years. It takes about 20 minutes each to install. Scott E. Niven, CGCS, at The Stanwich Club in Greenwich, Conn., is the inventor.



OUTSIDE THE ROPES

(MORAGHAN continued from page 52) brain after seeing, touching, smelling, hearing for yourself.

The next generations want to change the world and feel empowered to do so. And you know what? I like that and agree: It's going to be their world real soon and we should do everything we can to help them make it a better, safer, more enjoyable world. But many of them simply don't have the practical knowledge or real-life skills and are not experienced at life just yet to do that in a proactive way. They know how to harness technology and see things we never could from these marvels of modern life. But we can teach them that it takes real-life hard work and something I can only call "human" to bring it all together and make it matter.

Most of the young people I know are into things retro, whether it's clothing or music. How about this for retro: Like your mother told you, go outside. Old school is still cool.

For more on this topic, see my Golf Course Industry column from April 2014, Art Versus Science: Is science taking the art out of growing quality turf grass? Enter https://goo.gl/zJfmKN into your web browser to read the column. GCI

DESIGN CONCEPTS

(BRAUER continued from page 38)

I have created berms that force fast flowing water from directly entering the golf course, but allow it to "back in slowly" from the low point, to reduce erosion damage while maintaining flood storage capacity.

SPEEDLOOD WATERS UP – Sometimes, creek bends cause water to back up. Without touching the stream we have created straighter "short cut" channels just above the fast flow line that keep water flowing away from critical areas.

IRRIGATION SYSTEM – When installing any new system:

· Elevate pump station and controllers

on earth fill above flood levels.

- Put computer system on second floor
 of maintenance building
- Use 2-wire decoder system to minimize wires and controllers.
- Use 18-inch swing joints instead of 12-inch to make periodically raising sprinkler heads above new silt caused grades easier. GCI



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PARTING SHOTS

OH SNAP!



Pat Jones is editorial director and publisher of Golf Course Industry. He can be reached at pjones@gie.net or 216-393-0253.

couple of months ago, I banged the drum about my 30th anniversary of working in the turf biz. Yay for me and all that... but we're also sneaking up on the 30th anniversary of something vastly more important: digital turf information.

Yup, about three decades ago in 1988 a thing called TurfByte was born. It was hacked together by a few pioneering supers (Duane Patton of Lawrence CC was one key player and the legendary Jon Scott was in early). The genius behind it was the late Dale Gadd who was a writer at GCSAA by day and a computer wizard at night.

TurfByte was a bulletin board system, a very primitive forerunner of the message boards popular in the '90s and '00s on AOL, Yahoo and other platforms. (If you're old like me, you still despise even the thought of dial-up modems and those stupid LCD screens that looked like a broken Etch a Sketch half the time.)

TurfByte attracted about 20 supers and others around the country who possessed the ridiculously expensive PC, a cutting-edge 1200-baud modem and who would log on, post a question and wait for one of the other 19 to maybe provide an answer. Predictably those running GCSAA back then were more worried about TurfByte being used for association politics and gossip so they basically disavowed it. Ironically, the ugly launch of the "new" GCSAA bulletin boards 10 years later proved them right.

Obviously things have changed pretty dramatically in three decades and we now live in a world of Google, Facebook, Twitter, Instagram, Snapchat and instant everything.

Today's publishing tools might be space-age, but my job remains fundamentally the same as it was in 1988: Deliver useful information that helps turfheads do their jobs better. The question we face every day is how to do that in a world where GCI is quite literally active on 11 different platforms daily?

We did a broad survey last month to find out. So here are the latest facts and figures about how y'all use print, web, digital and social channels.

First, you still clearly want to read the magazine's print edition. Nearly 75% of you were just as likely to read the printed version of publications like GCI or GCM as much as you did five years ago. In fact, the research said that demand for print readership was just as high as it was 10 years ago. In short, you still like the ability to hold the publication in your hands, keep them on a shelf, share with staff and, of course, read on the crapper.

But what about social media junkies like me? Are they still reading the print magazine? Ahhh...yup. Even among the 60% of you who said you use Twitter or Facebook regularly, there was virtually no drop in print readership. Only about 6% said, "I don't read print because I get what I need online." Again, that jibes with data we collected a decade ago. People aren't reading less printed material, they're reading more of everything on multiple platforms. In dietary terms they aren't just carnivores or vegetarians – they're omnivores who consume media across different channels for different reasons on different days.

And what about social media? We asked how many of you actually used Twitter or Facebook for work. About one-third of supers said yes to both channels. Facebook, surprisingly, remains just as popular as Twitter as a place to find business information. That said the discourse on Twitter seems a lot more professional.

Now are there more turfheads out there on social media who chose to answer "no" because they feel they don't use Twitter or Facebook for "work." Certainly. Dr. Micah Woods, Dr. John Kaminski and I got together a couple of years ago and estimated that there were 28,000+ turfheads globally on Twitter alone. GCI has 13,400 Twitter followers and GCM has about 9,700. The "Golf Course Maintenance" group that Gary Grigg started on Facebook has nearly 10,000 members from all over the world.

Although some social channels are awesome, some are less so. Only 8% of you said you used Instagram for work and -5% of you use SnapChat. (Kidding! But almost no grown men will admit to using SnapChat unless, like me, they have daughters who use it as their primary form of communication with the world.)

There's more great information in the study about how turfheads consume information but I'm out of space here in the old-school, linear, dead tree edition. If you want a copy of the results, just email me. Or text me, or message me on Twitter, or Facebook, or LinkedIn, or comment on our Website or, best of all, send me a Snap! All the cool kids are doing it! **GCI** Take advantage of expanded products and earn more this season.

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