

Issue 2 | Spring 2010

BY DESIGN



Excellence in Golf Design from the American Society of Golf Course Architects

Great golf,
with less water

Also: Golf Consumer Trends • Designer Soil • News from GIS • Lifecycle of a Course

See the future of golf course irrigation
and learn how to use up to 90% less wire
at www.rainbird.com/ICS



Using less wire
by getting straight
to the point.

That's intelligent.



The innovative Rain Bird® ICS™ System uses up to 90% less wire by directly linking your rotors and central control. The groundbreaking Rain Bird® ICS™ System saves you time, money and labor by using up to 90% less wire than other control systems. Advanced diagnostics even let you troubleshoot from the convenience of your office. Proving less really is more. That's The Intelligent Use of Water.™



RAIN  **BIRD**®

We are delighted to bring you the second edition of *By Design*, the publication of the American Society of Golf Course Architects. Our focus is on excellence in golf design, and in each issue we look at aspects of the industry that shape the experiences of course designers.

In this edition, we look at the many ways in which golf impacts the environment. Our cover story examines how golf courses affect the water resources of communities, and asks how golf course architects can plan courses to conserve water and work harmoniously with the needs of local communities.

Following the introduction of the much talked about groove rule change in January, we take a look at the early implications for the game (page 7).

Decisions about materials can have far-reaching consequences for the environmental footprint of a golf course. On page 14, Joe Betulius of Profile Products explains how the right turf amendments can make the difference between a course that is constantly thirsty, and one that fits well with its surroundings, whatever the climate.

We also report on all the latest developments from the Golf Industry Show in San Diego (page 5), where Adam Lawrence talked to ASGCA members about their hopes and plans for the coming year.

Enjoy reading the magazine!

Yours sincerely,



Erik Larsen
President 2010-2011
American Society of Golf Course Architects

BY DESIGN

Editorial: Adam Lawrence and Michele Witthaus; **Design:** Paul Robinson; Bruce Graham;
Publisher: Toby Ingleton; **Editorial contributors:** John Last; Joe Betulius; **ASGCA Staff:** Chad Ritterbusch;
Therese Johnston; Mike Shefky; Aileen Smith; **Photography:** Aidan Bradley, Kemper Sports, canstock-
photo.com and Istockphoto.com **Subscribe to *By Design* at** www.tudor-rose.co.uk/bydesign

© 2010 American Society of Golf Course Architects. All rights reserved. www.asgca.org

By Design is sponsored by:



CONTENTS

Digest 5

A roundup of some of the most significant happenings in golf over the last few months.

Golf and water 8

Without water, golf cannot survive. Golf course architects have a role to play in reducing water wastage.

Consumer trends 12

Time-pressed golfers need easily accessible, family-friendly facilities, says Jon Last.

Turf decisions 14

Many golf courses have poor soil composition. High-quality amendments can help, says Joe Betulius.

Lifecycle 16

All the elements of a golf course need replacing eventually. Our handy chart explains what to tackle when.

Cost of the game 18

Is golf just too expensive? Adam Lawrence examines the delicate balance between golf and money.

COVER



Tom Fazio's Mountain course at Ventana Canyon in Arizona: Minimizing turf areas to reduce water requirement



SHARPEN YOUR INSTINCTS.

The new Lynx™ Control System from Toro Golf Irrigation helps superintendents do just that.

Your golf course often demands quick thinking and swift action in order to maintain optimal playability, while best managing resources. Now there's a faster, easier way for superintendents to act on their course management decisions. The smart Lynx Control System was developed to give superintendents intuitive control over what happens on a course by making all essential irrigation information readily available in one place.

Lynx is the latest advancement in Toro's complete portfolio of irrigation solutions. Switch to Lynx, and begin to run things your way.

©2010 The Toro Company. All rights reserved.



Count on it.

www.toro.com/Lynx

Development | Adam Lawrence

Golf operators encouraged to 'keep it simple'

ASGCA member Greg Martin told a seminar at the Golf Industry Show that clubs and course operators should focus on keeping the game as simple as possible to attract new golfers and retain existing players. "The main thing is to keep the main thing the main thing," he said. "In golf, the main thing is golfers."

Martin said that the barriers to entry that are generally cited as key in golf—cost, time and difficulty—are no different now than in the past. The key, he said, was to focus on making courses both accessible and interesting. He argued that excessive length, although desired by many developers for marketing purposes, was a problem for many reasons. "An extra 1,000 yards on the golf course can add 100 percent to the cost of a project," he said. "Yet ten of the top 21 courses on *Golf Digest's* US list are less than 6,900 yards. Golf needs to be shorter and wider if it is to grow, because that will make it quicker, cheaper and less intimidating."

Arizona-based architect Forrest Richardson gave the seminar his thoughts on how course upgrades could be funded. Richardson cited his firm's work at the Arizona Biltmore resort's Adobe course in Phoenix. Adobe, originally designed in the 1920s by architect



Regeneration through golf at Chambers Bay in Washington, USA

William P ('Billy') Bell, had drifted away from its original look and feel over the years, and, because of its tight site—only 104 acres—and the expensive real estate that surrounded it, there was little obvious scope for improvement. Despite this, Richardson was able to carve out two parcels of land that were sold for condominiums, raising US\$20 million and more than funding the restoration of many of Bell's original features to the course. "There are many potential pitfalls in this kind of project," Richardson said. "Liability is an obvious issue—will the course be safe?—and there are issues as to whether a golf course will be viable if reduced in scale. But if the land can

be made available to fund an improvement project, then at least we may be able to help the golf course survive. The key is planning, and making sure that we don't ruin the golf course in the process!"

At the same seminar, incoming ASGCA president Erik Larsen of the Arnold Palmer Design Company discussed alternative uses of golf courses, citing his firm's Eagle Ranch project in Colorado, and suggesting that courses should incorporate trails for walking, cycling and horseback riding, or lakes for fishing. Robert Trent Jones Jr spoke about how the development of Chambers Bay in Washington has regenerated a previously compromised piece of land.

CMM launches golf salary survey


Golf recruitment specialist Colt Mackenzie McNair is launching its inaugural *Golf Salary & Benefits Study*. The study will be published in April 2010 and will collate remuneration, benefits and staff development information.

The firm hopes the report will give employers and potential candidates detailed information and insight into current business practice, focusing on salary and benefit benchmarking, demographics of senior managers and staff development patterns and analysis.

CMM director Richard Wood said: "We're urging all stakeholders in the golf industry to take part in this study. Their input will enable us to publish the most comprehensive, valuable and useful insight document of this type. There is a distinct lack of accurate and credible information about salaries and benefits in the golf industry and this study will be highlighting the packages currently on offer across the various regions. We are sure employers will be able to use this information to attract and retain the best people."

To take part, visit www.coltmm.com/salariesurvey.





#5 FarmLinks Golf Club, Sylacauga, Alabama



GOLF IS FULL OF TOUGH CHOICES

THIS ISN'T ONE OF THEM:

On your next project, partner with Profile® for our consultative services, and a full line of erosion control and soil amendment products.

IN THE GROUND

Profile® Porous Ceramic is an inorganic soil amendment specifically designed to improve the root zone, and promote healthy turf establishment. Join the thousands of courses constructed with Profile to ensure the success of your greens, and realize long-term cost savings.

ON THE GROUND

Profile's industry-leading line of erosion control and vegetative establishment products helps you quickly stabilize soil and establish healthy stands of turf on even the most challenging sites.

BY YOUR SIDE

Profile's staff of agronomic experts can help provide site solutions and guidance on any design project. We provide root zone mix testing, site evaluations, and full consultation to help you succeed.

To partner with Profile Products on your next project, visit www.profileproducts.com or call (847) 215-3427.

Profilegolf™

PROFILE Products LLC • 750 Lake Cook Road, Suite 440
Buffalo Grove, IL 60089 • 847-215-1144 • www.profileproducts.com

©2009 PROFILE Products LLC

Profile Golf and Profile Porous Ceramic are trademarks of PROFILE Products LLC.

Groove Change | Michele Witthaus

Getting into a new groove

At the start of 2010, the first phase of the new club groove rules came into play, with professional golfers required to abide by the changes. The banning of U-shaped grooves (which has allowed players to ignore fairway lines, spinning the ball even from the rough) is widely expected to encourage players to approach the game in a more traditional way, with renewed emphasis on driving accuracy.

ASGCA member Steve Smyers said that the new challenges posed to the game by the groove change could represent an opportunity for course designers. “There used to be a strong correlation between driving accuracy and people who would always finish at the top of competitions, but that correlation has gone to zero over the last 20 years. I think the groove change is going to put a huge emphasis back on driving accuracy. For architects, this brings a tremendous element back into our design, giving us the opportunity to make golf courses more interesting and creative. So I think this is the best thing that’s happened in years for golf course architecture.”

Steve Otto, the R&A’s director of



Even with added length, Pebble Beach is short by recent US Open standards. Will the new groove rules offset its relative lack of distance this June?

technology, said that the characteristics of individual venues would strongly influence the effect of the groove change on actual play. “On a links course, when you’re 50 yards out and you’re going to play a bump and run anyway, grooves probably won’t have that much effect. Whereas if you have to get over a lake and stop the ball on the green, you are going to see a lot more effect.”

Otto warned against over-hasty analysis of data in the early months following the groove change. “To really measure the changes, we need to see a range of tournaments where

they’ve measured the conditions.” He said that the R&A would continue its regular practice of analysing ShotLink data from the PGA Tour. “We get the data on something like 200,000 shots a year, which is immensely helpful.”

Elite amateurs will only have to transition to the new groove in 2014, and all other players will follow in 2024. However, Otto remarked, “We are already starting to get quite a lot of enquiries from amateurs wanting to make sure they’re playing with products that meet the new specifications. People want to abide by the rules, even where they don’t need to.”

Economy | Adam Lawrence

Optimistic outlook at GIS

Consensus opinion at the recent Golf Industry Show is that golf was starting to pick itself up after economic travails of the past year and a half. Activity is, however, patchy and highly dependent on location. Feedback from architects, suppliers and other industry figures varied from ‘It’s still as bad as ever’ to ‘We are actually pretty busy’.

For those firms who have established a good practice in emerging markets such as China and Korea, work is less hard to come by. Clubs around the world remain cautious about undertaking major renovation work,

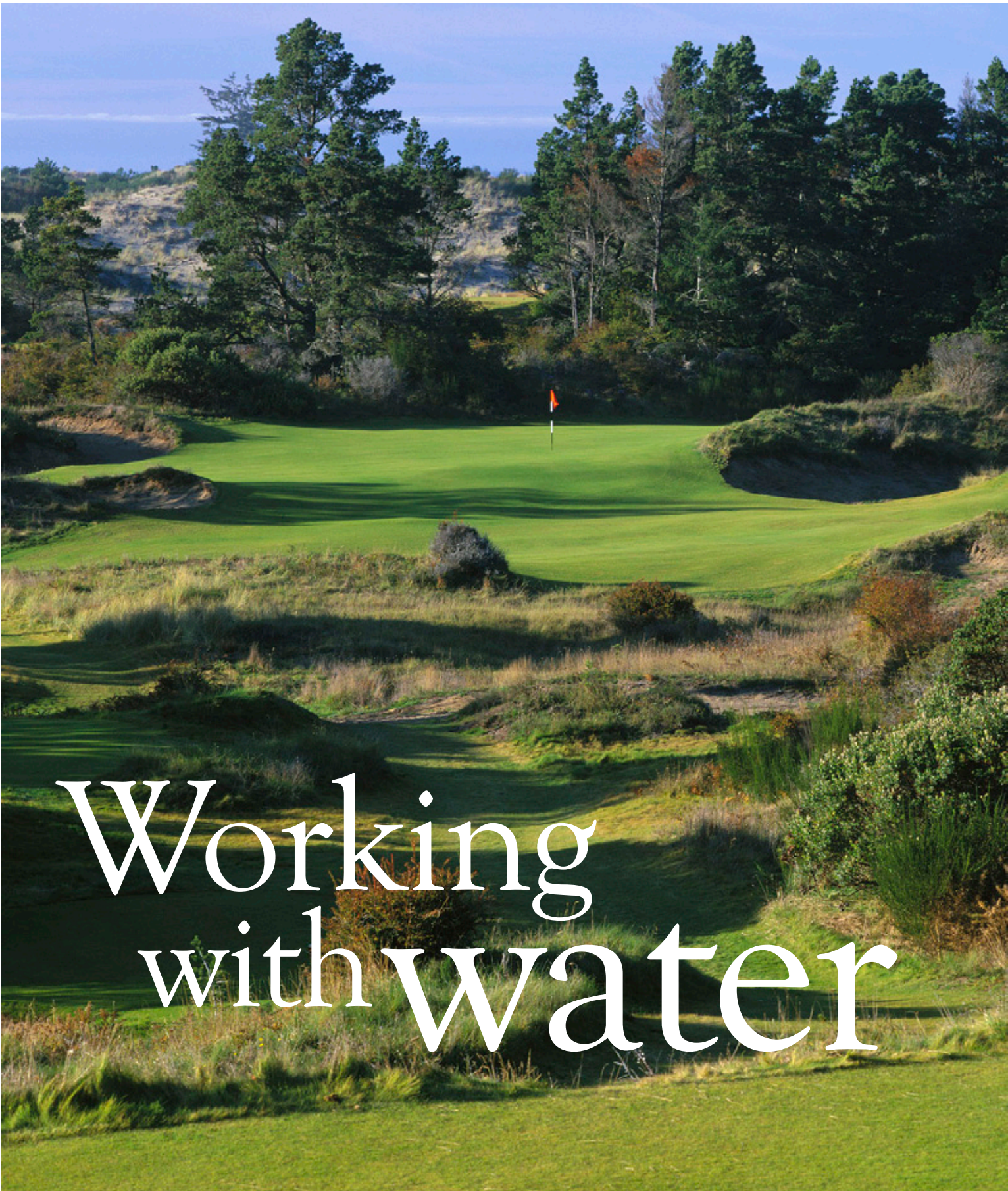
but are realising that improving their courses is a potential source of competitive advantage in a membership and player market that is likely to remain tight for some time to come.

Credit markets are still sticky, with little movement from lenders. But perhaps not as bad as some fear. One industry insider told *By Design*: “Things were never as locked down as everyone thought this time last year. You have to have a very strong, well capitalized project before the banks will take you seriously, but if you match this description, there are funds available.”

Toro commits to Haiti relief

The Toro Company has donated \$10,000 to the American Red Cross International Response Fund for relief efforts following the earthquake in Haiti. The company also announced that it would match all employee contributions to the Red Cross until March 1, 2010.

Judson McNeil, president of The Toro Foundation said: “At Toro, thoughts go out to those impacted by this disaster we support the Red Cross in their relief efforts and the long-term recovery and rebuilding process.”



Working with water

Bandon Trails, designed by Bill Coore, ASGCA and Ben Crenshaw: the Bandon courses have very sophisticated irrigation systems, but use them sparingly to deliver fast and firm conditions. Bandon also uses recycled water for irrigation



Water, its availability and cost, is a central strategic issue both for potential new golf developments and existing courses around the world. Adam Lawrence asks what the industry can do to alleviate the water problem

Unless you are prepared to play on sand, or to invest in a huge quantity of artificial turf, without water golf is impossible. Water shortages can be survived, water quality issues can be overcome and high water costs can be mitigated, but the absence of water means no golf. Water and golf are inextricably linked.

Across the world, water is becoming an ever-greater issue for society as a whole. Climate change, whatever its causes, the growth and mobility of human populations and our increasing thirst are making water a political football to a degree never previously known in most parts of the world. As far back as 1995, World Bank vice president Ismail Serageldin observed ‘the wars of the future will be fought not for crude oil but for water’, and the United Nations has issued warnings about the dangers of desertification in several parts of the globe. For golf, access to, and the sensible use of water, is a strategic issue.

Everyone involved in the global golf business is aware of the political hostility towards the game that exists in many countries and regions. Water is at the root of much of this disapproval, and it’s not hard to see why. In an area such as the Murcia region of Spain, which is essentially becoming a desert, no-one should be surprised that there exists a great degree of local disquiet about the development of golf courses.

Yet, of course, there is another side to the story. Golf, as many in the industry have been at pains to point out, is typically lighter on

the surrounding environment than agricultural use of the same land; in that same Murcia region of Spain, a huge and thirsty glasshouse economy has developed, supplying out of season fruit and vegetables across Europe. While it’s clearly true that food is more important to human beings than golf, no-one ‘needs’ strawberries in January. Nevertheless, the ‘We’re not as bad as you’ argument is a dead end for golf. If the game is to progress, it must prove to the world at large that it is serious about water.

There are a number of ways that this could be done. Talk to golf’s water experts, the irrigation suppliers, and the message you will get is that system efficiency is key. Old irrigation systems, the argument runs, waste water, because they lack control, and thus the superintendent applies more than necessary out of caution. “The sophistication of the physical system—how many sprinklers you have, how far apart they are, the level of control you have—dictates efficiency,” says Stuart Hackwell of Rain Bird. “You have sprinklers because you need water at times, but you don’t need to run them all the time. Bandon Dunes has a very sophisticated irrigation system, but it is among the firmest, fastest playing surfaces you can find. They only use the system when absolutely needed, which speaks to good irrigation management.”

Steve Snow of competitor Toro echoes this view, but adds: “Consistency is really important. If you have sprinklers with different circle speeds, then obviously you will set your run time for the slowest. But

the quick ones could put down twice as much water in that time.”

Irrigation systems, though, are expensive, so, with an eye to current golf industry priorities, the suppliers are pushing a message of cost-effectiveness. Specifically, they want to talk about low-cost upgrades such as sprinkler nozzles. “In the last ten or eleven years there have been really dramatic improvements in irrigation technology,” says Hackwell. “If you have a ten-year old irrigation system your sprinklers are probably still working fine, but if you purchase new nozzle kits to upgrade to the latest nozzle technology—which are less than a \$20 purchase—that will increase efficiency a great deal.” Snow cites a particularly impressive example. “We can upgrade a 30 year old sprinkler to today’s technology,” he says. “At one South Carolina course that was under severe drought restrictions, we were able to help save five million gallons of water by installing new nozzles.”

The issue with sophisticated irrigation systems, though, is that they are expensive. Accepting the industry’s point that retrofitting earlier systems to achieve state-of-the-art levels of control can be done relatively cheaply, it remains the case that the industry has spent a great deal of money on irrigation in recent years, money that—at the moment anyway—most courses don’t have. With the cost of sophisticated new irrigation systems regularly running into seven figures, this is a solution only suitable for a small proportion of golf courses. Sustainability, the buzzword of the moment where golf is concerned, means that courses must be economically viable, as well as environmentally sound.

To the irrigation industry’s credit,



The Geronimo course is one of six designed by Jack Nicklaus, ASGCA at Desert Mountain, all subject to Arizona’s law restricting irrigated turf area

suppliers are now talking about how, when and why courses might choose to limit their use of their systems. “What is driving up the cost of irrigation is the desire for manicured grass wall to wall,” says Rain Bird’s Hackwell. “If we are going to maintain those green-everywhere courses and manage water efficiently, then we’re going to need bigger and better irrigation systems. You could save a lot of money by not ‘hardlining’, out in the deep rough, for example. We were happy to see the *Golf Digest* ratings criteria change to say that fast and firm conditions are a good thing. Some experts recommend a nightly water window of four to six hours for tournament courses. In reality, for average courses, you may have eight to twelve hours available to get the water down. Choose to operate that way, and you can save money on pump stations, piping and the like.”

This brings us to the essence of the water issue: conditions. The simple truth, which we have all been reluctant to admit, is that the

environmentalists have a point. Golf has been a wasteful use of water, and, although the industry has made great strides to improve, it needs to do more, and demonstrate its stewardship of natural resource. To return to the Murcia example, it is not good enough for golf to say that other land uses are worse. Regions such as Arizona have begun to address this with the restrictions on the area of maintained turf permitted on courses. Elsewhere, too, golf courses are trying to reduce the amount of turf in play: Barona Creek in southern California, designed by ASGCA member Todd Eckenrode, recently won plaudits for a project that took 10-12 acres of turf out of play. Around the world, ASGCA member architects are working on similar projects, and partnering with developers, existing clubs, course superintendents, the irrigation industry and others to create innovative solutions to water dilemmas. From rainwater capture schemes that aim to detain every

“ Bandon Dunes has a very sophisticated irrigation system, but it is among the **firmest, fastest** playing surfaces you can find. They only use the system when **absolutely needed**, which speaks to **good irrigation management**”



Barona Creek recently reduced its irrigated turf by more than ten acres, as well as cutting back on water by eliminating most overseeding

drop of water that falls onto a site, through large reservoirs capable of retaining water obtained during wet spells, to grassing plans that increase the amount of unmaintained area, golf architects have found ways to cut course's water demands.

As an organisation, ASGCA has a long history of trying to persuade the game to husband its water resources. As far back as 1970, under its then chairman Phil Wogan (who sadly died recently at the age of 91), the society's Environmental Committee put out a landmark report on golf's use of water and other natural resources. More recently, the society has published a useful flyer on golf and water and, in 2008, issued a new edition of its booklet 'An Environmental Approach to Golf Course Development' (both publications are available from the ASGCA website, www.asgca.org).

The Barona project also addressed another water use issue that is of key importance in dry, warm areas: overseeding. There is a huge challenge to be dealt with in this regard. On the one hand, we know golfers like green grass, and, more fundamentally, it is always going to be difficult to cope with heavy play on grass that is not growing. Dormant bermuda or paspalum grasses provide a tremendous playing surface at the start of the winter, but by the end of the season, it is inevitable that

the condition of the course will suffer. On the other, it is pretty clear that overseeding is an expensive, thirsty process that is hard to justify in the context of water usage.

Only a few years ago, it seemed that paspalum grass species were the Holy Grail for courses in dry regions. Here, we were told, was a grass that could stand being irrigated with very poor quality water, even with pure seawater for a period of time. Unfortunately, though, the paspalum revolution has not had quite the impact that might have been hoped. Partly, as in the case of several developments in Dubai, this is because of failings elsewhere in the development: if your strategy is to irrigate with treated sewage effluent (TSE), but very few people are living in the houses attached to the course, where is your water to come from? But also, as superintendents have learned more about managing paspalum, it has become clear that the toxic buildup of salts in the soil demands that it should be 'flushed' with fresh water more frequently than had at first been supposed. Thus, the benefits of the grass are reduced.

In essence, the water issue, like so many other issues in the golf industry, comes down to what we as golfers expect from courses. It is natural that humans would want to live or vacation in regions that are warm and sunny: but places that are warm and sunny in the

winter especially tend to be hot and dry year round, not natural environments for golf. Thus the courses must be maintained in an artificial fashion. In arid regions such as Arizona, southern Spain and the Middle East, this cannot be avoided. Elsewhere, though, the game as a whole needs to take a step back and return to a more natural approach, and to find ways of explaining to golfers that dry, firm and bouncy courses are truer to the game's roots, more forgiving for weaker players and more testing for good golfers than the kind of lush, green and wet tracks many of us have come to see as the norm.

With this in mind, it was refreshing recently to hear of the noises coming out of the USGA annual meeting in Pinehurst. *Golfweek* architecture editor Bradley Klein reported in detail on this meetings, saying: "A number of senior officials referenced the need for a shift from the lush, ultra-green wall-to-wall turfgrass. The emphasis should be less about irrigation, with more naturalised areas and modest standards of grooming." But Klein rightly pointed out that the quickest way to get golfers to accept this old/new paradigm is for the professional tours to play more events on courses that match the description. The USGA and the R&A are walking the walk; will the PGA and the European tours match their efforts? ●

“ The clear implications are that those golf facilities that place a premium on making golf time equate to family time may see greater success than those that are less inviting

Mindset | Jon Last

Golf consumers: coming out of the rough?

I have always considered myself to be a ‘half-full’ kind of guy, but even the most optimistic in the golf industry look back at 2009 as a particularly challenging year. US participation remained flat to marginally down, while many facility operators and OEMs suffered hits to yield optimization and profitability.

Our Sports and Leisure Research Omnibus study, completed in January 2010, provides a fresh and current look at the golfer’s mindset as the new season approaches, and there are glimmers of optimism to encourage us. However, concurrent with this welcome emergence from the depths of 2009, our assessment also suggests that some fundamental belief systems have changed.

Perhaps most encouraging is a renewed vigor among golfers to tee it up with greater frequency in 2010. In January of 2009, 77 per cent

indicated that they expected to play as many rounds of golf as they did in the previous year, or more. Asked a backward looking question this January, a statistically similar 72 per cent reported that they actually did play the number of rounds they had predicted. So, with this precedent, it is refreshing to see that in our most recent study, 94 per cent of golfers said that they expect to maintain or increase their play in the year ahead. I wouldn’t necessarily take this to the bank and project a significant increase in rounds played, but our study does suggest that intent and commitment to play more golf has snapped back from where we were a year ago.

Similarly, in an era when value has become an important calling card, our latest study pleasantly reveals generally higher price expectations among golfers for new equipment

across all categories with the exception of putters and golf balls, which remain flat with 2009 price expectations. At the same time, two thirds of the more than 1,000 golfers we interviewed expect to spend as much or more on golf-related purchases in the year ahead.

We also see a rebound in golfer sentiment across a number of attitudinal dynamics. After hitting lows in Summer 2009, most recent results show golfer bullishness in areas such as willingness to indulge. More significantly, more than half agree that the year ahead will be better than the previous year. Only a third of golfers expressed similar sentiments last summer.

However, there are still a number of alarming trends that may impede our opportunities in 2010. Time constraints remain a significant challenge for golfers, even more





Image: Courtesy of Landmark Media

Golf facilities that accommodate a rising demand for family time may be more successful

Two-thirds of golfers expect to spend as much as—or more than—they did last year on golf-related purchases

than the financial costs of playing the game. Our research continues to reveal a stressed, multi-tasking consumer facing increasing demands from work and family that do not always coincide with golf. In our most recent study, only a third agreed that they were spending more time these days with friends and family than they did in the past. In lock step with this phenomenon, 60 per cent strongly expressed that they'd rather spend time with friends and family than with business associates. The clear implications are that those golf facilities that place a premium on making golf time equate to family time may see greater success than those that are less inviting.

This 'cocooning' phenomenon makes perfect sense, when one examines a heightened child centricity evidenced among golfers in our most recent research. Looking

at the generation of Americans born between 1960 and 1970, one can see that this cohort is now in the life stage that typically saw decisions made about joining private clubs. Attitudinally, these 'Sandwich Generation' adults are literally caught between Baby Boomer and Gen X values. These folks may want to make a greater investment in golf, but they are faced with (often conflicting) decisions about protective parenting and saving for their children's college education.

Simultaneously 63 per cent strongly agree that "there is really no such thing as job security anymore". There is evidence of a tentativeness that now forces choices between investing in golf lessons and the kids' education. Golfers may want to get out of the rough, but this 'new normal' may ultimately slow down their march back into the fairway. ●



Jon Last

Jon Last is founder and president of Sports and Leisure Research Group, a White Plains, NY full service marketing research consultancy that supports leading brands in sports marketing, travel, media and leisure categories. Jon holds an MBA from the Wharton School of the University of Pennsylvania and is a magna cum laude graduate of Tufts University.

Rootzone | Joe Betulius

Saving water at the grass roots

Conserving water on a golf course means more than operating a finely tuned irrigation system, it means building a smarter golf course from the ground up. The first and most important ingredient of an efficient and well-maintained course is the soil itself. Performance and turf consistency are a direct reflection of the rootzone—this is where it all begins. Build performance in the soil and the grass will follow.

At the rootzone, the right soil mix can resist compaction, store moisture and nutrients, and deliver the oxygen your turf needs. A poor rootzone can be hydrophobic or retain excessive water, which can stunt root development, increase plant stress, and increase the need for additional fertilizer and pesticides.

Amending difficult rootzones

One of the most critical considerations made during golf greens construction or renovation is the soil mix. Designing and maintaining soils to resist compaction, increase drainage and balance capillary/non-capillary (water and air) pore space is the key to healthy, high-performance turf. Sometimes it is necessary to amend the soil.

Inorganic soil amendments provide the benefits of additional moisture and nutrient retention without sacrificing air and drainage

pore space. Some inorganic amendments provide higher nutrient retention than traditional sphagnum peat, reducing the need for fertilizer throughout the year. A balanced soil should consist of approximately 50 percent solids and 50 percent pore space. The pore space should be divided evenly at 25 percent air and 25 percent water pores.

Soils for high-performing greens

Sand-based rootzones resist compaction better than native soil, but sand is not ideal for water and nutrient retention. To counteract this, amendments are made to the sand during construction. On the other hand, native soils tend to compact easily. Instead of water running through the rootzone, it often runs off, leaving roots dry, oxygen-deprived and soil-bound.

To alleviate some of the shortcomings of sand, peat has traditionally been added to hold water and nutrients. Unfortunately, organic amendments like peat change over time and can seal off the root zone, resulting in added watering costs. Porous ceramics do not change over time and consequently help maintain the soil porosity. The result is improved drainage and air space.

Testing soils is a critical first step in



Joe Betulius

Joe Betulius is the vice president of marketing for Profile Products. He has worked with golf course architects around the world, most recently focusing his efforts on Europe and the Middle East.

“One of the most critical considerations made during golf greens construction or renovation is the soil mix

creating an ideal rootzone blend. By testing different sands and amendments, you can dial in a high-performance mix, maximize air values and hold the right amount of water without negatively influencing infiltration rates.

It is important to note that while the performance of a new mix may look good on paper, radical change starts to occur when the rootzone begins to mature the first year after construction. Excessive hand watering for localized dry spots or puddling of water on golf greens indicate that the soil lacks balance.

You get one chance to build greens correctly. Take the time to investigate and test the mixes at an accredited lab (the USGA recommends using only A2LA-accredited labs). ●



Root zone preparation at Desert Mountain in Arizona

TURF TESTING

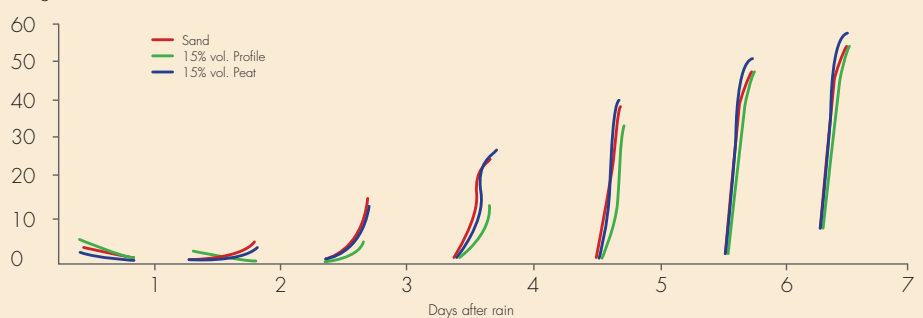
Recent computer modeling studies, completed by Dr. Ed McCoy with Ohio State University, examined differences in watering frequency of three soil mixes on sand-based soils. The studies were completed using a validated simulation of water flow and turfgrass stress within a USGA putting green. They addressed rootzone water retention, hydraulic conductivity, turfgrass stress and rootzone aeration in three rootzone samples: unamended sand, a 15 percent by volume Profile Porous Ceramic, and a 15 percent by volume sphagnum peat.

Rootzone tests

The first test compared soil water content to soil water suction. The addition of porous ceramics to the root zone sand by adding both capillary and non-capillary pore space, allowing it to retain water and nutrients better than using sand or peat.

Next, the rootzone hydraulic conductivity was tested. The porous ceramic amended rootzone had the largest saturated hydraulic conductivity value. Additionally, using the porous ceramic in the sand-based mix helped draw the water upward to the rootzone.

Turfgrass stress index



Turfgrass stress index

The study also tested the turfgrass response to water-related stress over the course of seven days following rain. The porous ceramic amended rootzone delayed the onset of turfgrass drought stress by one to two days, extending the number of days between irrigation cycles.

Dr. McCoy tested the distribution of air-filled pore space within the rootzone, showing typical root zone depth following a heavy rain or extended period of rainy weather. The favorable aeration conditions in the porous ceramic

amended rootzone allowed roots to extend approximately five centimeters deeper than the unamended sand or the sphagnum peat amended rootzones.

References:

- McCoy, EL and KR McCoy. 2006. *Dynamics of water flow in putting greens via computer simulation*. USGA Turfgrass and Environmental Research Online 5(17):1-15.
- McCoy, EL and KR McCoy. 2008. *Simulation of putting-green soil water dynamics: Implications for turfgrass water use*. Ag. Water Mgmt. (in press, doi:10.1016/j.agwat.2008.09.006).

How long will it last?

When managing a course, it's easy to get caught up in exciting design features and projected revenues. But it's important not to overlook a basic issue that can have long-term implications for the course's profitability. It can be summed up in one simple question: how long will all of this last?

Of the wide range of materials used in building a golf course, not all of them are of equal durability. Some are suited only to short-term use, while others will endure for decades without needing much attention.

Too often, necessary refurbishments are left until the course has begun to show unacceptable wear and tear or become downright hazardous. By this stage, normal scheduled repairs and replacements turn into emergency

fixes, with all the attendant cost and disruption to play.

To avoid costly repairs and replacements, it's important to research the lifespan of each part of a course before starting to build it. This knowledge will also allow for timely intervention when parts of the course are likely to need upgrading or replacing.

If you know, for example, that you will need new bunker sand after five to seven years, it is easier to plan and budget for this eventuality well in advance. The choice of asphalt or concrete paths can lead to a difference in durability of up to 20 years. Mulch is the most perishable component of a golf course, with a lifespan of only

one to three years, while properly maintained greens can go on and on for three decades and beyond.

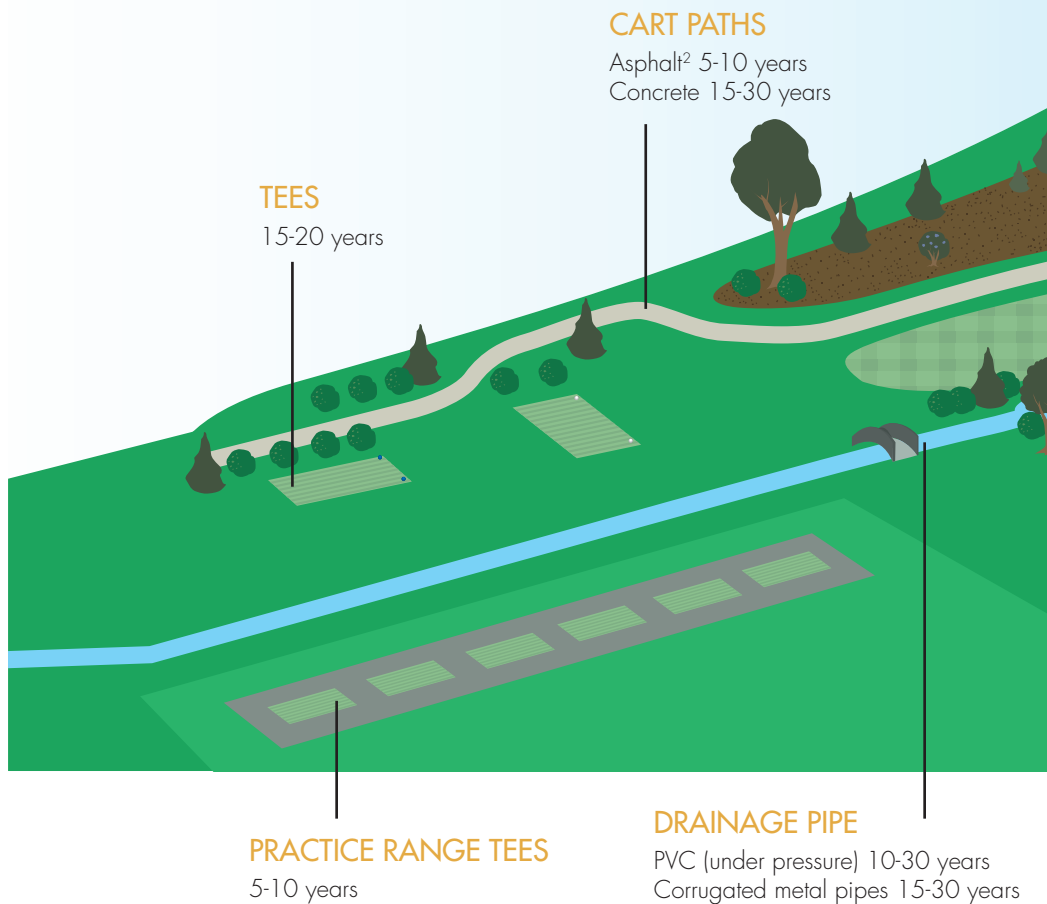
Several factors can affect the decision to replace greens. These include accumulation of layers on the surface of the original construction, the desire to convert to new grasses, and responses to changes in the game from an architectural standpoint (like the interaction between green speed and hole locations).

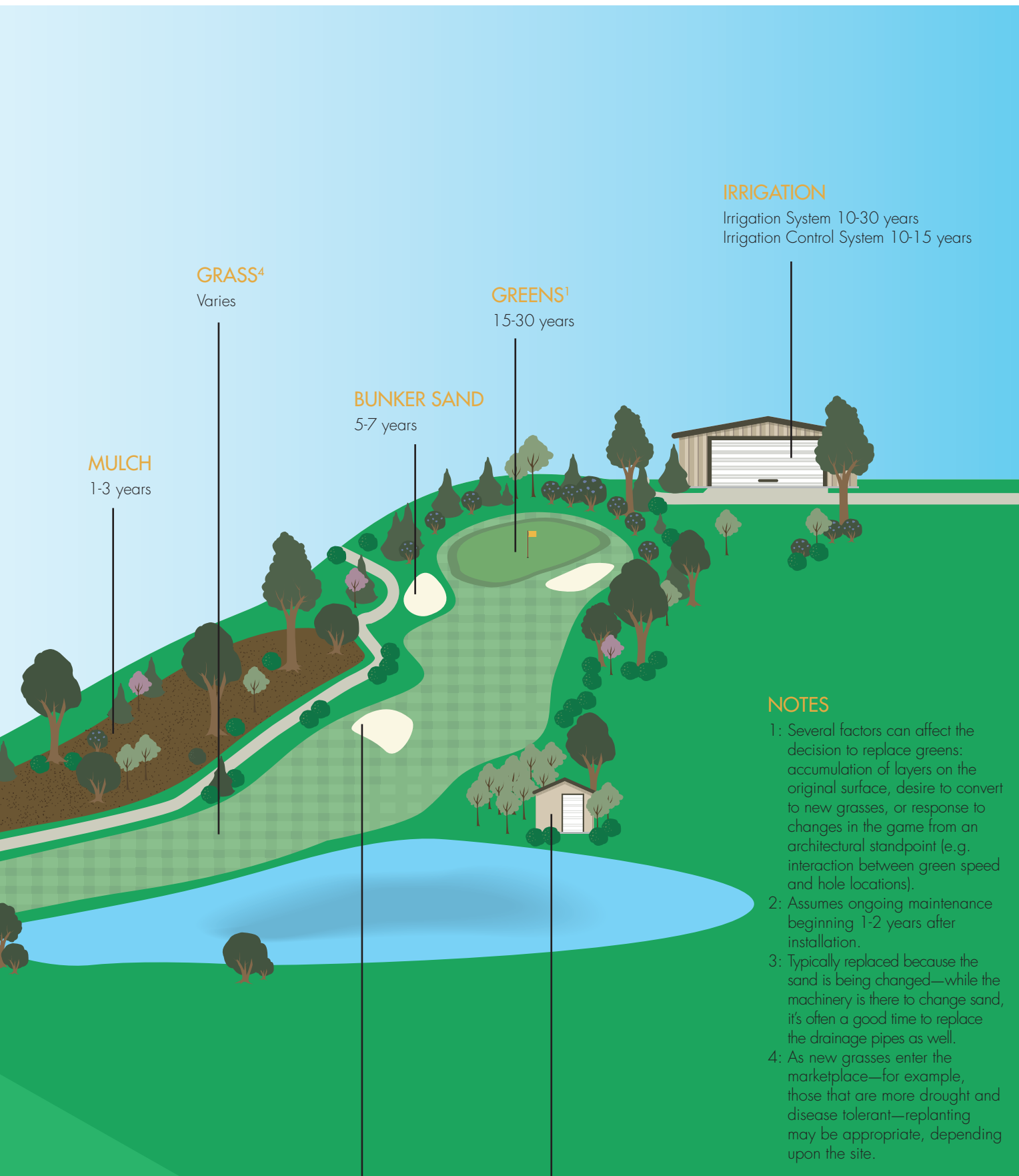
Keep our handy diagram nearby for information to help with maintenance and replacement plans. ●



ASGCA

The diagram is based on the ASGCA flyer titled Golf Course Items: Expected Lifecycle, prepared by the ASGCA with the assistance of seven of the other allied associations of golf. You can download it for free from the Publications section of www.asgca.org.





MULCH
1-3 years

GRASS⁴
Varies

GREENS¹
15-30 years

BUNKER SAND
5-7 years

IRRIGATION

Irrigation System 10-30 years
Irrigation Control System 10-15 years

NOTES

- 1: Several factors can affect the decision to replace greens: accumulation of layers on the original surface, desire to convert to new grasses, or response to changes in the game from an architectural standpoint (e.g. interaction between green speed and hole locations).
- 2: Assumes ongoing maintenance beginning 1-2 years after installation.
- 3: Typically replaced because the sand is being changed—while the machinery is there to change sand, it's often a good time to replace the drainage pipes as well.
- 4: As new grasses enter the marketplace—for example, those that are more drought and disease tolerant—replanting may be appropriate, depending upon the site.

BUNKER DRAINAGE PIPES³
5-10 years

PUMP STATION
15-20 years

“ The golf industry needs to find ways of reducing the barriers to entry...

Affordability | Adam Lawrence

The cost of golf

Golf has always been a relatively expensive sport to play. In some ways, it's inevitable that this should be so: golf's play area is surely the largest of any sport, and even at the beginner level, golfers need more equipment than is required to go for a run, kick (or throw, depending on your location!) a football, or hit a tennis ball. But there is another reason that golf is costly: because we golfers, throughout the ages, have desired to make it so, partly to 'improve' the game as an experience, and partly to ensure that the people who play are the 'right sort of chaps'.

Despite the efforts being made around the world to shift the image of golf as a socially exclusive pursuit for middle-aged, affluent white men, one can't deny that there is an element of truth in this viewpoint. We in the industry can look around the global golf industry and say that the elite facilities are only a tiny minority of courses, and that is so. But they have an influence way out of proportion to their numbers. Every time television features an event played at an exclusive private club, or the media gush over a new course built for a select few moguls prepared to lay down a huge initiation fee (and I hold up my hands: I have been as guilty of

this as the next reporter), the image of golf as 'Not for the likes of me' is reinforced in the minds of many viewers or readers.

Must this always be the case? Every market, every society has top, middle and bottom strata; as long as golf is played, some venues must be seen to be the best, and more prestigious than others. It's not hard to imagine the golfers of St Andrews in 1865, having persuaded Old Tom Morris to return to his native city as Keeper of the Green, exulting that they had got one over on their rivals from Prestwick. And the top courses, because they are top, need some mechanism to deal with the demand for their facilities. Imagine if Augusta or Cypress Point suddenly became publicly accessible: they would be inundated with requests for tee times and, like as not, would need to set their greens fees at unheard-of levels just to choke back that demand to a manageable level. Augusta at \$2,000 per round would be less exclusive than today's version, but it would hardly be promoting a 'golf for all' mentality.

Golf has, throughout its history, developed largely from the top down. Even in Scotland, golf was first organised by groups of 'gentlemen'; it was only later that it became the people's game. In



Adam Lawrence

Adam Lawrence is editor of *Golf Course Architecture* and a contributor to *Golf Monthly* and *Golf World* in the UK. Educated at Oxford University, he has been a journalist throughout his professional life.

England and America, golf became popular among social elites, and later spread to a wider audience. And in the new markets that are so important to golf's future—China, India and the like—golf is already strongly associated with the wealthy and the powerful. Only in a very few countries, such as Sweden and the Czech Republic, did a substantial base of low-cost courses spring up early in the game's development.

It is important that golf remains an aspirational game. Around the world, though, we in the golf industry need to find ways of reducing the barriers to entry. We in the media need to be as interested in small developments aimed at bringing golf to a new audience as we are in megabucks developments for billionaires, even if a trip to see the former may not be quite as desirable as the latter. We need to engage with public bodies around the world to make available properties suitable for low-cost golf. And, as I argued in the last issue of *By Design*, we need to end the self-destructive quest for ever more perfect course conditions. That quest drives up the cost of the game for little real benefit.

Golf has a great future. But that future must be based on openness and accessibility, not elitism and exclusion. ●



By Design would not be possible without the support of its sponsors who have played a key role in the publication of this magazine.



Profile Products

Profile Products manufactures a comprehensive line of soil modification, erosion control and turf establishment products. Its experienced team takes a consultative approach with golf course architects, builders and superintendents to design and specify customized solutions for maintenance and construction.

Profile's team designs root zone mixes utilizing Profile Porous Ceramics to meet USGA guidelines. Its ceramics permanently modify the root zone to better conserve water and retain nutrients.

Profile's complete line of hydro-seeding products is the leading specified brand by golf course architects. Profile works with architects and project managers, establishing effective erosion control and vegetative establishment practices.

www.profileproducts.com



Rain Bird Corporation

Since 1933, Rain Bird has built a reputation on delivering irrigation systems that combine performance with efficiency. Rain Bird leverages state-of-the-art technologies to innovate and develop products that apply water in the most effective and efficient manner possible.

From highly-efficient sprinkler nozzles to cutting-edge control systems and pump stations, Rain Bird is widely recognized as the leader in golf course irrigation control system technology. We take the challenge of using water responsibly very seriously. That's why our overarching philosophy, *The Intelligent Use of Water™*, guides everything we do. The revolutionary Integrated Control System™ provides innovation at a lower overall cost to golf courses enabling the user to maximize system efficiency and conserve water with a smaller environmental footprint.

For more information, please contact 1-800-RAINBIRD or visit:

www.rainbird.com



Sportcrete

Sportcrete has been developing its bunker lining system for golf courses for the past 15 years. The system involves spraying environmentally friendly material on to 50mm of specified stone installed throughout the bunker, creating an engineered porous base and a hydraulic draw effect for drainage.

It is the first and only engineered sub base for golf bunkers whilst being cost effective and providing players with some of the best bunkers in the world.

Sportcrete for Golf Bunkers reduces the risk of washouts, prevents standing water and contamination from soil below the bunker and provides a level base for the sand in the bunker. It is also the only bunker product that has the ability to be repaired when damaged within or outside the warranty parameters.

www.sportcrete.com



Toro

The Toro Company is proud of its legacy of quality and innovation. Customers around the world rely on Toro for high performing products that include precision fairway and rough mowers, greens mowers, compact utility loaders, commercial zero-turn mowers, bunker management machines, and water-efficient irrigation systems.

In 1921, Toro developed the first fairway mower and six years later shipped the company's first golf maintenance products overseas. Today Toro continues to lead the global market with best-in-class turf maintenance equipment and precision irrigation solutions. Approximately two-thirds of the top 100 courses in the world use Toro irrigation systems. The company also leads the way in environmental innovations, making products safer, cleaner and quieter whenever possible.

www.toro.com

The Sportcrete Bunker System



Simply the Best...



Untreated bunker at The Wisley,
8 July 2009



Bunker treated with Sportcrete
at The Wisley, 8 July 2009

Sportcrete are working with some of the leading architects, consultants and golf facilities to create the best bunkers in the world. The innovative Sportcrete Bunker Lining and Drainage System is the way forward in bunker construction. It incorporates an engineered base that eliminates contamination and a totally integrated drainage system with hydraulic properties that ensure no standing water and minimal washout.

- 5 Year Performance Warranty
- Free draining – up to 2,000mm per hour
- No sand contamination
- Minimal washout
- Bunker shape retained
- Reduced maintenance costs

“ Sportcrete was installed into all the Garden Course bunkers in April 2009 and we are delighted with the performance. At the beginning of July we received heavy rainfall of over 30mm in just two hours but the Sportcrete bunkers were totally unaffected and remained playable both during and after the rain. In comparison, the Church and Mill Course bunkers were devastated and it took 20 staff nearly five hours to repair the washouts and flood damage in time for a guest-member day. The Sportcrete system has already proved itself to be incredibly efficient and effective and we are planning to install it in all our bunkers at The Wisley. ”

Stephen Byrne, Course Manager, The Wisley

Superior drainage • Engineered strength • Environmentally friendly

Europe +44 (0)1773 741 100

USA +1 203 285 8714

Asia +66 2 751 4247

ANZ +61 73893 2122

Email info@sportcrete.com

www.sportcrete.com

Sportcrete is protected under the international patent application no. 2007/070913 A1


sportcrete