Inside: Brian Van Bower on Working Overseas

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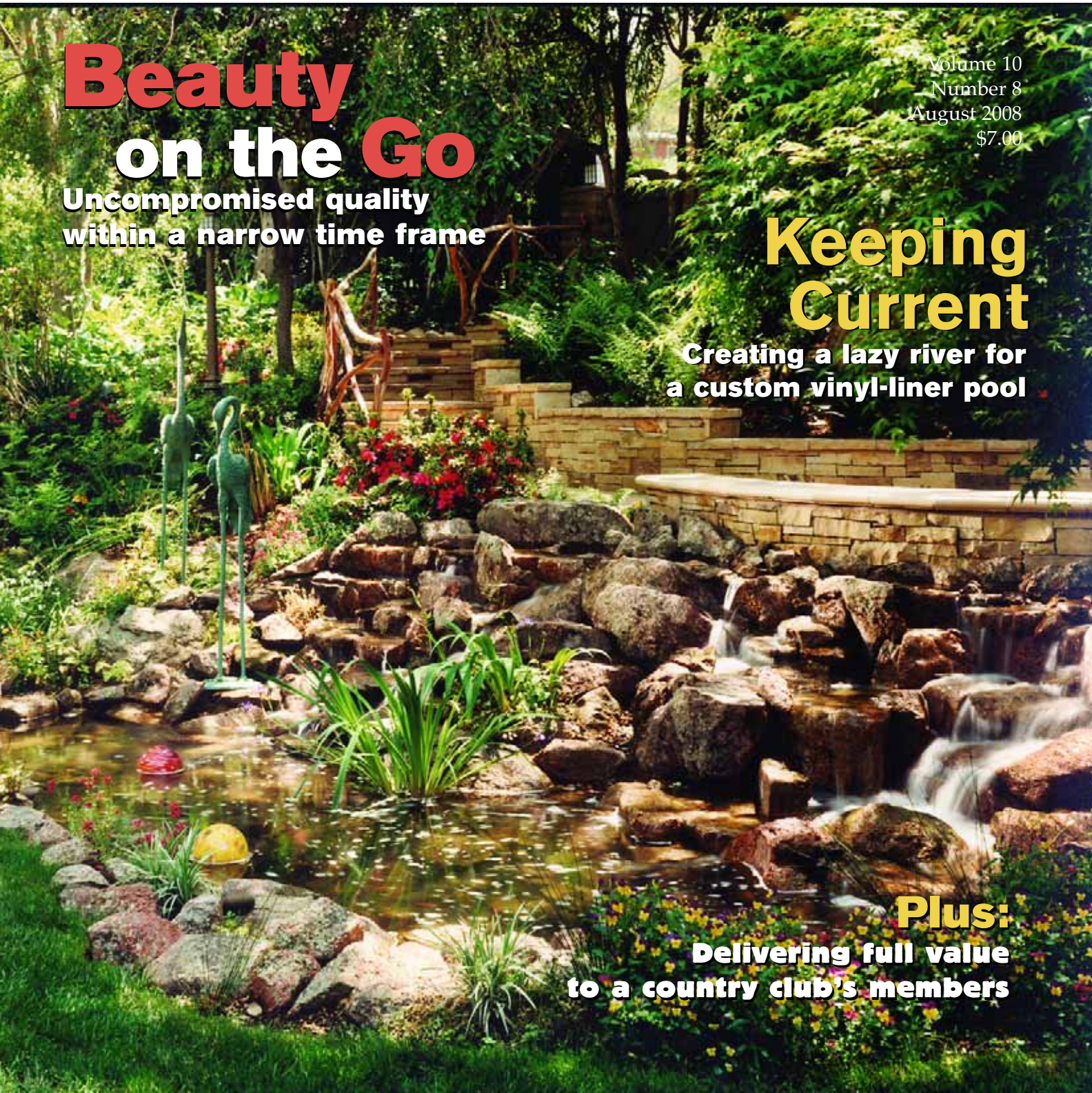

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On the cover:
Photo courtesy Colleen Holmes, New Leaf Landscape, Agoura Hills, Calif.

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By Eric Herman

Thinking Differently

Not long ago, a friend and I were talking the about worn-out phrases, and "thinking outside the box" was one of them. As he pointed out, it's remarkably ironic that we now use a cliché to describe the process of freeing ourselves from habitual thinking.

And that phrase is far from alone: Whether someone is marching "off the beaten path" or "to the beat of a different drum" or plainly refers to the notion of doing things in a different way than they've been done in the past, all of those phrasings have become so familiar and so widely recognized as being keys to success that all of them have become somewhat shopworn and tired.

That's a pity, because no matter how you put it, the fact remains that enabling, developing and following a creative impulse is one of those things that often spells the difference between success and failure.

That's especially true in a cooled market and a universe in which watershape designers, engineers and builders have all been forced to think carefully about how they demonstrate their value to potential clients and make the most of projects that manage to come their way. Sometimes, that means operating with efficiencies that squeeze more out of tightened budgets; in other cases, however, it's all about coming up with new ideas and approaches that inspire clients to devote greater resources to their homes and yards.

In my role in guiding the content of this magazine, I'm constantly amazed at the population of professionals who follow the creative road and continue to press at the boundaries in ways that lead to new thinking, whether those ideas emerge out of necessity or surface in response to creative passion. Indeed, one of the things I enjoy most about watershaping as a business is the fact that so many of you are able to convert innovative thinking into creative action.

In this issue, for example, you'll find two stories about creativity that are as different from one another as one could imagine.

- In "Shaping Bubbles" by inventor David Whiteis (page 46), you'll find the story of a man whose childhood curiosity led him to develop a class of devices that generate perfect "bubble rings" – not cascades of individual bubbles that form a ring but, rather, single circular bubbles that rise like smoke rings in the water. It's one of the most unusual features we've ever run, and it's all about a clever, charming, even mesmerizing concept.
- In "Moving Experiences," Canadian pool designer/builder Josh Katz (page 28) describes what may well be the world's first-ever lazy river pool made with vinyl-liner technology – a project that asserts by its very existence that these pools are capable of becoming every bit as custom (and creative) as their concrete cousins.

As suggested above, these two stories have little in common – except for the fact that both Whiteis and Katz are extremely passionate and have devoted their time and energy to developing concepts that had never been tackled before. Both were of a mind to take chances; both did what it took to see their innovations through to fruition.

To my mind, whether it's something as ephemeral and simple as a bubble ring or as persistent and complicated as a custom swimming pool, there's something truly inspiring about looking at the work of those who, to use another possible cliché, "expand the sphere of possibilities."

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August's Writers

Josh Katz is president of Lido Pools, a full-service vinyl-liner swimming pool company serving the Toronto metropolitan area. He grew up in the pool industry, working at his father's side from the age of four. Hy Katz founded the company in 1968 after building a package pool for his family in 1967. He passed away in 1986, at which point Josh Katz was working toward degrees in biochemistry and psychology. He left school just short of his graduation to take over the reins of the family business and has seen it grow to focus mainly on highly customized residential design/installation work.

Larry Paulick is president of Contech Associates, an engineering consultation/project-management firm based in Annapolis, Md. He began working in the pool and spa industry as a laborer, progressing to design work while studying civil engineering at the University of Maryland, where he received his bachelor's degree in 1967. Upon graduation, he worked for the American Bridge division of U.S. Steel, focusing mainly on engineering and project management for large high-rise projects. He rejoined the pool and spa industry in 1972, becoming director of technical services and standards for what was then the National Swimming Pool Institute and later serving as NSPI's senior vice president until 1990. He founded Contech in 1974, and today the firm mainly provides consulting services for large-scale renovation projects throughout the United States, along with a separate division that tackles commercial pool and spa projects in Southeast Asia.

David Whiteis is a computer networking engineer and part-time inventor living near Washington, D.C. He sold his first patent (on

a method of recommending music to individuals based on the music they already enjoy) in 1998 to a company that is now a subsidiary of Microsoft. He currently works at the J. Craig Venter Institute, providing computer support to scientists conducting genetic research. Part-time, he continues his work toward inventing and developing new products and volunteers with a local inventors group as well as a group that helps in recycling old computer equipment. Whiteis reached the final 24 candidates during the first season of the ABC-TV show *American Inventor* with a jewelry box that takes a brief video of a woman's reaction when she first sees her diamond engagement ring. His wife Kasia and their seven-year-old son Jake helped him take the photographs seen with his article in this issue.

Colleen Holmes is president of New Leaf Landscape, a full-service landscape design/construction firm based in Agoura Hills, Calif. A landscape designer with more than 30 years' experience, she began her career as a child at the side of her father, Charles Prowse, who instilled in her a love of the art of landscape design. She studied landscape architecture at the College of the Desert in Palm Desert, Calif., where she was profoundly influenced by sculptor/landscape artist Michael Watling, and later attended UCLA's school of landscape architecture. Her early work focused on designs for country clubs and gated communities in the Coachella Valley. Since then, Holmes has run her own pool and landscape maintenance firms and founded her first landscape design/construction company in 1980. She established her current firm in 1987 and now focuses exclusively on high-end residential projects including a number of celebrities' homes.

By Brian Van Bower

Border Crosssings

There are a number of fundamental features of international jobs that, when observed, will help you increase your chances of success while avoiding some of the potential pitfalls.

It seems to be a trend: In more and more of the conversations I've been having with watershapers, the level of interest in what's involved in working overseas has really spiked in recent weeks and months.

I recall a time several years back when curiosity about overseas work focused on the glamour and excitement of stepping into uncharted territory. Now, however, there's a certain urgency to the inquiries, and my guess is there are at least three reasons behind it.

First, there's the enduring sense of the prestige and energy that comes with working in faraway or exotic locales. Second, there's a healthy desire among these people to increase the scope of their businesses and reach for overseas projects that can be both lucrative and intellectually stimulating. Third and quite certainly, there's concern in many quarters about the current economic situation in the United States and where it all might lead.

As one who's been involved with offshore projects for many years, I've watched as the world truly has become smaller because of communications technology that makes working with clients in foreign lands so much easier and more affordable. Travel is still a burden, but digital photography and computer-assisted design have lightened the load to a manageable level by reducing the necessity to go on the road with greater frequency.

Things have developed to the point where some 40 percent of my own company's business takes place beyond U.S. borders. Although that work has become easier to manage through the years, it's still something we're getting used to. Indeed, just about every project offers some new wrinkle that educates us and helps us be more prepared for the next job.

going over

This is, of course, a topic I've discussed before on these pages, but it's one that bears revisiting given both the uptick of requests for information and the urgency I sense among some of those who've asked about this sort of work: If you're seriously thinking about making this move as a hedge against what's happening in the domestic market, please be aware that there are a number of important considerations you need to weigh before you dive headlong into international work!

First, bear in mind that there's no exact blueprint for being successful in foreign countries, largely because everyone's business is a bit different and the type of work you do will influence the way you pursue these clients. There's also the fact that there are tremendous variations in what you need to do, depending on where you're intending to work.

That's not meant to be as intimidating as it sounds: It's just that going after offshore work means you need to be both forewarned about the nature of these locales and forearmed with information that will help you get along. Indeed, there are a number of fundamental features of international jobs that, when observed, will help you increase your chances of success while avoiding some of the potential pitfalls.

By nature, for example, my design-consulting approach to the business is well suited to international outreach because my company trades in in-

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tellectual property rather than dealing with the complications of selling goods in other countries or the even more challenging process of running construction jobs overseas – both of which involve a range of shipping, distribution, material and labor issues atop a near-infinite set of variables.

It's not impossible to deal with all those functions and variables, but my observation is that translating complicated business operations into complex *overseas* business operations is a tough row to hoe. By the same token, if you're determined and have the wherewithal to stick with it, just about any sort of business approach can be exported and applied in many other places around the world, in some cases with relative ease.

Indeed, I've found in many respects that working overseas is not unlike working in the United States: Referrals are all-important wherever you go, and the key is making yourself known to people who will lead you to projects, whether they be clients or other professionals (architects, landscape architects and more). In our case, we didn't actually *plan* a dozen years ago on becoming international in scope; instead, this part of our business has grown incrementally, largely as a result of following leads and making the most of those contacts.

Almost invariably, once we gain a toehold in a place, we become established in rapid order and the work often multiplies rapidly. Bermuda has been one of those places for us: It's a healthy, well-to-do marketplace, and so far we're up to more than 40 projects there with no signs of slowing down. All of it started with one call from a single architect who needed help on just one project. It went well, others saw what we did and the referral network expanded from there, just as it would stateside or in any other place.

local colors

To some extent, getting a feel for a place is the key to having business blossom on that level. And I'm not alone in this experience: My friend and Genesis 3 partner Skip Phillips, for example, has established a similar beachhead in Canada and has even opened a satellite office there.

In neither his case nor mine did we plan to become established in these particular places, but in both instances we recognized opportunities and have done our best to make the most of them. What it takes is a willingness to try and, once you gain access, to stick with it and see what comes.

Of course, pursuing overseas work brings its costs and challenges, and the travel can become enormously time-consuming. To make things work, you need to be comfortable working across a range of time zones, put up with going through customs, work around whatever language barriers you might encounter and accept the fact that long airplane flights mean lots of time away from both your family and your business base.

At root, you need to be realistic in your expectations. Yes, I've actually sat on a beach with my feet in the sand while sketching out a pool, and I've had my share

of vacation-like experiences in other countries, but the reality is generally otherwise: The work can be difficult and there are times when it can become uncomfortable and exhausting, physically and mentally.

I recently traveled to Nicaragua, for example, to work with a couple who are opening a resort there. The tropical landscape is beautiful and I met many wonderful people there, but I also saw extreme poverty at very close range and on a level that was both eye-opening and distressing.

I've also been to places where extreme cold, extreme heat, oppressive humidity or non-stop insect intrusions have made me uncomfortable. And I've been in places where roads are dicey, communications are spotty and the drinking water is questionable – and it will come as no surprise that I have sometimes been disappointed by the accommodations I've found and the limitations in local cuisine.

It's another simple case where being forewarned is being forearmed: Before traveling to any new place, I do all I can to learn as much as I can so I am prepared for good as well as bad. To be sure, no preparation of that sort is completely adequate and I always run into something that surprises me; as a consequence, I always pack my bags with an open mind and a flexible spirit, recognize that I'm a guest and do all I can to adapt myself to these new situations as they unfold.

Sometimes it's pretty easy to get along. Bermuda, for example, is a British territory, so there are no real language barriers and I don't sense great cultural distinctions. Even so, I would never have known, other than by direct experience, that there's a huge division there on the issue of separating from the United Kingdom and becoming a separate nation. Some people are passionately for it, others are against it and both sides are vocal in their beliefs.

I've learned (here and elsewhere) that these subjects are not to be treated lightly. It doesn't affect my ability to do business, but if I was brash or insensitive in stating my own opinions, I certainly might run the risk of making a comment that could be construed as offensive – and a potential deal killer.

making headway

A big part of being a good traveler and welcome guest means employing tact and

situational awareness. That comes naturally to some people, but I know it can be challenging for others. For my part, I've come to believe that experiencing other countries and cultures has rounded out my character and broadened my perspective on a host of issues.

At this point, when I go to a new and unfamiliar place, I act as though I am having an initial conversation over a kitchen table with a potential U.S. client and open myself to everything around me. Sometimes, people notice and seem to appreciate my effort in raising my awareness of the nuances of their culture and customs. They sense my adaptability and willingness to listen and pick up on the subtleties of their everyday lives and are impressed that I'd take the time and have the patience to do so.

Patience is an important word in this context. Working overseas can require a lot of it, and you need to balance that need against what you hope to achieve on any given trip. You might, for example, have to sit through hour after hour of peripheral conversations before finding your way to the "real" business at hand.

And you have to recognize that you're basically under a microscope: I often find myself flying to another land, coming face to face with a client I've never met and sometimes spending the night in his or her home. Being comfortable in those circumstances can be surprisingly difficult (especially if you're a bit jet-lagged), but you need to move confidently through any such situation. Some are good at it, others aren't: It's just not for everybody.

In other words, as with so many things in business that require us to step outside the bounds of what we usually do, we have to be self-aware and accept the fact that the variables we encounter in dealing with these "exotic" situations are nearly infinite. Indeed, the one thing we can count on is that work overseas is never "business as usual."

When you *do* land work in another country, you must become immediately familiar with the rules of engagement. In some countries, for instance, no government agency will care that you're there doing work and everything's easy.

Patience is an important word in this context: Working overseas can require a lot of it.

In others, however – Bermuda included – you have to obtain a work permit that involves serious red tape and a large dose of bureaucratic absurdity. The key here is to make no assumptions: Depending on where you are, the laws you might inadvertently break may find you in detention while things are clarified or might even result in your being summarily deported.

Some of the requirements seem a bit outlandish: In Bermuda, for example, you must submit a recent chest X-ray with a sheaf of application paperwork. I'm not sure why that's so and I haven't run into it anywhere else, but the rules are the rules and there's no getting around the requirement. (I can only imagine the facility they use to store all that film: Must be a file clerk's nightmare.)

knowing the ropes

Once you're safely, legally and comfortably operating in another country, you then have to be able to function effectively on the business front.

In that context, understanding various monetary systems, currencies and exchange mechanisms is critical. These days particularly, I am careful about pricing and taking into account the strength of the dollar relative to other currencies and keep an eye on various fees, taxes and other expenses I might incur. In other words, I can't price things overseas the way I do at home and know that if I don't do my homework I could get killed, financially speaking, by unexpected expenses that can take a profitable-seeming job and turn it into a real money-loser.

As much as I'm aware of cultural issues, I'm perhaps even more fiscally aware overseas. If I'm moving materials into the country as part of a construction project, for example, I'm keenly aware of the import laws, tariffs, shipping costs, customs rules and the time required to move items from point A to point B. In some situations, you might even have to know a thing or two about whose palms you have to grease to get things delivered – a risky, unpleasant but, in some places, unavoidable side of the business.

Experience certainly helps. In my case, I've learned a great deal about charging for my time based on the kinds of expenses I'm going to run into, including everything from air travel and hotel accommodations to dining and costs associated with ground travel. That's basic stuff, but important – and extremely variable from place to place.

I also know well enough now that, in dealing with upper-echelon people in other countries, I need to plan on hosting an evening or outing of some kind while I'm there – especially if I have the sense that a particular client may be the key to referrals or additional business contacts. Doing so means knowing what things cost and engaging in some research about restaurants or various types of excursions.

Again, no two countries are exactly alike, so if there's one way to sum up what I have to do, it's all about knowing the rules, playing by them, pricing my services sensibly and planning my time thoroughly.

As suggested at the outset, my work overseas is simplified by the fact that I run mostly a design-only business. If your thought is to design and build in another country, there are additional issues to consider with respect to the availability of basic materials (stone, concrete and plumbing supplies) as well as electrical services and excavation equipment – all of which have an influence on job planning. The same is true of local building codes: As I've pointed out in some past columns, rules governing construction in other countries tend to be far less stringent than they are here at home, but you can never be certain what you're dealing with until you investigate and get reliable answers to your questions.

In some places I've worked, methods of construction are completely different. I've been in areas, for example, where

pneumatically applied concrete is nonexistent and everything is built using masonry blocks or poured-in-place concrete. That single factor can have a huge influence on the nature of a design, the estimated cost of its installation and the time construction will take.

measuring up

Another issue that can really trip some people up – especially folks from the United States – is working in the metric system. In designing, you absolutely need the capability of interpreting plans drawn using the metric system and have to be able to generate your own plans and drawings in that system as well. Rest assured: This distinction drives equipment selection and acquisition of basic plumbing materials.

Another facet of international work that catches some operations off guard is the ongoing need for project oversight. As a design-only guy, that's not typically a big issue for me, but I always establish expectations for my designs based on how well they're installed – and if project supervision is part of my arrangement with the client, I price and plan site visits just as I would for projects here in the United States.

Although often challenging and occasionally intimidating, it is true that working in other lands can be big (and profitable) fun, and I'm thrilled that I have had so many opportunities to pursue such projects. I've seen the world, had experiences I wouldn't have had otherwise and have met some truly fascinating, wonderful people. Indeed, if you get involved in this sort of work and are good at it, rather than simply visiting places, you come to see the world through a very different kind of lens than you do simply as a tourist. In a sense, it's a much deeper type of involvement in other places and cultures.

If you have confidence in yourself, plan adequately, do your homework and, perhaps most important, are prepared to deliver quality service overseas on the same level you do at home, then you might find this work to be just the ticket. But if you go into the process with blinders on, hobbled by preconceptions and thinking that work is work abroad and at home, you're likely to wake up with an awesome headache in a foreign hotel asking yourself, "What am I doing here?"

It's not for everyone, but for some of us who've survived that particular nightmare and worked through the difficulties, it's now a pleasurable part of our working lives. WS

Brian Van Bower runs Aquatic Consultants, a design firm based in Miami, Fla., and is a co- founder of the Genesis 3 Design Group; dedicated to top-of-the-line performance in aquatic design and construction, this organization conducts schools for like-minded pool designers and builders. He can be reached at bvanbower@aol.com.

By Bruce Zaretsky

Stone Stepping

When stairs are considered in deliberate and creative ways, they can become much more than a conveyance and can indeed lend a great deal of beauty and unique visual interest to almost any setting.

Stairs, to borrow an immortal phrase from Rodney Dangerfield, "get no respect."

In fact, if my observations through the years tell me anything, the stairs set in far too many landscapes are strictly utilitarian objects – no more than a means of getting from one level of a space to another. The only thought that seems to go into some of them has to do with avoiding trip hazards, which is important but hardly the most aesthetically oriented of approaches to take.

In my experience, when stairs are considered in deliberate and creative ways, they can become much more than a conveyance and can indeed lend a great deal of beauty and unique visual interest to almost any setting. You can't lose track of their functionality, of course, but I've always seen them as an artistic detail and do what I can to respect them in that spirit.

This is particularly true for me when I turn to any number of stone treatments to create the treads and risers and have the wherewithal to focus on offering my clients graceful vertical transitions as well as the means to pass among the levels of their gardens.

elevated tradition

To be fair, not all steps are treated shabbily. Many architects, for example, design spectacular, grand staircases for upscale homes and make them a vital part of the architectural program. In landscapes, however, too many designers seem to look at slopes and think, "We need a set of steps here" instead of recognizing that these slopes present them with opportunities to create stairways of great beauty.

Sometimes steps don't have to be anything more than an informal set of stone slabs placed throughout a garden. In other cases, they can be central features in formal landscapes – luxurious affairs made with incredible, hand-cut stone and fitted with broad treads, elaborate railings and strategically placed landings. Either way, if they are built to fit the site and harmonize with a home's architecture, your clients may be so distracted by their magnificence that they will never notice all the exercise they're getting in climbing them.

The prime design principle I apply with garden steps is that they should never be daunting or off-putting. That is, they shouldn't look too steep or in any way seem treacherous, nor should they be visually jarring; rather, they should draw observers to them and invite people to climb their risers, alight on their treads and experience their stability.

In that light, even though I'm generally one who ignores conventional approaches when it comes to landscape design, steps are a specialized functional detail that involve a couple sensible rules of thumb:

- They shouldn't be too steep – risers never more than eight inches high and preferably no more than six.
- Treads should be proportional to the risers – the shorter the riser, the longer the tread.
- There shouldn't be too many steps before a level landing. (My personal preference is such that I rarely set up more than five risers before

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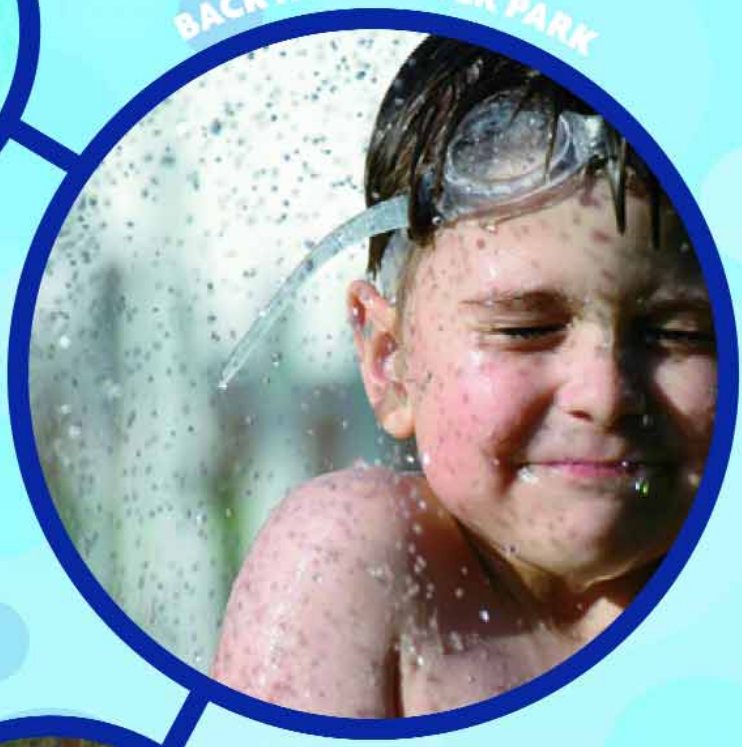

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inserting a landing.)

- Steps should be impressive enough to deserve the time anyone invests in climbing them.

With those points in mind, there are numerous options when it actually comes to building steps into landscapes.

One of the simplest treatments involves cutting out level treads in a slope and either planting them with grass or a groundcover that can withstand the foot traffic. Or, for a nice, informal look, you can cut those same level areas and place stone slabs of somewhat uniform thickness as treads. Precast concrete materials also work, as do mortared treads of brick, stone or any other material (including wood and composites) that work in your particular climate zone and with your particular design. There are also tread-and-riser systems made of stacked stone capped with a flat Bluestone or flagstone.

I use the plain-stone-slab approach quite often when traversing levels through gardens: It's beautiful, natural and hits all four of the key criteria listed just above. It's also a cost-effective approach with respect to both materials and labor – provided, of course, that you have access to a small skid/steer loader or can enlist a number of strong backs. I love the look of a set of these slabs rising amid plants: Done right, they can look as though they are bedrock that has been exposed by generation upon generation of climbers.

versatility

Sometimes, of course, a setting will call for a more formal or structured look.

Each year, we build (or rebuild) quite a few terraces leading to our clients' front doors. In these cases, we always defer to the architecture of the home in the belief that the surrounding landscape should harmonize with it. (In fact, the only time I'll diverge from that commitment is when a client specifically asks me to do so.)

Thus, if I'm working in front of a brick Colonial, the entry porch will be brick, too – at least with the risers in the event we select some other surface material instead of brick. I love, for example, the look of Bluestone and brick together: They have a timeless quality to them, so in many cases I'll surface a terrace in Bluestone and use bricks for the risers.

When I'm not using bricks in these formal contexts, Bluestone is often my first option: You can buy it in many sizes and shapes, and for steps, I frequently use what are called Bluestone treads. These come in varying depths, from 12 inches up to whatever size you might need, and are generally two inches thick.

For the most part, I use treads that are 12 or 14 inches deep. This works out quite comfortably in most situations, because I like my risers in landscapes to be no more than six inches high unless the slope

An informal approach to stone steps involves cutting into a slope and placing stone slabs as treads. I set them up so the riser height is approximately uniform from top to bottom of the stairway; I also try to find slabs of uniform thickness to lend a sense of visual balance.

or some other factor calls for a higher one. These treads, which can be found up to eight feet long, form a solid, stable step at the point where most people want to place their feet as they climb stairs or step up onto a terrace.

When the entry requires a larger terrace, I'll use the 12-inch treads as a sort of capstone atop stone or brick risers, then fill in behind them with various sizes of cut Bluestone.

While my preference is natural stone, I've used many of the precast concrete products on the market today. Versa-Lok (Minneapolis) and Keystone (Oakdale, Minn.) have been around for many years now and their lines have improved significantly in both looks and versatility. Many of these include modules designed specifically for use as steps at a variety of riser heights, and because they are modular, it doesn't take a tremendous amount of experience to install them.

Again, that's not my first choice, but these products have their place, tend to be cost-effective and, in recent years, have gained significantly when it comes to aesthetics. Indeed, several of these suppliers now offer "tumbled" products that come reasonably close to mimicking real stone. No professional will be deceived, but these products definitely appeal to clients on a budget and deliver consistent, satisfactory results.

As a final option, you might consider pouring concrete steps. I don't do so myself very often, but when I do, I fully exploit the material's ability to be textured, colored, acid-stained and formed into virtually any shape imaginable. I've even begun using stamped concrete for walkways

We work on lots of properties with classic Colonial styling and, often, lots of red-brick details. When I don't use bricks for steps, I like using Bluestone instead: Its color and visual texture harmonize perfectly with the architecture and work very well in combination with brick.

and pathways in certain situations and have come to appreciate its place in the landscape.

proper proportions

No matter which material or style you choose for your steps, the most important consideration is making certain they "fit."

That word, of course, has at least two meanings in this context: First, you need to make sure the steps don't look like they were plopped in to the space; instead, they should seem as though they were unearthed on site and have proportions suited to the space. Second, they must be designed in consideration of human scale and must be carefully thought out and properly designed.

That first point is a given in any landscape design, but as mentioned above, in my experience far too many stair systems seem to be no more than afterthoughts – and carelessly done at that in aesthetic terms. The second point is more practically oriented, so let's focus on that one in more detail.

In building steps in the field, you need to give careful thought to the relationship of the rise to the run. The two most common mistakes I've seen have to do on the one hand with providing too great a tread depth (in one memorable case, an average-size person would have to take one full step and then a short, foot-shuffling step to reach the next riser) and, on the other, with arranging things so the user steps up with the same foot every time – a tiring, disconcerting process.

The most comfortable steps allow you to proceed upwards (or downwards) with a natural stride and have you alternating feet as you go, whether it's a normal staircase or a series of landings. To avoid any problems here, in laying out steps for installation, I'll always pace off the steps and landings and mark where my opposite foot wants to step up: This is where I'll place my next step.

I don't find them to be terribly helpful, but there are formulas used in the step-construction world to determine tread depths based on riser heights. The most common says "tread depth + 2x riser = 27." Thus, if you want to build a set of steps using a uniform set of six-inch risers (such as a six-by-six pressure-treated timbers, for example), that works out as 27 – (2 x 6) = 15-inch tread depths.

If I use such formulas, I look at them with a bit of flexibility based on experience, instinct and the specific requirements of the site. While I might start with the guideline, in other words, what I pace out in the field is always my best measure in finalizing tread/riser relationships. Sometimes a six-inch riser works beautifully with just a 12-inch tread depth – or maybe it takes 18 inches under slightly different circumstances.

In fact, when I'm working with rough-cut stone (which I often do), I know the material will rarely have anything approaching uniform heights and depths. In those cases, I start by seeking out the most uniform heights, then tweak the stones as needed to get the depth I want. In doing so, I keep all risers at whatever final height within a half-inch range: The biggest mistake anyone can make with steps is to have noticeably inconsistent riser heights!

down to details

The whole area of riser heights is actually pretty interesting – especially when you consider them in light of the

Whenever I design step systems to cover extended distances, I always insert landings after a maximum of five steps. This gives my clients and their guests places to rest, take in the scenery and size up the flight of steps immediately in front of them on their way up or down.

needs of specific clients. Riser heights of less than four inches are seldom a good idea in general because they present something of a trip hazard rather than a practical rise – but the problem is even more pronounced if your clients are tall.

In some areas, of course, riser heights are covered by building codes. In my area, for example, risers can be no more than eight-and-a-quarter inches high (except for spiral stairs, which are a subject unto themselves).

My general inclination in landscapes is to work with risers of just under seven inches: To my way of thinking, this allows for greater tread depths and a more casual stride in climbing a slope. By contrast, higher risers lead to narrower treads and a faster climb (or descent). That's the complete antithesis of what I want going on in any of my clients' garden spaces.

This focus on the way people use the steps is why, as mentioned earlier, I do what I can to keep runs of steps to five at a maximum before I insert a landing: I want to give them an experience rather than a chore. A landing affords my clients and their guests a place to rest, smell the roses, look around the garden from a unique perspective and assess the next steps they'll be taking. And if they reach that landing with their right feet, I want to make certain they'll approach the next step up with their left feet.

As another rule of thumb, I consider 24 inches to be an average stride of someone walking casually through a garden and set up my landings accordingly. As always, however, the specifics depend on a number of factors related to the clients and the site, so I tend to use that figure as a point of departure rather than a hard, fast rule.

One final point: Step width is a factor, too. I've built steps as narrow as 18 inches using small slabs, simply because it worked with that particular site. I've also built steps up to 20 feet wide in cases where the architecture and the site called for it. In general, however, as a matter of comfort (and with some thought given to the user's sense of physical security), my preference is to make stairs at least three feet wide in gardens.

As I've mentioned time and again in this column, what actually happens in step installation is much less about rules than it is about the site and its requirements. Steep or narrow, long and graceful or short and expansive, what it takes to get steps right is making certain they fit – not only in the setting but for the people who will use them. WS

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By Dave Peterson

Keys to Consistency

The equipment schedule helps ensure that the right components and devices are purchased and installed, thus reducing errors and change-orders during construction.

Professionals often seek ways to distinguish themselves in their chosen fields of endeavor. For watershapers and others who work in design- and construction-related disciplines, one prized distinction is consistency when it comes to drawings: It's something that makes them easier to work with and more valued as collaborators.

Indeed, established firms repeatedly use the same drafting conventions, project after project, to a point where their plans become known and well-regarded for being easy to understand – and their projects much easier to bid and build.

In my last "Currents" column (May 2008, page 26), I began to define the nature and value of consistency in project documentation by discussing the importance of drawing-set and sheet organization. This time, we'll dig deeper and focus on some of the actual content of the plans – specifically as relates to Module 3 of the National CAD Standards (NCS) on Schedules and Module 4 on Drafting Conventions.

using schedules

Let's start with a quick definition: In the context of drawings, the term *schedules* refers to tables of information that summarize equipment and various other specifications. Typical sets of documents may also include, for example, schedules for construction or critical path milestones, but this time we'll focus almost entirely on equipment schedules.

No matter the type, schedules are a fast, easy way to summarize what's needed for a project. The equipment schedule, for example, helps ensure that the right components and devices are purchased and installed, thus reducing errors and change-orders during construction. And when these equipment schedules include relevant electrical information (as ours do), they are easily understood by electrical engineers who can size up the circuits and ensure that the right voltages will be available at all the right places.

Here's why this is so important: Have you ever read a plan developed by someone who listed a pump as "2 hp" only? I certainly have, but I know that without additional information it is virtually impossible to select the right pump.

There are, for example, two-horsepower pumps with curves that handle high flow and low pressure – and two-horsepower pumps that produce low flow at high pressure. Even similar pumps made by different manufacturers will have varying performance, rendering "2 hp" completely meaningless.

If the plan happened to read "2-hp Pentair WhisperFlo," that would be better but would still be inadequate, because that manufacturer offers that pump in energy-efficient models, full-rated or up-rated models, three-phase or single-phase formats and even single-speed and two-speed versions. The best way to make certain the designer's actual selection gets installed in the field is to provide that information in a pump schedule.

To place this in context, let's back up a bit: Before my company generates our equipment schedules, we always develop a single-line schematic diagram of all hydraulic systems. (This is done immediately

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after the plan view has been developed.) This schematic helps in validating the plans (with respect to size of surge basins and the like), and we prepare it before we start *any* structural engineering work because sometimes the schematic diagrams identify operational problems that might affect subsequent plans and structures.

The schematic shows each piece of equipment from the smallest needle valve to the largest filter – but it doesn't get specific about the equipment: That's left to the equipment schedule. A pump, for example, might be shown and labeled on the schematic as P1, but the manufacturer and model number of that pump P1 will be listed in the Pump Schedule along with its electrical and performance criteria.

better and clearer

Why not simply list the pump on the schematic diagram?

First, the schematic diagram is already quite detailed, carrying a great deal of information on line sizes, flow rates, velocities and more. There's so much going on here that the drawing would be quite difficult to read if specific equipment details were listed.

Second, although the schematic identifies some performance criteria (particularly flow rates), there may be many pieces of equipment that may be suited to the purpose and the place to indicate those options is on the equipment schedule rather than the schematic itself. This is especially true with large projects or government jobs that require competitive bids.

Third, nothing will summarize all the equipment as neatly as a schedule. That clarity is especially important for sorting out details such as electrical loads, for example – a huge help to the electrical engineer who needs to develop a plan to handle them.

Fourth, it is much easier to change equipment in the schedules than it is anywhere else. As an example, we recently specified variable-flow pumps for a commercial waterfeature before we had received relevant electrical information from one of the project's other consultants. Later, we learned that we could only count on getting 208 VAC delivered to the pump (which requires 230 VAC), so we changed the schedule and specified a fixed-speed pump with a motor that could function adequately with 208 VAC.

We also use different schedules for different types of equipment because their requirements vary. For example, a pump schedule might need fields for flow rates and total dynamic head, while heaters need columns for ambient temperature, maximum desired temperature, delta-T and Btus per hour. Formatting a single table to include all the required fields for everything from lighting to chemical controllers would be incredibly complex and highly inefficient, so we break everything out in sensible groupings.

The first column of all the schedules carries the Equipment ID Tag. This tag is referenced in the schematic diagrams, plans, sections and written specifications and distinguishes this piece of equipment from any other that might be specified. For our drawings, we use letters to identify different types of equipment: P for pumps, F for filters, H for heaters and so forth.

We also use a three-letter prefix that identifies where the item (a lighting fixture, for example) is located or, with a pump, for instance, where the water originates. This works well in that equipment related to, say, a spa *only* is labeled as such – even though pumps sometimes pull from multiple bodies of water. (In such cases, you just need to pick one for your labeling because it's generally more important for the designation to be unique than to be spot-on specific.)

simple tracking

The key in all of this is consistency, of course, but it also requires whoever is doing the coding to have a complete overview of project features and a good sense of what is involved in collaborating across disciplines. In addition, the person doing the coding needs to be both thorough and meticulous. Where there are multiple pieces of equipment, for example, he or she needs to keep track of everything and include suffix numbers to make certain all bases are covered and identifications continue to be unique.

In our business, we mark these identifying codes on the equipment itself during installation. This helps keep things

PUMP SCHEDULE

ID (P)	SERVICE/ FUNCTION	QTY	FLOW RATE (GPM)	TDH (FT)	TYPE	SIZE	MINIMUM EFFICIENCY (%)	MAKE/ MODEL	MOTOR HP	RPM	VOLTS	PH	HZ	DETAIL	NOTES
OPL-P1-1 OPL-P1-3	OUTDOOR POOL FILTER PUMP	3	85	45 (60)	END-SUCTION CENTRIFUGAL	2 X 2 X 6		PENTAIR WHISPERFLO WFE-6 PN 011514	1.5	3,450	208	1	60		DEH APPROVAL: LOS ANGELES COUNTY
IWP-P1-1 IWP-P1-2	INTERACTIVE WATER PLAY FILTER PUMP	2	59	45 (60)	END-SUCTION CENTRIFUGAL	2 X 2 X 6		PENTAIR WHISPERFLO WFE-3 PN 011512	0.75	3,450	208	1	60		DEH APPROVAL: LOS ANGELES COUNTY
SLD-P1-1 SLD-P1-2	SLIDE SLIDE PUMP	2	400	40	END-SUCTION CENTRIFUGAL	6 X 4 X 8		PENTAIR EQ SERIES EQK750 PN 340033	7.5	3,450	460	3	60		DEH APPROVAL: LOS ANGELES COUNTY
IWP-P4-1 IWP-P4-4	INTERACTIVE WATER PLAY GUN PUMP	4	80-135	45	END-SUCTION CENTRIFUGAL	2 X 2 X 6		PENTAIR WHISPERFLO WFE-8 PN 011515	2	3,450	208	1	60		DEH APPROVAL: LOS ANGELES COUNTY
IWP-P5-1 IWP-P5-2	INTERACTIVE WATER PLAY GUN PUMP	2	200	50	END SUCTION CENTRIFUGAL	3 X 2 X 6		PENTAIR CHALLENGER CFII-N1-5FE PN 345210	5	3,450	208	1	60		
OPL-P2-1	OUTDOOR POOL CHLORINE PUMP	1	0.1	40	POSITIVE DISPLACEMNT	3/8"	75	LMI B-SERIES (800.564.1097) MODEL: B131-468SI	1/10	3,450	120	1	60		DEH APPROVAL: LOS ANGELES COUNTY
IWP-P2-1	INTERACTIVE WATER PLAY CHLORINE PUMP	1	0.1	40	POSITIVE DISPLACEMNT	3/8"	75	LMI B-SERIES (800.564.1097) MODEL: B131-468SI	1/10	3,450	120	1	60		DEH APPROVAL: LOS ANGELES COUNTY
OPL-P3-1	OUTDOOR POOL LIQUID ACID PUMP	1	0.1	40	POSITIVE DISPLACEMNT	3/8"	75	LMI B-SERIES (800.564.1097) MODEL: B131-468SI	1/10	3,450	120	1	60		DEH APPROVAL: LOS ANGELES COUNTY
IWP-P3-1	INTERACTIVE WATER PLAY LIQUID ACID PUMP	1	0.1	40	POSITIVE DISPLACEMNT	3/8"	75	LMI B-SERIES (800.564.1097) MODEL: B131-468SI	1/10	3,450	120	1	60		DEH APPROVAL: LOS ANGELES COUNTY

This is the sort of Pump Schedule that often accompanies our schematics. This way, a given piece of equipment can be called out on the diagram with an identifying code rather than with a full description – a real benefit when it comes to reducing clutter on the schematics.

straight with repairs and maintenance in the future (particularly valuable for large commercial jobs).

Ultimately, what we accomplish with all this is making the equipment schedules the single reference point for specifications. In other words, all diagrams, plans, specifications, notes and other references simply link back to the schedule using the Equipment ID Tag – which can be as simple as "P1" or "SPA-P2-1."

For large jobs, these schedules can multiply like rabbits. In most cases, for instance, we'll have them not only for pumps, but also for filters, heaters/chillers, solar heating, lighting, autofill devices, chemical-treatment systems, controllers and, as a grab bag for other components such as nozzles, safety equipment, pressure gauges, flow meters and sight glasses, a table labeled "Miscellaneous."

Our schedules usually require an entire Arch-D size sheet (that is, 24 by 36 inches). We start with a master copy that includes all the schedules filled out with products that we tend to specify over and over. From that starting place, we simply add, delete and edit to make the sheet specific to the job.

Once the editing is done, the schedule becomes the shopping list – the first step in determining an accurate scope of work and preparing a bid.

Helpfully, the NCS includes sample schedules for many project functions, including steel reinforcement, pumps, doors, finishes and much more. It's possible to establish and adjust the schedules in a spreadsheet program such as Microsoft Excel – but you need to be sure the information can be pasted into the drawing set before committing much time to compiling your basic product lists.

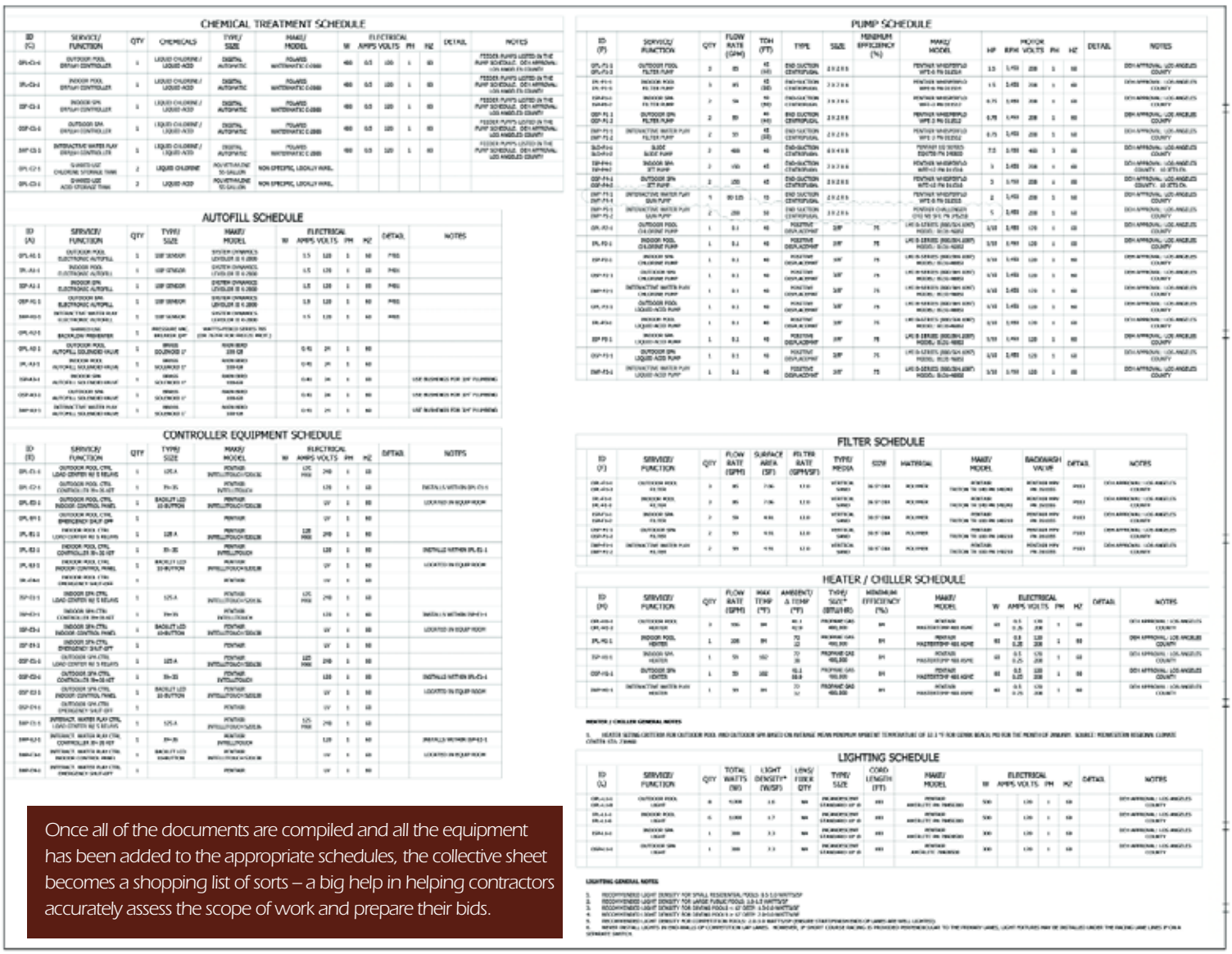
It's also possible to modify the format and diverge slightly from the NCS model – as we've done for our own purposes. In everything we do, however, we follow the spirit carried in Module 3 of the NCS as it relates to the way we set up all of our schedules and use those principles with all of our construction documents.

conventional wisdom

Now let's move on to the fourth module – Drafting Standards – which is all about bringing consistency to graphical and textual information conveyed within drawings.

Large firms follow these rules out of necessity because the members of their own design teams may change as projects move along, meaning each employee may need to be able to jump into the process at any time and have his or her work merge seamlessly with everyone else's.

Some of these conventions deal with simple issues (such as line weights and scales), but they also cover the complexities of mock-up plans of the sort developed at the beginnings of new projects. No matter: The all-important goal here may be summarized as the generation of *clear, concise, comprehensive* and *consistent communication* and *cross-referencing*.



Once all of the documents are compiled and all the equipment has been added to the appropriate schedules, the collective sheet becomes a shopping list of sorts – a big help in helping contractors accurately assess the scope of work and prepare their bids.

That's a whole bunch of Cs, but what it all boils down to is that we can't get all of the required information to build a project on a single sheet of paper. As a result, we need to use consistent references throughout any given set of drawings.

One of the first conventions has to do with drawing orientation and the use of "north arrows."

Generally, our site plan of an entire property will show the project with true north pointing straight up on the sheet. Sometimes this will be rotated slightly if it means we can show the whole site at a larger scale by taking advantage of a plan page's aspect ratio, but generally the practice is to have the directional arrow pointing straight up.

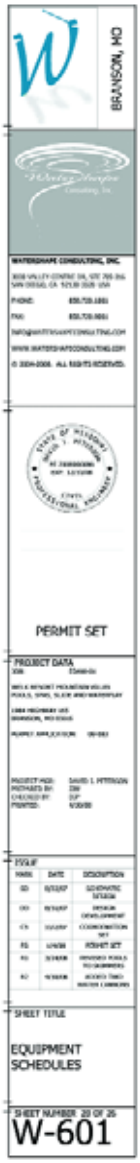
Beyond that one sheet, however, most sets of construction drawings are almost always set up with the north arrow pointing in some direction that's other than straight up.

On most residential projects, for example, we position the entry door at the bottom of the sheet with the backyard at the top so the client reads the plan as if he or she were coming home. This *isn't* the site plan: This is a larger-scale construction plan, and if the project is strictly a backyard design, it might even include only the rear walls of the home at the bottom of the sheet, no matter their directional orientation.

The important point here is consistency, not direction: Wherever you set the baseline and no matter the direction of the arrow, all drawings in the plan set must use this exact same orientation, with the overall site plan being the *only* possible exception.

working the grid

Another convention of Module 4 is a grid system that can be used to align and reference certain edges, column lines or other elements in a plan. Using this grid is especially important in multistory buildings to coordinate the activities of trades between floors, but we've found it to be useful for layout work in both geometric and freeform watershapes.



Generally, the vertical grid elements are labeled with numbers and the horizontal rows are labeled with letters. The grid does not need to be equally spaced, and sometimes intermediate lines are identified with markings such as "C.4" to represent 40 percent of the distance from row C to row D. If the primary grid is ten feet on center, then C.4 would be four feet from row C. The great thing about a grid system is that it can reduce much of the dimensioning that would otherwise complicate the plan.

The NCS also carries suggestions on how to lay out drawings to maximize plans' readability and accuracy. Noting dimensions beyond the edges of the primary construction plan, for example, is recommended as a way to reduce clutter within the plan itself. That seems simple enough, but there are several NCS pages on dimensioning that highlight the fact that this information can be critical.

Helpfully once again, the NCS makes suggestions about what exactly needs to be dimensioned. Do you, for instance, dimension the edge of the coping, or is it the concrete structure beneath it?

Generally, says the NCS, it's better to dimension the structural elements and let the finishes float out beyond that – unless, of course, the location of the finish material is critical and the plans need to reflect that fact. This module also gets into vertical dimensioning and suggests working with finish elevations because it is simply unacceptable to have odd-sized steps, unworkable slopes to drains or flawed water levels.

There are also rules regarding scale. No more needs to be written here than that the minimum scale to be used for designing watershapes is one-quarter inch per foot. (The only exception might be a lake-type project where the size is huge and the point-by-point accuracy of a plan is not so crucial.) Naturally, details can be drawn at larger scales, and the NCS does a decent job of explaining that items such as material indications should not be completely shown in certain views lest they complicate the image.

Line weights, line types, arrows, section and elevation callouts, detail references and some symbols are also covered by the drafting-conventions module, and there's an emphasis on the importance of cross-referencing, which flows from the floor or construction plan (the master drawing) and establishes links to more specific information (details, sections, notes and so forth) on subsequent sheets.

Bottom line: Plans with great cross-referencing never duplicate information and the specific details are always within easy reach.

value added

The Drafting Conventions module is all about organization and consistency of the drawing information, so it is no wonder that it includes a recommended method for organizing the drawing set.

This starts all the way at a project's beginning with the mock-up or cartoon set – something we prepare for all our large projects at the proposal stage so that we can get our hands around the scope of the work. Our mock-up sets use ordinary 8-1/2-by-11-inch sheets to represent a scaled-down version of the final set of plans we expect to create. We rough out each sheet, verifying that our proposed scales will actually fit when we move to the final documents.

Some of the sheets are marked up with rudimentary sketches, but others are simply lists of what eventually will be included. Our resort projects show why this preparatory work is so important: Large pools need to be split into multiple sheets with match-lines – an effort that will require a little more work in the design phases not to mention higher printing fees throughout the project.

We need to determine all of this during our proposal phase, so the mock-up sets are sometimes done before we even get the project. The real value, however, comes when we get the job and use the mock-ups as a roadmap for all the rest of our design work and as a yardstick that lets us know what percentage of the work we've actually completed as the project moves forward.

As an example, one of our recent resort projects included 36 sheets of watershape-specific plans in addition to the landscape, civil engineering, architectural and other plans produced by our fellow team members. It was *much* more efficient to draw each sheet knowing that certain information was required – and that other information was going to appear on separate sheets.

We were also able to add complete references (such as section lines or details) starting on Day One instead of having to wait to apply those references (which include key bits of basic information such as sheet numbers) until after the first full set of plans was completed. The mock-up set also established drawing priorities and allowed us to split up the work among multiple drafters without losing any continuity within the whole set.

To those of you who are thinking, "We'll never need a mock-up set for our residential projects," I say this: While that will be true for most projects, some custom watershapes are complicated enough that we've found ourselves developing up to 17 or 18 sheets for a mock-up set. If you are ever invited to design a really big project, in other words, I'd suggest jumping on the NCS bandwagon and using the mock-up process to get yourself organized early.

That's what the NCS is all about: simplifying your processes by making them organized and consistent from project to project. WS

Next: Terms, abbreviations, symbols, notations and code conventions.

Dave Peterson *is president of Watershape Consulting of San Diego, Calif. He's been part of the watershaping industry since 1994, starting his own firm in 2004 after stints with an aquatic-engineering firm and a manufacturer. A registered civil engineer, he now supports other watershape professionals worldwide with design, engineering and construction-management services and may be reached via his web site,* www.watershapeconsulting.com.

Moving

Experiences

As a vinyl-liner pool specialist with adventurous tendencies, Josh Katz has done several installations that have pushed the technology to its creative limits. In the project described here, for example, his firm designed and installed a residential watershape in which customized steel walls and a liner were used to fashion a full-fledged lazy-river pool – perhaps the very first of its kind – surrounded by stone and wood decks, waterfalls and much more.

By Josh Katz

When my father started Lido Pools in 1968, he built both concrete and vinyl-liner pools.

By the early '70s, however, the market in our area had reached a point where vinyl liners were enabling increasing numbers of middle-class consumers to enjoy our products. We found ourselves still building a few gunite pools, but before long the company's focus narrowed to installing quality vinyl-liner pools that possessed the opulence we were familiar with in gunite pools as well as the practicality and affordability of vinyl-liner pools.

As has been discussed in the pages of this magazine and elsewhere, developments in vinyl-liner technology in recent years have brought the market along to a point where nearly anything that can be achieved in concrete can also be achieved with a vinyl-liner system. Indeed, those of us who specialize in these pools have truly entered the realm where design limits are imposed solely by clients' budgets and our imaginations.

Southern Ontario in general and the Toronto area in particular have become something of an epicenter for innovation in this technology, and I'm proud to say that Lido Pools has been a part of that phenomenon – especially when it comes to innovative work with the complexities of multiple radiuses.

Through the years, our work with various manufacturers, engineers and clients have resulted in new twists and turns – and the project profiled in these pages is certainly a case in point: It's an extremely complex residential design that features a lazy river that is, so far as we know and as many have told us, the first and only one of its kind.

Client Ambitions

When I first visited with the client, he talked at length about wanting something interesting in a freeform, lagoon-style pool.

His property is in Thornhill, a well-to-do Toronto suburb, and presented us with a yard with a working space about 50 feet wide and 135 feet long. The home is well above average, but I was nonetheless somewhat surprised that he

was after anything quite so elaborate. He explained that he wanted a pool that would wow both business associates and friends – something aesthetically sharp *and* suitable for big-time fun.

About halfway through our first conversation, he mentioned that he'd been on vacation in Mexico at a resort with a lazy-river pool. He asked me if it could be done in vinyl. Almost immediately, he added that he had asked the very same question of five other high-end pool builders in the area, none of whom would entertain the idea save one who said he could only do it in concrete.

Excited by so open a challenge, I told him that I'd have to do some research but didn't see any obvious reason why it couldn't be done.

At first, of course, I was doubtful that this particular client would *really* want something so elaborate and expensive, but it wasn't long before he started calling me and basically pressuring me to generate an initial concept. I had already been working on it, but when I realized how serious he was, I put his project on the front burner.

I conceptualized the plan, prepared a colored hand drawing and dropped it by his house. He was away on business at the moment, but his wife was so excited by what she saw that she scanned the drawing and e-mailed it to him. That same day, he called and told me he wanted to meet as soon as possible and get the project rolling. I began researching the mechanics and hydraulics needed to drive a lazy river, and by the time we met, we were moving full steam ahead.

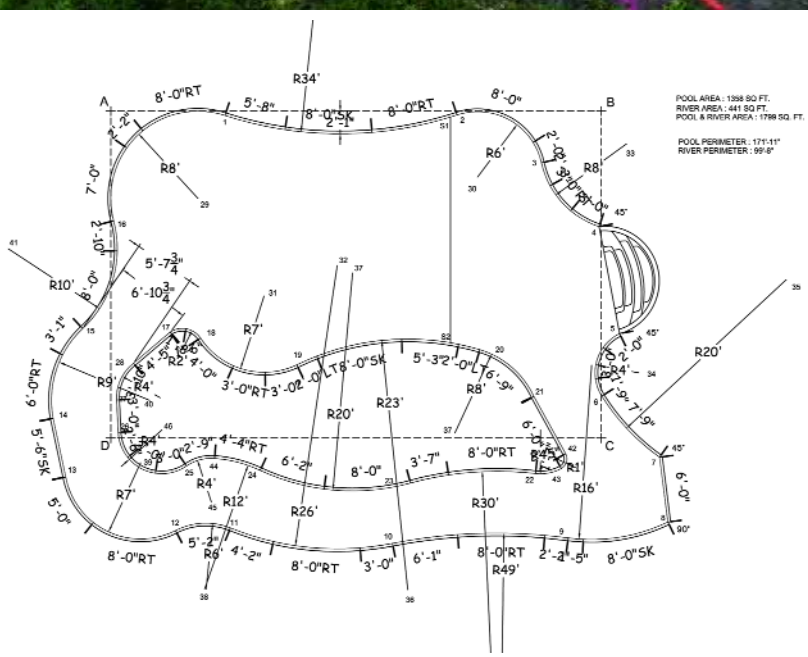
A helpful key to my research was Phil de Tournillon and the staff at Riverflow Systems of Ft. Lauderdale, Fla. They let me know what was involved in their product and told me what I'd have to do to marry its suction grates and return jets with a vinyl liner. I was also in very close contact with Jenn Cummerson, Jason Dawson and the experts at Technican Pacific Industries (Brantford, Ontario) in early discussions about what promised to be a complex system of steel walls – and a liner to match.

Everything came together quickly: The pool is about 30 feet wide and 50 feet long with undulating perimeter contours. On the side farthest from the house is a river channel about 85 feet long that flows out of and into a wider swimming area. Set within the pool is an island approximately 45 feet long and 10 to 15 feet wide. The island features a circular spillover spa, landscaping and a spiral waterslide.

Around the pool's perimeter are five natural-stone waterfalls. There's also a natural-stone bridge connecting the island to a deck area finished with a complex quilt-work of patterned stone. Nearby is a wood deck with complicated cuts that embrace large boulders and planting beds.

Complex Contours

In a project with many challenges, perhaps the largest one here had to do with



The complex shapes of the pool and lazy river were adjusted over and over again through the layout stage of the project – to the point where we had to get green paint to erase some of the many lines drawn in the grass. What finally emerged is the complex configuration seen in the schematic.

designing the steel support structure for the liner system.

In developing that configuration, we had to accommodate the client's desire to save a mature 60-foot maple that stood at one end of what would be the island. We designed the watershape to wind around it in a way we hoped would preserve its roots and moved ahead with that in mind.

As it turned out, once we started excavation, we discovered that one of the tree's primary roots went in an unexpected direction. The arborist we consulted told us that removing that root would leave the tree with insufficient structural support and that it would almost certainly topple in a high wind. So we made the difficult decision to cut it down.

By that point, however, we were already *very* deep into the process and decided to proceed as though the tree was still part of the program.

That process was hard for a number of reasons having to do with clearances around the pool's perimeter and the complexities of its distinct, undulating shape. Technican Pacific offers designers a tremendous amount of flexibility with its 42-inch-tall, galvanized-steel wall panels. The keys to their strength are five-inch-wide top and bottom rails that can be made to almost any contour with respect to inside and outside radiuses.

For this pool, we were designing not only the usual outside system of panels for the outer perimeter, but also an inside set for the island. We were after an organic look, so we didn't want these inside and outside perimeters to parallel one another – although they still had to work together. By the time we were through, there were 25 panels on the inside and 35 on the outside, no two of them exactly alike.

Laying out the pool on site was no piece of cake. Using a CAD drawing generated by Technican Pacific based on our initial design, we established a series of reference points in the yard, measured the distances to several points on the pool's edges and spray-painted the radii to develop a precise excavation layout. Once that was done, we checked in with the homeowner. He asked us for so many adjustments that by the time we

Other than working uncomfortably close to the property's fence in excavating for the pool and lazy river, installing the watershape was a reasonably direct process. Making allowance for the river system's fittings (something entirely new for us) and hanging the liner were occasionally challenging, but it all moved forward with relative ease.

The most unusual features of this project were the current system and the island. In the former case, the lazy river had us get involved with what were (for us, anyway) unusually large pipes and fittings and unusually tight plumbing tolerances to keep the flow balanced; in the latter, we had to set things up in such a way that one of the island's narrow ends could support the weight of a large stone bridge.

were done, we'd basically laid the pool out 21 times.

The process became so involved with so many different lines painted in the grass that we actually had to use green paint to "erase" some lines so we could clearly see the most recent ones and follow the plan.

Digging In

Excavation was another challenging part of the project because of the location of the pool relative to the lot lines. Local rules require five-foot setbacks for swimming pools, but the client wanted to maximize use of the space and push the pool to within four feet of his property line. To do so, we had to get a variance from the building department – an added step that took quite a bit of paperwork and patience and also made digging the hole a good bit tougher.

This was so because the panels are supported by systems of steel braces that call for over-excavating the pool site by a minimum of two feet. In some spots, this meant maneuvering within two feet of the existing fence, which in a couple of places meant we had to do the digging by hand. Fortunately, the island wasn't much of an issue: At 15 feet wide at many points, we were able to over-excavate here and still had enough ground in place so we wouldn't have to backfill the entire island space.

Once the hole was dug, panel assembly was a relatively straightforward task. We worked in some tight spaces near the fence, but all went smoothly. And although the panels are precisely designed, they have enough flexibility that they can be bent just a bit. This allowed us to do some on-site customizing in consultation with the client, who oversaw installation of every panel.

With the panels fully assembled, we poured concrete around the outside of the panels to lock them in place. (Again, some finesse was involved in getting material out to areas near the fence.) We returned the next day and finished the concrete work by pouring the pool's floor, including a precisely designed diving well in the main pool area. Next, we installed the retaining-track assembly for the vinyl liner, which consists of ten-foot-long channels made of extruded, powder-coated aluminum that screw onto the tops of the wall panels. (Later, the ledgerstone coping would be cantilevered over this retaining-track coping.)

Then came the liner – in this case quite an impressive affair both in size and complexity. Normally, liners weigh in at anywhere from 180 to 250 pounds, with 500 pounds being the usual upper limit. This one weighed approximately 1,300 pounds and had to be moved into the pool using a Bobcat.

Shaping the liner is where the magic of CAD-based design really comes into play in the vinyl market: Using precise measurements taken before and also af-

ter the walls were installed, the factory used its computer to design a liner to fit within a fraction of an inch. With a shape this complex, there would have been no way to get things anywhere close to correct without applying some advanced technology.

All In Place

The 30-mil liner showed up with one break in it and some overlapping material we would have to seam on site once it was finally in place. There had to be a break at some point because of the island and the fact that our original program had us working around that big maple that was subsequently removed: There was no practical way we could have lifted the liner over a 60-foot tree.

The liner has a gray-marble pattern selected to blend with the preformed pool steps and the stone decking. And as it turned out, the not-quite-necessary cut in the river portion of the liner made everything easier to manage: We just unfolded it in rough form around the island and simply marched around both the inside and outside perimeters, hooking the bead into the track on the coping assembly.

The cut in the liner was positioned at the narrowest spot on the river to keep the seam as short as possible. A mobile vinyl-welding company came on site and formed the seam in a matter of minutes, after which we turned on the vacuums and watched a flawless fit take shape before our eyes. Even we were amazed: Start to finish, the liner-installation process took only 75 minutes.

One of the nicest features of the system we used was the fact that the steps closely matched our gray-marble liner pattern – another first in vinyl-liner pools, so far as we know, and an innovation credited to Technican Pacific that represents a significant step forward in the aesthetics of vinyl-liner pools.

Now it was time to focus on the hydraulic systems and kick the Riverflow device into action. The unit, which is positioned next to the stone bridge on one end of the lazy river's course, generates its flow with a 13-horsepower pump that delivers 2,500 gallons per minute at a rate of 12.5 miles per hour at the nozzle. (This produces a far more leisurely 2.5-mile-per-hour flow through the river channel.) The system also includes two 20-inch intake grates that distribute the flow in such a way that there's a suction of less than three pounds per square inch at the grates – and therefore no perceivable pull.

Plumbing this unit proved to be one of the toughest parts of the project, partly because it runs on 10-inch PVC lines with 12-inch PVC connector tees, but also because the flow from the suction grates has to be perfectly balanced. This meant that the system's plumbing had to be perfectly symmetrical and that we had to have the entire manifold assemble fit perfectly onto the grates on the first try: It couldn't be off by even the

The heart of the project is the lazy-river system, which flows along a sweeping course on the far side of the pool. The system is driven by a 13-horsepower pump that will eventually be hidden by plants. This pump delivers 2,500 gallons per minute at a rate of 12.5 miles per hour at the nozzle – more than enough to create a well-tuned current that courses through the entire pool/river system.

smallest fraction of an inch or we'd have to start over again – an expensive, time-consuming possibility with pipes and fittings so large.

As a result, we had to hold the entire assembly in place while cementing the massive pipes, elbows and T-fittings into place. In all, it took eight of us to get it done, and I'm happy to say it all came together perfectly the first time through. (If I had to do it all over again, I would have given myself much more room to maneuver: Things were just too cramped for any level of comfort.)

The trajectory of the water blast from the river-flow unit in conjunction with the river's shape was crucial. Aesthetically, we wanted the river to have undulating sides to promote a somewhat natural appearance, but the first 25 feet of the river had to be fairly "straight" so as not to diminish the water velocity we needed to drive the system. It all worked, and I have to give a good measure of credit to the custom-made trajectory grate Riverflow Systems provided for us: It was skewed to the left at a six-degree angle to optimize and perfect the flow of water from the device.

Finish Details

We filled the pool, fired up the lazy-river system and were all thrilled by how smoothly it pushed bathers in inner tubes around the pool's full perimeter. Best of all, we saw that when those bathers reached the wider, swimming pool part of the vessel, the system gently drew them across the surface and back toward the mouth of the river: All they had to do was sit back and float across the open water without ever having to maneuver themselves back to the river's mouth.

With the pool and lazy river done, we focused on making the rest of the space into a complete backyard paradise, starting on the island where we installed an inground, 92-inch-diameter acrylic spillover spa finished in a gray-granite

One of the most enjoyable features of the project is that it was about much more than an innovative pool system. In addition, we also installed a spa on the island; an intricate deck system in which different stone profiles define transitions between the home and the pool; a wood deck with edges trimmed to flow around rocks; and a broad patio area in which we installed a fire pit as well as a full-featured cabana. (Note the pool steps, finished by the manufacturer in a way that blends them in with the liner.)

pattern. We then clad the exterior with Armour Stone boulders and Owen Sound Flagstone veneer.

That stone and all of the other stone materials used in the project came from Beaver Valley Stone, the largest supplier in Canada and third largest in North America. Their proximity to the job site made sourcing these materials both easy and more affordable.

To maintain a consistent look, all of the stone we used is some form of Armour Stone, a stratified limestone commonly used in this area. It has a variety of gray hues, is extremely strong and comes in a variety of shapes and sizes. Beaver Valley Stone receives daily shipments of the material, which made it exceptionally easy to work with them in obtaining exactly what we needed in assembling the coping, bridge, decks, waterfalls and landscape details.

The bridge between the deck and the island involved some heavy lifting. We installed bell footings using Sonotubes, then poured a concrete slab before installing the stone steps. What made things tricky is the fact that we had to move stones to the island using a backhoe with a chain rigging to prepare the island side to support an eight-foot-long spanning slab that weighs the best part of two tons.

We also took a somewhat unique approach to the deck design by employing a quilt-work of both interlocking and natural flagstone. The random flagstone coping ranges between 18 and 24 inches in width and is set up with a jagged backside for a rustic look. The main patio area features a four-size combination of Brussel's Block tumbled stone placed at odd angles to avoid obvious patterning or alignment with any of the straight lines found at the yard's perimeters.

This deck-stone arrangement also played a functional role having to do with where patio furniture was to be placed: Old World Cobble inlay was used as a transition between the natural flagstone coping and the more formal-shaped tumbled stone on which the furnishings were arrayed. Inlaid through this deck quilt are seven large Owen Sound Flagstone steppingstones that form a pathway from the yard's entrance to the stone bridge that crosses over to the island.

Immediately around the pool, we installed five rock structures using Armour Stone boulders to serve as small waterfalls. One of these structures is located by the deep end and has sev-

For all the innovations that form the foundation for this project, our ambition here was less about doing something new and different than it was about creating an interesting play zone for kids of all ages. From the corkscrew slide (which someday will be partially obscured from view by a tree) to diving pads and the river system, it's all about recreation and the client's desire for plentiful family fun.

eral flat pieces that serve as diving platforms. Another by the pool steps offers a small area with Armour Stone pedestals where people can sit and cool or clean debris off their feet.

The Complete Picture

Away from the pool and directly off the back of the house, we constructed a two-tiered cedar deck. Most installers leave the wood planks straight, so we decided to do something unique and scroll-sawed the entire perimeter of the lower deck and cut around the stones adjacent to the garden.

We also built a cedar cabana complete with a kitchen, a bar top and restroom. Behind this structure, we hid an equipment pad that includes two 400,000 Btu heaters, multiple pumps, cartridge filters, chlorine generators and a 16-zone control system. All of the equipment was provided by Jandy (Petaluma, Calif.) and went in without a hitch thanks largely to Gary Scott of Jandy Canada, who was generous both with his time and assistance.

There's also a 300,000-Btu, natural-gas fire pit on the deck, surrounded by both Armour rock and tree trunk pieces taken from the 60-foot maple that had to be removed from the island despite our best efforts at saving it.

As a final touch on the island, the client wanted a slide. We did our best to explain that it would compromise the aesthetics of the setting; he was determined, however, so we installed a 13-foot-tall, 720-degree, double-spiral waterslide manufactured by USA Slide (Gainesville, Ga.). Not entirely willing to sacrifice aesthetics, we masked the view of the slide from the house by planting a 20-foot maple in front of it.

Through the entire process, we were driven to get everything just right by the fact we were doing something we all considered to be unprecedented. Our foreman, John Zeijdel, deserves tremendous credit for managing an installation process that required frequent on-site adjustments and smart decision-making on a near-continuous basis.

It's testimony to just how far vinyl-liner pools have come in recent years that we could even visualize such a project, and we're more than pleased that we at Lido Pools are among a growing cadre of vinyl-liner pool specialists who are no longer seeing any limits to what can be achieved for the right clients.

To be sure, this was no low-budget venture. In fact, it completely violates the cost-consciousness that has given conventional vinyl-liner pools their traditional place in the sun. But now, in locales where this technology is the best available option, all we're doing is applying our imaginations in ways that increase the perceived (and real) value of what we do.

For this particular client, that value came from the fact that we were able to create something that absolutely no one else had. Since the project was completed in the summer of 2007, he reports that it's had the desired effects of impressing his business associates and friends – and serving as a venue for tremendous aquatic fun.

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Club Connections

It was a project, says engineer and watershape designer Larry Paulick, that led him to explore the nature and needs of an unusual market and develop an aquatic complex that met the needs of users at all age levels. The result is a complex set of features that grace part of a large Virginia country club, but the process of getting there, he says, was a four-year process that was long on research and presentations – and brutally short in actual construction time.

By Larry Paulick

My association with the Richmond Country Club began after a rainstorm.

The club's pool had been drained for some basic repair work, but unfortunately it rained for several days while the shell was still empty. Hydrostatic pressures built, physics took over and one end popped out of the ground by about 18 inches. It was a truly impressive mess, which is why they called our firm, Contech Associates of Annapolis, Md., to get some engineering help.

They definitely needed it: The deep end of the pool was a total loss and had to be removed. On the shallow end, we repaired cracks using epoxy injection, then built a wall where the deep end formerly met the shallow end as a means of restoring the pool's utility on what was obviously a temporary basis – basically to serve as the training venue for the club's swim team and for summer pool use.

The Richmond, Va., area is also home to several other well-established country clubs, so there's keen competition for membership. As is true of all businesses, these clubs respond to changes in the market, so what was initially seen as an utter disaster soon became an opportunity for this particular club to step up and look at its amenities in all-new ways.

Given this opportunity to step back and evaluate the situation, it wasn't long before they began thinking and talking about an entirely new aquatics complex.

Green Pastures

Of course, these businesses have their idiosyncrasies. First, we had to get past our initial assumption that these clubs are little more than social gathering places where golf and tennis serve mostly as an excuse for people to spend time away from home.

These businesses generally occupy a great deal of land, and in most cases communities grow and prosper around them. As a result, many pay extremely high property taxes compared to the rates they paid when first established, so revenues are always an issue. Moreover, member families age and move on, so most clubs work constantly at attracting new ones. In other words, these are tough, high-stakes operations.

As we learned, the Richmond Country Club has seen its target market become much younger in recent years as the local population has turned over. Instead of people in their 50s, 60s or in retirement years, they now have to draw on members who are significantly younger – with young families as well. In facing this transition, club managers knew they had to pay close attention to amenities and profit centers and keep a watchful eye on member needs and demographics.

While they knew they wanted to update their aquatic facilities, they were uncertain just how to proceed. As a result, the first phase of our work involved us in surveying the current membership to draw a bead on their desires and priorities (and find out what they didn't like). As a basis for comparison, we also tapped into data accumulated by a country-club trade association that gathers the same sort of information on a national basis.

Evaluating the results was an education. Beyond seeing that dining facilities are clubs' largest profit centers and fitness centers are in high demand, we also learned that golf and tennis, while still a major interest, are less important than we'd assumed. Most interesting (and relevant) of all, it's abundantly clear that the traditional "country club swimming pool" is a thing of the past. In fact, just as watershaping has become more multifaceted, complex and ambitious in recent years, so, too, have the aquatic experiences being sought by club members nationwide.

In the specific case of the Richmond Country Club, the property is located near the corporate headquarters of Capital One, a credit-card company that employs thousands of people who fall mostly in the "young professional" demographic and have young children to keep busy and entertained. Rolling through this accumulation of

data and knowing the damaged pool was wholly inadequate, the club's management lifted the renovation to their aquatic facilities to the top of their priority list.

Even so, moving ahead was no sure thing, because country clubs are complicated entities. Most clubs (including this one) do not, for example, maintain surpluses of cash to fund major renovations or expansions. In general, operations are supported in comfortable sorts of ways by member dues; when upgrades or refurbishments are needed, managers present their plans with projections of what needs to happen with respect to special assessments and dues levels to pay for it all.

A Long Menu

In this case, the club was considering much more than just the aquatic facility. There was no fitness center, so that was something they wanted. They also aimed to upgrade the locker rooms and the dining facilities and renovate much of the golf course as well. So from the start, we weren't really sure how things would work out or where the aquatic facility would fall when the general membership let its own preferences be known.

Once we developed the design (described below), we went through a process of presenting it to various committees – both for approval and as a means of polishing things up before we approached the full membership. These presentations included artist's renderings and a host of details developed in response to hundreds of questions we'd

The construction process may have taken less than 100 days, but it was a substantial effort covering 57,000 square feet of surface area with a total water volume of more than 390,000 gallons. Within that space, the country club's pool complex includes several unusual details, including the long peninsula dividing two beach-entry areas; the angled, current-generating floor returns in the water-treadmill section of the lounging pool; and the breaks in walls that link the beach-entry areas to each other and to the competition pool and diving well beyond.

been asked along the way. Finally, the entire renovation program (and associated assessments) was released, discussed and put up for a vote.

To our delight, the sense we had all the way along that the aquatic facility was at the top of everyone's wish list was fully supported by the members' votes and pocketbooks. In fact, the aquatic facility was far and away the top priority. From the members' perspective, the multi-generational appeal of aquatic activity in terms of recreation, health, fitness and relaxation proved to be irresistible. The managers were happy as well, because they saw a well-appointed, much-upgraded aquatic facility as a way not only to satisfy existing members, but also to use in marketing the club to potential new members.

This says a great deal about the overall appeal of water in recreational environments, but I think our success at this stage also had to do with the fact that we'd done our homework and developed a plan that addressed a wide range of key family interests.

What we'd proposed was a radical departure from the traditional rectangular country club pool, which in this case was rarely used by anyone (beyond that local swim team) other than as a place to sit in lounges to catch some sun. Our ambition was to create a dynamic environment in which clear benefits were associated with each of the proposed activity zones.

In everything we proposed, we were working in a relatively compact space 300 feet long and 190 feet wide. We didn't even consider using the existing pool site because it was far smaller than that. In fact, the patched pool was kept up and running throughout the installation of the new facility; once we were done, it was filled in and became a putting green.

Even though the space we envisioned was rather small in relative terms, it was still an extraordinary request: To make it happen, the club would need to purchase a bit of land from a neighboring

The 25-meter competition pool is the heart of the club's aquatic amenities, but it doesn't stand alone: Perpendicular to one end (in the foreground) is a spacious diving well with a one-meter board; on the opposite corner is the access channel to the dual beach entries beyond.

property. Moreover, the proposed site abutted the driving range, which would have to be relocated to take our area out of the line of fire.

In the Water

The piece of land we were after (and to which we were finally given full access) was overgrown and on a slope.

Soils tests were performed before we cleared and graded the site. This was a big concern, because subsurface springs are quite common in this area. We didn't find any problems along those lines, but we *did* discover that, in the spot where the deep end for the main competition pool was to be located, the ground was made up of poorly compacted soil. We had to get rid of that bad soil and, through the course of several weeks, build up the area by a depth of more than eight feet. This work proceeded layer by layer until we reached the final pool elevation.

Once that task was finished, we were finally ready to begin construction, which took place on a 99-day stretch in the summer of 2007 – nearly four years after we'd first been called about the popped pool. As completed, the entire complex contains more than 390,000 gallons of water with thousands of square feet of surface area.

The heart of the design is the competition pool. As mentioned above, the club hosts local swim teams, and the membership had let us know that swimming for exercise was a chief priority. To accommodate all of this, we installed a 25-meter, eight-lane racing pool – but with a number of interesting twists.

On one end perpendicular to the main body of the pool, for example, we set up a 24-by-45 foot diving well 12 feet deep with a single one-meter board. We did so because diving is one of the swim team's activities and because the members wanted it (even though diving is a relatively unpopular activity these days).

Far more unusual, on the shallow end we set up a narrow passage that offers access to a pair of large, V-shaped, beach-entry areas: Although they're connected to the pool and each other, they have completely separate functions and are, in my opinion, what gives the facility its interesting character. First, there's the fact that beach entries aren't all that common in conjunction with rectangular competition pools; second, there's also the fact that there are *two* of them.

The dual areas serve distinct purposes: One is an active play zone measuring 29 by 52 feet that includes a number of interactive/waterpark-type structures and elements, while the other is a 27-by-62-foot beach entry pool much like a wading pool. Each is meant to provide its own sort of experience and was developed in response to the play needs of people of certain ages.

In making our selections for the splash zone, we at Contech Associates studied a variety of possibilities before contacting Rain Drop Products of

The peninsula-split beach area serves two distinct purposes for club members: The one that feeds directly into the competition pool is for active play and features a number of waterpark-style fixtures; the other is a much calmer space designed for relaxed wading and for acclimatizing small children to the fun of being in the water.

Keeping it Simple

In reviewing the photographs that accompany the text, you'll no doubt notice that the aesthetics applied to this aquatic facility are extremely spare – quite plain and utilitarian.

That visual sparseness was entirely by design. Although the aquatic area was set up to provide various types of play for people of different ages in much the way a visually brighter waterpark might be organized, the Richmond Country Club is a classy place marked by simple elegance and an understated, streamlined architecture – qualities our design needed to reflect.

So we went with simple lines and a straightforward green-and-white color palette (to align with the club's colors). The only embellishments, if you can call them that, are the flags on the tops of the dumping-bucket fixtures.

– LP

Ashland, Ohio, to provide us with fixtures including mushroom falls, dumping-bucket features and standpipes controlled with wheel valves. Our thought was that this set of features would appeal to the widest range of ages, from small children to adults – and indeed the area has proved particularly appealing to teenagers, who can be among the toughest of all age groups to satisfy in this type of setting.

The other beach area functions as a transitional wading environment for small children, their parents and anyone else who wants to ease him- or herself into the water. By comparison to the other beach area, this one is all about relaxation and *far* less energetic play and was designed as a place to acclimatize small children to the process of getting wet in a safe, non-threatening environment. It's also a great place for sunning – or just hanging out.

By splitting these beach entry areas into two rather than combining them in some way as one, we allow everyone on deck to evaluate the situation and make a choice. And it's worked like a charm, with some people going crazy among the interactive features while others relax in the wading pool.

Making a Splash

A separate area near the pools serves as a play zone for kids: This one is a 20-by-40-foot deck area outfitted with 24 computer-programmable leaping jets that fire in a non-repeating pattern to keep things from getting predictable or boring.

The concept here was that parents could stay dry in this fenced area, while their small children played to their hearts' content. What we found out later is that this area was also being enjoyed by teens (and playful adults as well) who couldn't resist the dancing waters, under the guise of playing with the tots.

With all the activity in the main pool, beach areas and splash pad zones directed mainly toward entertaining children and teens, we saw the need to establish a separate area strictly for adult enjoyment. To provide a sense of separation, we divided this adult area from the main pool and play zone for kids and cut down on noise with a grassy, five-foot berm topped with landscaping to create a feeling of isolation. This space is all about relaxation, peace and quiet – just for adults.

There are two main elements here: a raised, oval-shaped, 22-foot-diameter spa that easily accommodates up to a dozen people and features a variety of hydrotherapy jets; and, adjacent to the spa, a unique keyhole-shaped body of water that combines a lounging area with a circular water-treadmill zone.

The lounging area serves as a shallow conversation pit where people can sit and quietly chill out as they watch the action on the green at Hole 7. The water-treadmill is a 10-foot circle with return jets mounted in the floor to create an even flow at two-and-a-half feet per second to pro-

The splash zone is another kid-oriented area within the club's aquatic complex. Its arrays of jets are programmed to fire in non-repeating patterns – the key to keeping things from becoming repetitive or boring – and the deck is large enough to accommodate children of all ages (and playful adults as well).

vide low-impact exercise for people walking against the current. (Interestingly, we've also spotted people "going with the flow" after a fashion, turning an exercise area into an abbreviated lazy river.)

As with all of the other elements in this project, this unique vessel was based on a calculated understanding of what club members wanted and desired in their revamped aquatic facility. I'm proud to say the response to the entire composition has been phenomenal, and we've all been encouraged (and informed) by those who've used certain of these features in ways we didn't anticipate, even with all our research.

The club's members and managers are thrilled, and although it was a long road from start to finish, it appears to have been worth every step.

Quality Roster

From start to finish, this project was about executing the design and installing systems with quality and reliable performance uppermost in mind.

When it came to pool equipment, for example, we started with a detailed cost/benefit analysis to help club managers and members feel confidence that our selections would pay dividends through many years of operation.

Our analysis, for example, led us to specify chlorine generators from AutoPilot (Fort Lauderdale, Fla.) that would offer a payback on investment within three years after installation compared to other chlorine-administering systems. We also made a similar value judgment with the heating system, using heat pumps from AquaCal (St. Petersburg, Fla.) in conjunction with propane heaters, and recommended energy-efficient pumps from Pentair (Sanford, N.C.), chemical controllers from Chemtrol (Santa Barbara, Calif.) and rail goods from S.R. Smith (Canby, Ore.).

Of course, all of our value-engineering work would have fallen short without excellent contracting throughout the installation process. The crews at Charlottesville Aquatics (Charlottesville, Va.) filled that role brilliantly, executing a highly complex project within an incredibly compact 99-day time frame. They proved their professionalism at every turn.

– L.P.

Slightly removed from the louder swimming and play areas and insulated by a large, planted berm, we set up an area to accommodate the needs of the club's adult membership. This spacious deck features a large hydrotherapy spa and an unusual, keyhole-shaped lounging pool with a circular water-treadmill at one end.

Shaping Bubbles

By David Whiteis

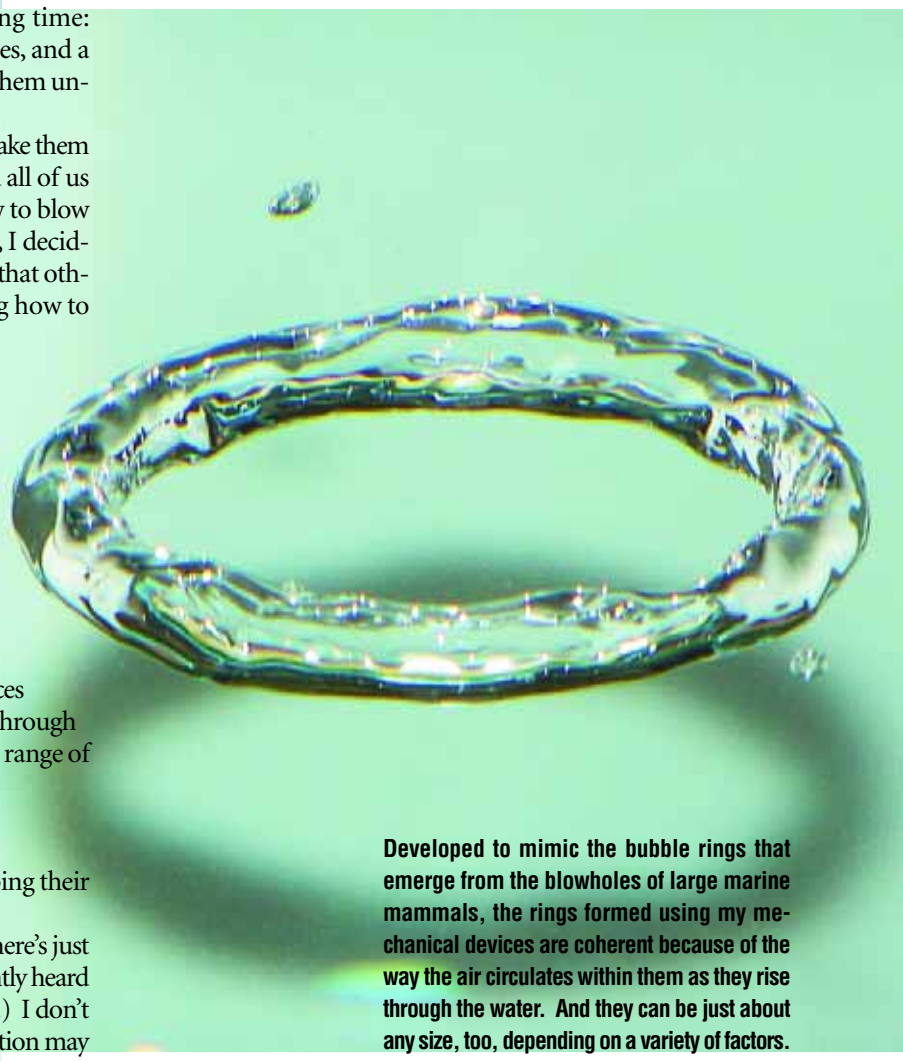
Nature is his favorite source, says inventor David Whiteis, when he seeks ideas for new designs. He was so fascinated by his observation of whales' and dolphins' ability to generate perfectly circular rings of bubbles using their blowholes, for example, that he felt compelled to replicate the trick. It took some doing, but he eventually developed a few simple mechanisms that reproduce these hypnotic rings, consistently and repeatedly.

People have known about bubble rings for a long time: Dolphins and whales make them with their blowholes, and a great many humans have taught themselves to make them underwater using their mouths.

I'm one of those humans and have known how to make them since childhood: Back when my mother would send all of us kids down to the community pool, I figured out how to blow the equivalent of a smoke ring underwater. Later on, I decided to invent a device that would do the same thing so that other swimmers could enjoy the rings without learning how to generate them.

A bubble ring is basically a doughnut-shaped pocket of air, moving upwards in a body of water. The air inside a bubble ring spins as it travels through the water – not like a spinning plate, but rather the way a bead bracelet rolls on your arm. (Smoke in a smoke ring spins in this same way.) As bubble rings rise, their circumference widens and the rings get thinner.

As one might expect, there are a number of variables that influence how well these rings hold together. As an inventor, my goal has been to create devices that can consistently produce rings that will move up through the water and reach the surface intact within a certain range of depths.

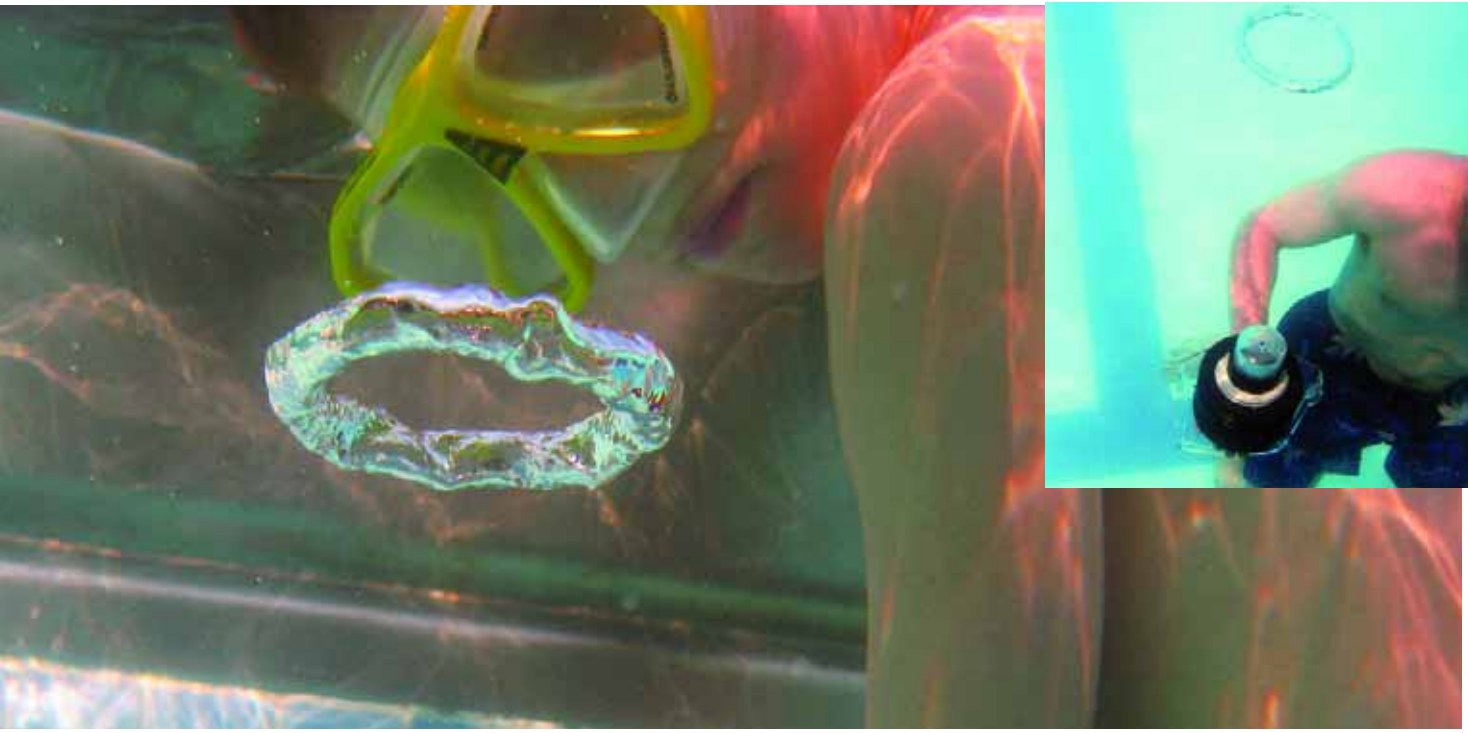


Developed to mimic the bubble rings that emerge from the blowholes of large marine mammals, the rings formed using my mechanical devices are coherent because of the way the air circulates within them as they rise through the water. And they can be just about any size, too, depending on a variety of factors.

The Appeal

Bubble rings may be simple in concept, but describing their appeal is not so easy.

Most people who see them express the feeling that there's just something fun and delightful about them. (I've frequently heard the words *hypnotic*, *charming* and *mesmerizing* as well.) I don't want to get too high-flown here, but part of the fascination may



extend from the fact that circles are powerfully suggestive to human beings in symbolic terms and have an obvious place in mysticism, religions and cultures worldwide. As such, they may resonate with us on levels we don't quite understand – and in my book, that just makes these bubble rings all the more interesting.

At root, however, I just see them as fun. Indeed, I liken the experience of watching and playing with bubble rings to observing butterflies or looking at magnified snowflakes: All are beautiful natural forms – tangible and recognizable, yet utterly ephemeral at the same time. Moreover, bubble rings can't be captured, stopped or held: If you try to do so, you destroy the effect. And even if you leave them alone, they last for only a matter of seconds before disappearing.

You can hang out with dolphins and whales for days on end and never see one, which is why I was so determined to make a machine that would enable me to enjoy the experience of their generation, growth and disappearance over and over again at will.

Once I put these rings in the water, I noticed that their appeal is universal: Young or old, in the water or just next to it – for whatever reason, when people see bubble rings rising in the water, they almost invariably stop and take a closer look. In the water, both children and adults find all sorts of ways to play with them, sticking their hands through the hoops, racing to see who can disrupt the ring first or creating currents that distort the shapes of the rings as they rise.

And again, we humans aren't alone in being enthralled by bubble rings: I installed one of my systems at the National Aquarium in Baltimore, and we observed that marine mammals – especially dolphins – can't seem to get enough of these rings. This device automatically generates them at timed intervals, and the dolphins seemed to have a great deal of fun racing to see which would be the first to bite the rings and break them into splashes of small, separate bubbles.

As mentioned above, both dolphins and whales actually make bubble rings – or what scientists refer to as "vortex rings" – with their blowholes. In some cases, whales' bubble rings are so large that if you happened to be in a kayak at the point where one surfaced, you might be capsized by the resulting turbulence. Why they do it is still anyone's guess, but the fact that these simple forms are part of the natural aquatic environment seems to add yet another level of interest.

How They Work

My day job is in the computer industry, but for many years I've spent my spare time as an inventor. The device I call "The Ring Machine" is the result of years of tinkering; so far, I've developed a number of different models capable of generating bubble rings in bodies of water of almost any type.

Before I came up with my mechanisms, one of the few ways others had invented to generate bubble rings involved delivering compressed air to a solenoid-controlled valve. These devices were noisy, cumbersome and relatively expensive – and not for every application, because you wouldn't want the device making a loud "clack, clack" sound that might spook marine mammals and other sea creatures.

By contrast, all of my designs are simple, quiet and inexpensive – devices that one might best classify as "toys" rather than as "industrial instruments." In fact, one of my patents shows a device that isn't much more than an upside-down bucket filled with air and featuring a hole in the center of "top" of the buck-

The devices come in many shapes and sizes, including versions that are essentially toys. One device, for example, is simply held under the water and generates bubble rings when a lever is actuated; another has been housed inside a plastic whale and produces its bubble rings with similar ease.

et. That hole is plugged by a ball that is removed and replaced by actuating a mechanical device (either a lever or pedal) that moves the ball straight back from the hole and then quickly puts it right back in. This opening/closing action releases a sphere of air with minimal internal turbulence.

The bubble ring forms when that sphere of air starts floating toward the surface and encounters resistance from the water through which it's traveling. That resistance pushes the air at the top of the sphere out toward the flattening sphere's edge. That air curls around to the center of the sphere and travels back toward the top. Once the ring forms, if you could slice out a cross-section, you would see the moving air rotating up near the center of the ring and back down on the outside – a circulation pattern that holds true around the ring's entire circumference.

If the currents in the water in which a ring is generated are too strong, the ring will break apart. If there's not too much current or turbulence in the surrounding water, however, then the bubble ring remains intact, expanding and thinning until it reaches the surface, where it pops once it comes in contact with the atmosphere.

The physical qualities of a toroid (the scientific name for a doughnut shape) are what make this possible. Each section keeps the section next to it stable because of the perfect balances achieved in that circular form. In other words, I won't be trying to create "bubble squares" or "bubble triangles" because it would not be possible: The points of tension associated with the corners would cause the structure to break apart immediately.

One of my handheld designs is held underwater by a bather who pulls a small lever on the device to release a ring. If that bather lets go, the device floats to the surface. I originally developed a weighted model that would sit on the bottom of the pool, but that meant that someone would have to swim down and lift it back to the surface to refill it with air. I stopped pursuing that option because of the unit's weight. I've also assembled a version that can be permanently mounted on the bottom of a pool, where it is fed by a small trickle of air in a feeder line.

Handheld or mounted, these units can generate bubble rings that will travel up to 18 feet vertically before breaking up, making them applicable in just about any residential or commercial pool.

In Progress

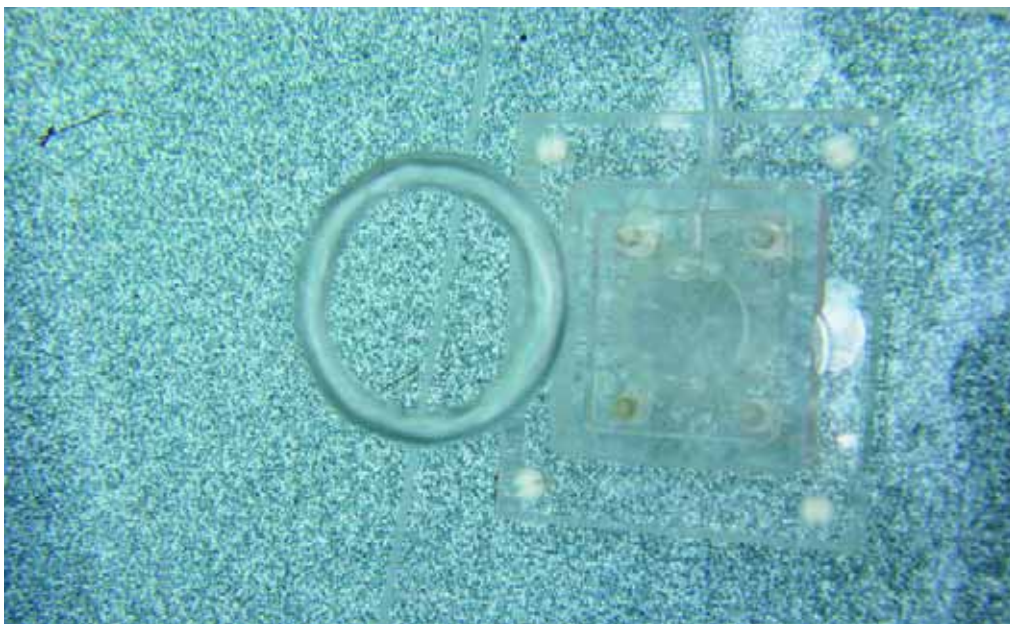
At this point, each bubble-ring unit is custom made and available supplies are limited. I have also produced a number of evaluation units in my effort to license designs to a manufacturer.

My prototypes have been seen in action at the aforementioned National Aquarium in Baltimore; at the Tulsa Zoo; and at the Georgia Aquarium in Atlanta (the largest such facility in the world), where the devices are being evaluated for possible permanent installation in either the beluga whale tank

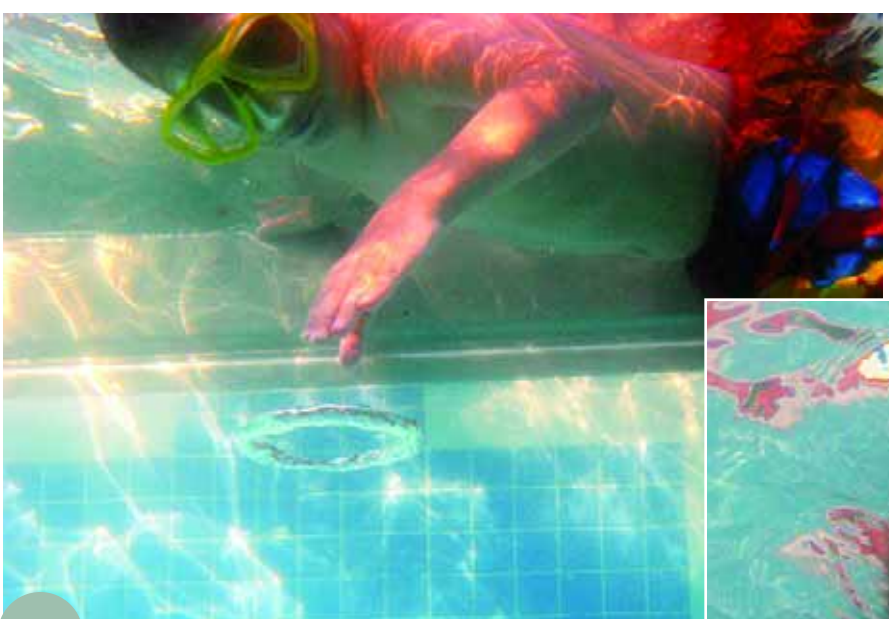
or the African penguin exhibit.

In years of playing with these systems, I've always been fascinated by the amazing dance that occurs when two or more of the rings bump into one another. This is hard to describe in words, but it's utterly delightful to watch as the combined internal tension and turbulence force the rings into complex, fleeting shapes. If one ring is larger than the other, for instance, it appears to warp and absorb the smaller one. If the two rings are the same size, they'll twist and turn until the tension equalizes and they form up again as a single larger ring.

Although there's almost certainly some complex physics involved here, for now I'm just satisfied to sit back and watch. The fact that I'm not alone in this interest and that it seems to be shared not just by people, but also by a variety of marine animals, is more than enough to keep me going.



A more sophisticated model is being developed to generate bubble rings in pools and spas. What you see here is a prototype for a system that can be mounted unobtrusively in the floors of these watershapes.



My childhood fascination with bubble rings propelled me to develop these mechanical devices, and the greatest satisfaction I take is when I see children (or marine mammals) playing with the rings and becoming just as transfixed as I was by the experience.

For Your Viewing Pleasure

To see more, visit the Image Gallery at *www.watershapes.com*, where you'll find several views of bubble rings in action as well as links to David Whiteis' Web site.

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Pastoral Frenzy

Landscape artist Colleen Holmes is known for wonderfully thoughtful and entirely distinctive projects. In the one she describes here, she was asked to do her usual in designing and executing an intricate job complete with a pond and waterfall, extensive plantings, retaining walls, pathways, lighting, a teahouse and more – and to make it all happen in a frantic 60 days that saw her and her crews working around the clock, seven days a week.

By Colleen Holmes

My first experience with these clients had to do with their backyard pool: They let me know they weren't quite satisfied with what they had and wanted me to come in and set things straight. The result of this collaboration was a tropical, Hawaiian-style paradise they truly love.

The next time they called, it was about their large front yard. I initially assumed, of course, that they would want me to carry themes established in the backyard out to the street, but I was mistaken: What they desired instead was a Japanese garden-style woodland complete with a pond/waterfall system, a teahouse and more. Admittedly, it's somewhat unusual for a property to have so pronounced a split personality, but in this case, it was not only what the clients desired, but it also made perfect sense because of the way the property is configured.

So far so good, but then they hit me with the timetable: Everything had to be done in *60 days* so all would be ready for a holiday party they were planning.

Truth be told, just the preliminary design phases in most of my projects at New Leaf Landscape of Agoura Hills, Calif., take *at least* that long, because my preferred method is to collaborate with my clients over time on almost every detail and run a design through as many iterations as it takes to make everything come together. But these clients were in a crashing hurry, expressed their complete faith in my ability and gave me *carte blanche* to do exactly what I thought should be done.

It was an exciting way to work, but it was also extraordinarily exhausting. It also required supreme effort on the part of my crews to produce results that in no way betrayed the frenzy we all experienced in creating this calm, soothing, restful space.

Suburban Buffer

The impulse to split the property's personality in two had mainly to do with location: The home is in the hills of Sherman Oaks, Calif., an upscale residential area marked by a number of busy, noisy streets.

My clients' place is on a three-quarter-acre lot that slopes down from one of the busiest. They told me they wanted a dramatic transition from that raucous environment – one that would establish a private forest in which it would be possible to lose touch with the street beyond.

For starters, this meant adding a thick, noise-filtering hedge along the property's frontage – a barrier that would serve the dual purpose of providing them with some privacy by blocking the view of the house from the street. Moreover, seeing the heavy privacy screen from the street would foreshadow the sort of wooded experience people would have in passing through the front gate.

As it stood, the existing landscape was quite the mess. The original entrance was no more than a straight brick path that descended some 25 feet down from the street to the front door – boring and unimaginative, to say the least. The rest of the yard was a mass of brambles that might, to the untutored eye, have been sort of interesting; to me, however, it was a benighted wasteland redeemed only by the presence of a number of large trees I knew we could save, prune and use to create a wonderful new canopy.

In all, the front yard covers about a quarter acre, so we had plenty of room in which to develop areas and features and generate a complete outdoor experience: This would not be a space through which people would numbly pass on the way to the front door; rather, it was to be a sequence of restful havens – refuges from daily cares to and through which my clients and their friends might wander, relax and generally spend quality time.

As it turned out, the goal was to make the front yard every bit as much of an event as the backyard.

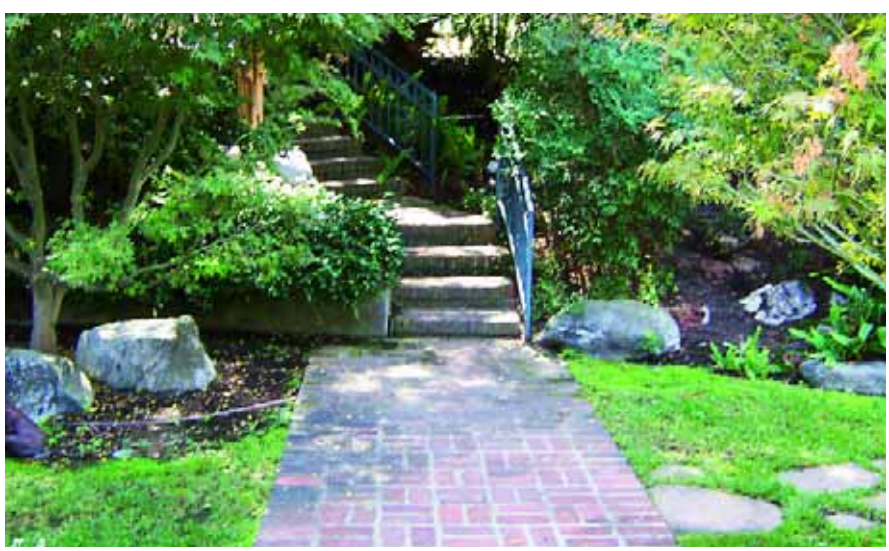
Before I get too far into the details, it's important to mention that the clients themselves are something special. They never wavered in their trust in me and were wonderful collaborators both in redeveloping the backyard and in tackling the front yard.

The home is a typical California ranch-style structure with relatively muted, indistinct architectural features. Indeed, it's fair to say that the landscapes front and back actually define the architecture rather than the other way around – so much so that one of the key phases of our work had to do with developing a new color palette for the home's exterior that would blend well with the landscaping.

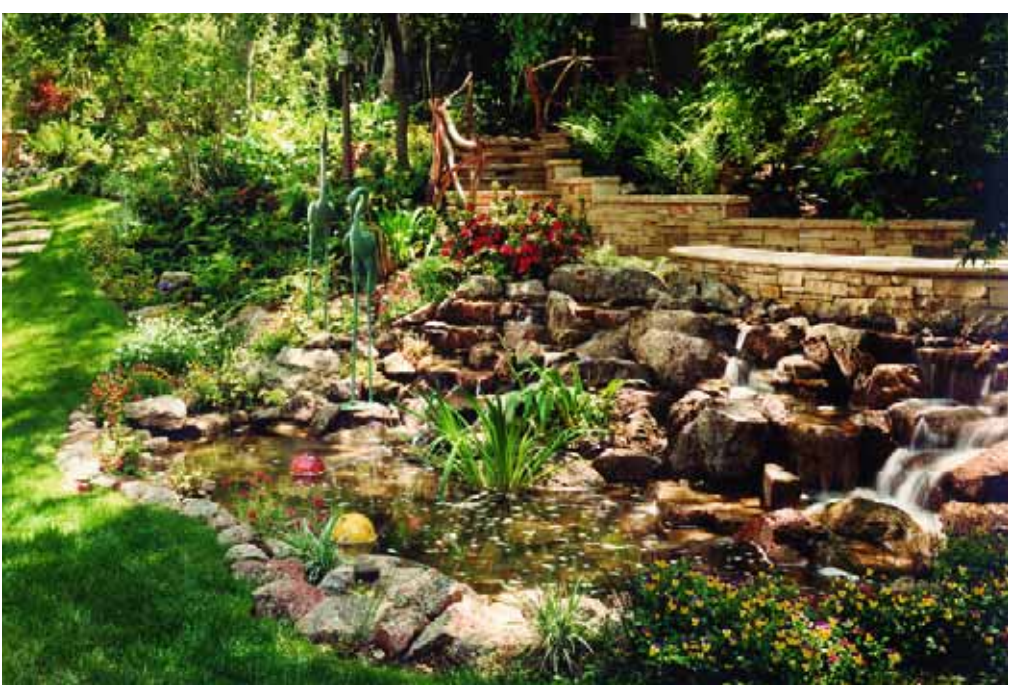
Sweeping Arrival

Given the directness of the program outlined above, it's only too easy to forget that the project unfolded in a style that resembled nothing so much as a fire drill.

We started talking things over in mid-October 2006, and after I showed them my initial sketches (which they loved), they broke the news to me that it all had to be completed in time for a pre-Christmas party. I told them we could do it, but that we'd have to start right away, had no time to put anything out to bid and saw no alternative to handling everything on a straight time-and-materials basis. They agreed without



As originally configured, the approach to the front door was a straight shot after an unceremonious descent via a nondescript brick stairway. The rest of the yard boasted wonderful, mature trees, but the space was mostly a disorganized mess.



At the start of the rapid-fire installation process, we relocated the gate most of the way toward the other side of the property, allowing us to set up a sweeping pathway from the busy street down through a completely revised garden space and along the back of a small pond/waterfall feature.

hesitation and we started working on site the very next day.

As a first step, we brought in the heavy equipment and began ripping the place apart. But right away we recognized we couldn't go at *truly* breakneck speeds because we were going to preserve most of the existing trees. As a result, the demolition and grading actually had to be done carefully.

To make certain all would go well, I brought in an arborist to help us avoid damaging any of the trees – Chinese elms, various pines, a redwood tree, an avocado tree, an ash, an acacia and more. As it turns out, this was a good way to start and helped us get accustomed to working frenetically, but with great care as well.

Once we fully engaged in the process, however, I'm the first to concede it was all something of a blur. I, for one, completely lost track of time, worked constantly, created details on the fly and basically put everything else I was doing on hold for the duration.

I give a tremendous amount of credit to my crews, who stayed with me every step of the way. We had a never-ending series of on-site meetings and kept communicating through thick and thin – so well, in fact, that at no point did we have to rip anything out and start all over. Indeed, the whole process unfolded without a single major mistake or delays that might have resulted from unexpected complications.

If I may say so myself, it was an operational marvel to behold, especially as the days began to add up (with less and less daylight each day, lest we forget). I also had to beg the patience of my family and office staff, all of whom were pulled into my complete immersion in the tasks at hand. There were more times than I care to remember when people around me had to remind me to eat and take breaks.

I certainly wouldn't want to work this way on every project, but I must say there was something exhilarating about designing and managing the execution of such a large, involved project in so short a time.

Into the Glade

With the site cleared and ready, we tackled one of the most important ele-

ments in the design – that is, the complete reconfiguration of the entrance to the property.

The home's front door is far toward the end of the house on the left, which essentially meant that all of the original, impenetrable greenery was off to one side as you walked onto the property and was truly just wasted space. We repositioned the street-level approach at the center of the frontage and created a sweeping stone path that leads down through the new garden – a journey of arrival in which you punch through the privacy hedge via a large wooden gate and discover a private forest beyond.

The existing trees were quite large, so I wanted the rest of the planting to be bold and express the sense that everything had been there together for countless years. To achieve that look, we went with large groupings clivias, ferns and other species that do well in the shade. We also broke the pattern with single specimens that created focal points amid the sweeping masses of greenery.

Just as you enter the yard, you can choose the meandering stone path that leads to the front door, or you can turn right and follow a gravel-and-flagstone path that leads to a sitting area with a café table; moves along to a large teahouse; and ends in an area of the side yard known as Nielson's Meadow, named for the clients' beloved dog of the same name who spends most of his time in the area.

If you take the direct path to the front door, you walk over a surface finished with a combination of Montana multi-blend stone, polished-aggregate inlays and ledger stones at various step locations and come to a landing outfitted with a bench that overlooks the pond and waterfall and most of the rest of the yard.

The pond is the space's primary watershape. It measures approximately 25 feet long by 10 feet at its widest and is encompassed by moss-rock structures and rich plantings. The pond itself was the handiwork of David Duensing of Point Vedra Beach, Fla., who did an amazing job of setting up the system on short notice and managed to complete the task amid the localized maelstrom

that blew all around him and his crew.

Visible from a number of key spots in the yard and from the kitchen/breakfast area and the master bedroom, the pond serves as a beautiful central feature. It's not right next to the house, which may seem unusual, but one of the reasons it's there is to serve as a source of noise relatively close to the street that masks the sounds of traffic beyond.

To that end, we spent a good bit of time tuning the three-foot-tall cascades, making the flow vigorous enough to hide the thrum of passing cars – but not so overwhelming that it undermined the setting's tranquility. We achieved balance in good order, and it's amazing just how well the sounds of the flowing water work together with the privacy hedge and other plantings to make the street noise almost completely disappear.

Colorful Contours

There are a number of interesting artistic touches throughout the space, and the area around the pond is no exception. This is where, for example, we installed two NightOrbs (LaSorgente

Glass Studio, Media, Pa.), using their reflections to give the water an otherworldly look at night. We also installed a pair of blue-heron sculptures there as well.

The pond has a number of Koi in it and the bronze herons do them no harm, but real birds in the area have occasionally used the water as a sort of avian smorgasbord, so we went back in and inserted some extra shelving and subsurface hiding places for the costly fish. (That's slowed down the predators a bit, but Koi still vanish on occasion.)

As you continue past the landing on the way to the front door, there's another area in which we inserted a small, brimming pot surrounded by stones and plants and backed up by one of the many retaining walls we built on site. We located another bench at this spot, where you can sit and look back over the entire space and enjoy the noise-masking sound of the water flowing past the rim of the pot and trickling into a chamber below.

The sloping site gave us ample opportunity to break up the visual planes with retaining walls. They're all clad in a thick ledgerstone with a rough-hewn

Continued on page 60

We used retaining walls to establish a number of terraced spaces throughout the yard. This enabled us to create a variety of destinations – intimate seating areas, serenity-inspiring water-features and, most elaborately, an openwork teahouse that serves as a gathering place as well as a spot for relaxation and meditation.

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Morris on kinetic sculpture; **Cattano** on collaboration; **Hebdon** on water and settings for healing.

❒ **May 2004 (Vol. 6, No. 5)**
Rowley on main-drain safety; **Ewen** on purposeful restoration; **Dallons** on high-wire watershaping.

❒ **June 2004 (Vol. 6, No. 6)**
Dallons on a hilltop treasure; **Mitovich** on the D-Day Memorial; **Slawson** on Japanese inspiration.

❒ **July 2004 (Vol. 6, No. 7)**
Benedetti on fortifying concrete; **Shaw** on fountain 'standards'; **Holden** on Italy's watershapes.

❒ **August 2004 (Vol. 6, No. 8)**
Bravo on Olympic-scale restoration; **Martin & Tester** on water and music; **Jauregui** on clients and styles.

❒ **September 2004 (Vol. 6, No. 9)**
Abaldo on a grand-scale vision; **Gutai** on valves; **Lennox Moyer** on principles of lighting water.

❒ **October 2004 (Vol. 6, No. 10)**
diGiacomo & Holden on watershaping's role; **Allen** on integrated spaces; **Grusheski** on a river's history.

❒ **November 2004 (Vol. 6, No. 11)**
Abaldo on grand-scale detailing; **Freeman** on water-chemistry ABCs; **Hughes** on naturalistic design.

❒ **December 2004 (Vol. 6, No. 12)**
Revisiting 25 projects that define **The Platinum Standard** in watershaping.

Listings represent partial contents only.
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A large measure of the garden's true charm emerges when the sun sets – testimonial to an elaborate lighting program and the way destinations are arrayed under a tree canopy we carefully drew into the picture.

look occasionally interspersed by cobbles to lend a bit of variety. As is the case with many of my designs, I like to use such walls to mark grade changes while letting them make artistic statements as well. In this case, all the walls are relatively low – no more than three feet tall – and they've been organized to set up terraces highlighted by the walls' winding, undulating lines.

From the landing near the front door, you get a prime view of the teahouse in the distance across the yard. Along the way, the eye passes over the pond and all the plants, walls and other visual elements – a compelling invitation to double back and explore the entire space.

The teahouse sits near the top of the slope beneath some trees and is a house only in a metaphorical sense because it's actually an open-beam structure that allows clear views of the tree canopy and, at night, of a gorgeously illuminated space. We left it open so it would never feel dark or overly shaded and outfitted it with a wonderful metal chandelier, beautiful outdoor furnishings and a number of other bright aesthetic touches – a wonderful spot for outdoor relaxing and entertaining.

As mentioned above, we also revamped the home's exterior color scheme, mostly picking up colors of the Montana multi-blend stone used on the entry path, in the retaining walls, on an expanded patio area at the front of the house and as cladding on the house itself. This gave us several shades of green (with cream and terra cotta colors mixed in as well) to cover the house and complement the camel-colored front door. The front gate and teahouse timbers are all painted green.

It's all quite tranquil and soothing while still carrying colorful highlights and points of interest.

In Good Time

One of the key features of the project is the extensive lighting system, our ambition being to give the setting a magical quality at night.

In rapid order, we installed fixtures for an unusually complex lighting array with approaches that included backlighting, depth lighting, moonlighting, path lighting, uplighting, cross-lighting and more. There are also firefly lights in some of the maples, and in some cases we used lavender-colored lenses to create a distinctly moody effect.

Much of this rigging had to be kept in mind from the start of the construction

phase, of course, and we did all we could to cover all eventualities. We ran electrical, irrigation and drainage lines under the new patio at the front of the house, for example, just in case. And it worked out well because we set up several ceramic pots on the patio and ended up inserting plants, watering systems and lights into them.

While we worked with great speed, in other words, we also maintained a focus on subtle details that took some planning and coordination and, we think, added immeasurably to the overall ambience. The lighting system, for example, lends depth, texture, focal points and a high level of nighttime safety to the composition in ways that lead the eye throughout the garden space.

Looking over the completed project, there's a remarkably strong sense of visual continuity combined with the feeling that you can travel easily to any point within the space and find any number of restful locations. I'm particularly proud of this: The fact that the garden looks good from every angle and offers visitors the opportunity to get "lost" in the space is most satisfying – and quite romantic.

I still can't believe that we finished in time for the holiday party. My husband and I were invited, and I was delighted to return to the site to experience it as a guest rather than as a time-pressed contractor. Believe me, it was quite a contrast to the stresses I experienced during the installation process.

It rained gently the night of the party, which kept the guests from spending too much time in the garden. I was secretly glad, because it was all freshly planted and I'd been concerned about everything getting trampled. That didn't happen, affording me some extra sighs of relief.

As I stood there surveying the scene, I couldn't help sensing the irony of it all: Here was a perfectly peaceful space that had just gone through the most intense, frenzied sort of creation imaginable. Now, what remains is a pure expression of calm – but I'll always know better!

Growing Concern

In a garden with such lush plantings and large trees, maintenance is extremely important.

A good bit of the space is covered in lawn, so I made it clear to the homeowners that if they wanted it to survive and look good, they needed to arrange for regular pruning of the tree canopy to enable sufficient light to filter through to the ground to sustain the lawn and other sub-canopy plants. I alerted them as well that regular maintenance would be needed to keep plants from taking over and disrupting the lighting system.

To keep our own handle on the process, we've arranged to go back twice a year to detail the garden, do some judicious pruning, replace plants as needed and generally fine tune the entire environment. At this point, nearly two years after the installation, the clients have done a great job keeping up on the maintenance, and the yard looks even more beautiful than it did at party time.

– C.H.

Of Interest

The following information has been provided to WaterShapes by product suppliers. To find out how to contact these companies, look for the Product Information Card located on page 58.

Poolside Lift

Circle 135 on Reader Service Card

REHAMED INTERNATIONAL offers the Portable Aquatic Lift (PAL) system. Designed to provide access to swimming pools for people with disabilities, the device raises and lowers bathers using a rechargeable, battery-operated electronic actuator. It is also completely portable and requires no anchoring, so it can easily be moved into position for use and stored again just as easily. **RehaMed International**, Homestead, FL.

Pool-Bonding Products

Circle 136 on Reader Service Card

ERICO offers a full line of EriTech bonding products for permanently installed swimming pools. The products (including copper mesh, connectors, clamps and more) allow for adherence to bonding requirements of the 2005 edition of the National Electrical Code by lowering the possibility of electric shock and reducing differences of potential in the event of an electrical equipment fault. **Erico**, Solon, OH.

Stone Pavers

Circle 137 on Reader Service Card

OLYMPIC STONE & MARBLE imports stone pavers in sizes ranging from 4 by 8 inches up to 24 inches square and in seven distinctive colors: walnut, pearl, Tahoe, gold, Oxford, rose and ice. Bullnose pieces are available for use as steps or as pool coping for completely integrated looks, and the material can be finished to suit any design – polished, brushed or tumbled. **Olympic Stone & Marble**, Pompano Beach, FL.

Pond Products

Circle 138 on Reader Service Card

POND FILTRATION offers filter units and other products for pond applications. The filters are available in sizes suitable for ponds with capacities ranging from 300 to 4,800 gallons and can be combined with appropriately sized ultraviolet water –treatment systems, pre-filters, aerators and more. The company also provides control systems to head off algae, mosquitoes and birds. **Pond Filtration**, Fargo, ND.

Ozone Generators

Circle 139 on Reader Service Card

DEL OZONE offers the Eclipse Series of corona-discharge ozone generators. Easy to install, retrofittable, reliable, energy efficient and non-polluting, the systems produce no chemical byproducts and are designed for use in the circulation systems of swimming pools with capacities from 7,000 to 25,000 gallons (as the primary system) and from 15,000 to 100,000 gallons (as supplemental systems). **DEL Ozone**, San Luis Obispo, CA.

Outdoor Dining

Circle 140 on Reader Service Card

OUTDOOR KITCHEN CONCEPTS offers a range of stainless steel products for use in outdoor kitchens. These products include gourmet grills and side burners, pizza ovens, and a range of accessories including drawer, storage and door units, paper-towel drawers, refrigerators, ice chests, icemakers and more – including lights, sinks, firepits, barbecue tools and tiki torches. **Outdoor Kitchen Concepts,** Las Vegas, NV.

Horizontal Sand Filter

Circle 141 on Reader Service Card

PENTAIR WATER COMMERCIAL POOL & AQUATICS offers the THS Series of high-performance horizontal sand filter for commercial applications. Designed with up to 27 square feet of filtration area, the line features 34-inch diameter tanks that fit through standard doorways for easy installation, plus a manway in the front of the unit for easy access. **Pentair Water Commercial Pool & Aquatics**, Sanford, NC.

Pond Skimmer/Fountain

Circle 142 on Reader Service Card

EASYPRO POND PRODUCTS has introduced a floating skimmer that doubles as a pond fountain – a combined functionality that keeps small ponds clear of surface debris while providing a decorative accent. A submersible pump draws water from the surface, down through a removable strainer basket and three foam filter pads. The water is then returned through the fountain nozzle. **EasyPro Pond Products**, Grant, MI.

Path Lighting

Circle 143 on Reader Service Card

ORBIT/EVERGREEN offers Model B110, a Craftsman-style, solid-brass, 12-volt path light for applications near walkways and outdoor entertainment areas such as gazebos, patios and decks. The fixtures feature lanterns that are 5-9/16 inches wide by 8 inches tall and are offered in three finishes – antique brass, antique bronze and aged green – to complement a range of garden designs. **Orbit/Evergreen**, Los Angeles, CA.

Coping for Fiberglass Pools

Circle 144 on Reader Service Card

VASTEC USA offers a flexible, powder-coated aluminum coping for use with fiberglass pools. Designed as an easy-to-use, faster-to-install alternative to coping made with styrofoam cantilever deck forms, the product is available in white, tan or gray, is fully compatible with tile, pavers and fiberoptic lighting systems and withstands the challenges posed by salt-chlorine generators. **Vastec USA**, Dagsboro, DE.

Safety Cover Literature

Circle 145 on Reader Service Card

PLASTIMAYD POOL PRODUCTS has released a brochure on its expanded line of safety-cover for 2008/2009. The four-page, fold-out flyer highlights the fact that the company now provides free commercial-grade hardware on all its covers, which come with four material options (in both solid and mesh formats) that meet the needs of the full range of safety-cover clients. **Plastimayd Pool Products**, Oregon City, OR.

Fountain Lighting

Circle 146 on Reader Service Card

OTTERBINE BAREBO has introduced its Fountain-Glo Par 64 Lighting System. Designed to illuminate large, impressive fountain-jet patterns vertically as well as horizontally without being too complicated to install or maintain, the fixtures operate on 115-volt service and feature two-light sets that produce 2,000 watts of power and over 38,000 lumens with bulb lives exceeding 4,000 hours. **Otterbine Barebo**, Emmaus, PA.

Terrain-Friendly Software

Circle 147 on Reader Service Card

STRUCTURE STUDIOS has released a Terrain Update for its Pool Studio design software. This update enables designers to create multiple, sloping hills and upright arcs in realistic three-dimensional representations and topographical maps in two dimensions. It also allows for rotation and scaling of materials to offer clients multiple product options – all set amid true-to-life landscaping. **Structure Studios**, Las Vegas, NV.

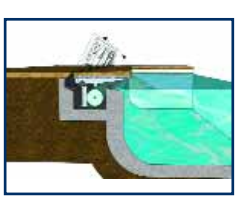
Package-Pool Accessories

Circle 148 on Reader Service Card

WATERPLACE POOLS has introduced the High Fashion line of gray-colored accessories for its extensive lineup of package pools. These easy-to-maintain materials allow builders to trim the entire pool in gray instead of white – including coping, stairs, handrails and face plates – to complement latest architectural looks and trends in concrete decking, pavers and stone décor. **WaterPlace Pools**, York, PA.

Pool Cover Decking

Circle 149 on Reader Service Card



BBDECK offers a pool-cover decking system as a custom alternative to the standard brackets and tray-lids used to conceal automatic pool-cover housings. Designed for strength, unlimited aesthetic flexibility and easy operation, the system can be used with such materials as oversized pavers, tanning rocks and diving boards and cantilevers over the pool edge to conceal the cover's lead bar. **BBDeck**, Ketchum, ID.

Colorful Spray Jets

Circle 150 on Reader Service Card

SPRINKLITES offers a line of color-changing indoor/outdoor accents. Designed originally as illuminated drip-irrigation systems with clear-acrylic sculptures of butterflies, dragonflies and hummingbirds, the units are also functional as sprayers simply by trimming the nose of the emitters and can become playful, color-shifting highlights in watergardens, Koi ponds, waterfalls or fountains. **SprinkLites**, Irvine, CA.

Fibeglass-Pool Accessories

Circle 151 on Reader Service Card

VIKING POOLS offers concrete-pool-style amenities to go with its composite water-shapes. Glass or ceramic tile can now be added to the floors, steps and seats or be placed around the skimmers of any of the company's pools or spas for a polished, sophisticated look. In addition, the company also offers aromatherapy systems as an add-on accessory for stress reduction, relaxation and mood elevation. **Viking Pools**, Jane Lew, WV.

Laminar Jets

Circle 152 on Reader Service Card

PENTAIR WATER POOL & SPA has introduced MagicStream Laminars as part of its expanding waterfeature line. Designed for installation in pool decks or in adjacent landscaping, the units send arcs of water and light up to seven feet tall into pools or spas and feature color-changing lighting packages that come with three color-changing programs and/or can be fixed as single colors. **Pentair Water Pool & Spa**, Sanford, NC.

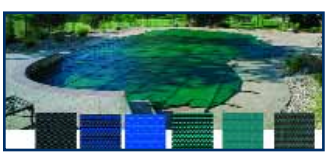
Coating Materials

Circle 153 on Reader Service Card

SIDER-OXYDRO offers coating kits for decks and pool finishes, including Sider-Deck, for application over new and existing concrete; Sider-Proof FF-PR, a roll-on liquid replastering agent that also may be used to coat and waterproof waterfalls, fountains and concrete-lined ponds; and Sider-Pool, a pre-mixed product that provides a smooth finish with no brushing or check-cracking. **Sider-Oxydro**, Hawkinsville, GA.

Safety Pool Covers

Circle 154 on Reader Service Card



VYN-ALL POOL PRODUCTS has expanded its line of safety pool covers, now offering them in seven different fabrics, including solid covers in blue and green; standard mesh covers in blue, green and black; commercial-grade black mesh covers; and new, thicker covers made with Sun-Guard Mesh, which provides 99-percent shade to retard algae growth for easier spring pool openings. **Vyn-All Pool Products**, New Market, NH.

Commercial Pool Heater

Circle 155 on Reader Service Card

LOCHINVAR offers Copper-Fin^2, a gas heater for commercial pool applications. Available in models ranging from 500,000 to 2,070,000 Btus per hour with thermal efficiency ratings up to 89 percent, all units are designed for high efficiency in a space-saving configuration. They also exceed the toughest NO_X emissions requirements, with a rating of less than 30 parts per million. **Lochinvar**, Lebanon, TN.

Pool-Finish Brochure

Circle 156 on Reader Service Card

CL INDUSTRIES has published literature on SunStone Pearl, a pool finish in which small pebble aggregates are blended with pigmented, color-fast white Portland cement to produce a durable stain-, wear- and chemical-resistant surface. The six-page, full-color gatefold brochure shows seven color options (both dry and under the water) and highlights the availability of custom color blends. **CL Industries**, Orlando, FL.

In-Pool Bench

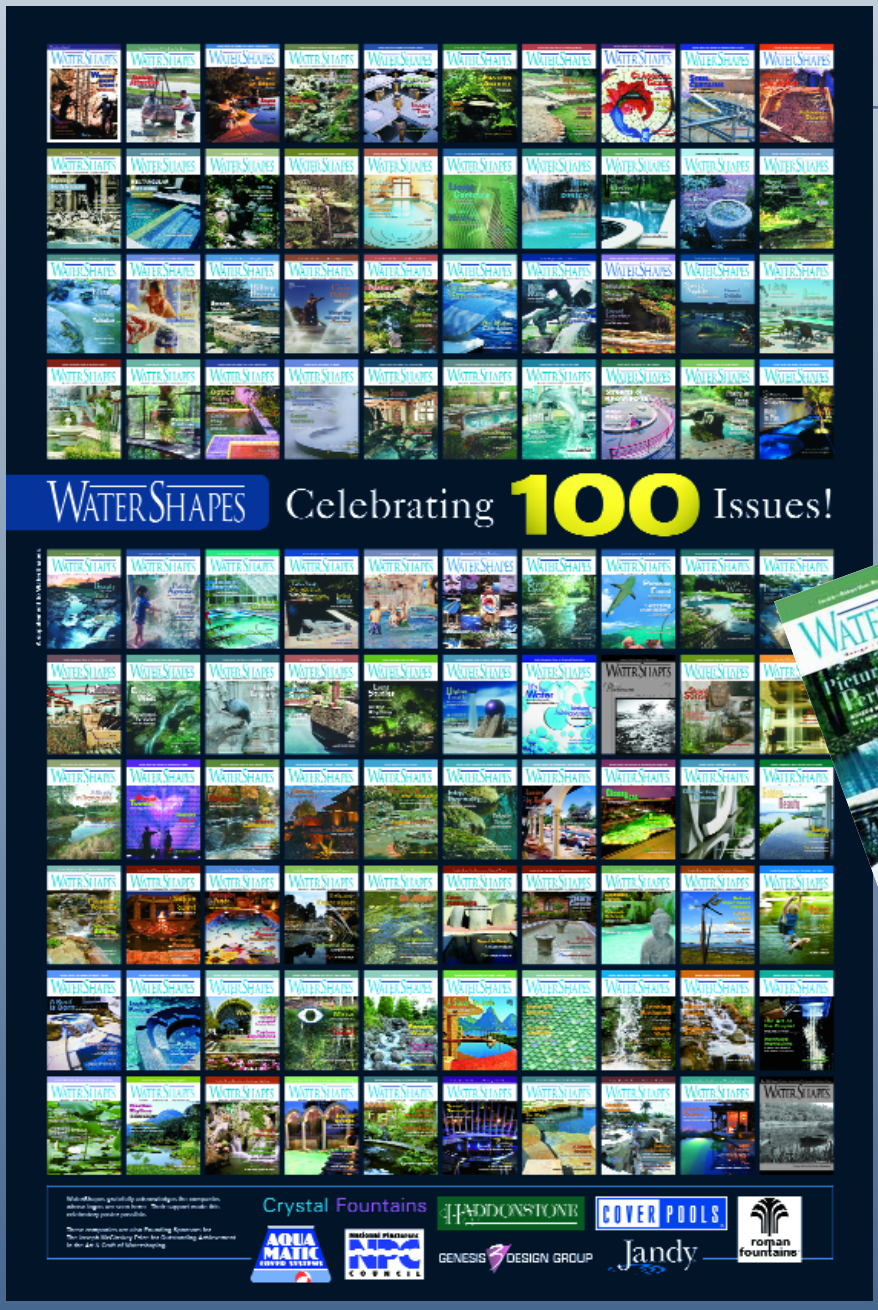
Circle 157 on Reader Service Card

FOX POOL has introduced an in-pool bench to complement its pool packages. Designed to follow the straight or radiused contours of the pool wall for a seamless look, the bench becomes an integral part of the pool to ensure structural integrity while requiring less space to build than features that protrude outside the pool wall. Each bench also comes pre-plumbed with three hydrotherapy jets. **Fox Pool**, York, PA.

Waterfall Pumps

Circle 158 on Reader Service Card

CAL PUMP has introduced the PLP series of low-profile, magnetically coupled waterfall pumps. Designed for use in a variety of watergardening applications (especially waterfalls), the devices provide a powerful flow with the energy efficiency and reliability that are the hallmarks of magnetic-drive technology. Available in four sizes from 2,000 to 8,000 gph, each model has a snap-on prefilter screen. **Cal Pump**, Valencia, CA.



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By Mike Farley

Everywhere Pools

For the past few years, I've made a practice of offering occasional roundups of books that feature swimming pools as their star attractions. As I've mentioned before, there was a time when such publications simply did not exist – but now we seem to be in an era when pools are hot and a visit to a good bookstore will reveal a plethora of relevant titles covering a remarkably wide range of projects and styles.

As with swimming pools themselves, of course, the books dedicated to them vary widely in quality and creativity: Some are truly wonderful, while others are of marginal value and offer little by way of useful ideas. I take *all* of them, however, as evidence that booksellers have noticed increasing consumer interest in highly imaginative swimming pools. I further believe that this interest has developed because so many of today's watershapers are willing to push forcefully at the boundaries of creativity.

Let's start with *H2O Architecture* by Stephen Carsti (Images Publishing Group, 2005). This 215-page volume is about watershapes integrated into the structures of custom homes – which in most cases translates to pools that share walls with homes or have been built into courtyards.

The intimacy of these connections might explain why all of these watershapes were designed by architects rather than pool designers or landscape architects; it might also explain the distinctively Modernist look a lot of the projects have. I can accept both those biases, but I'm puzzled by the fact that most of the covered projects are in Australia and New Zealand: It's obvious that wonderful work is being done in those places, but I can't help thinking the book might have been improved had Carsti broadened his scope.

For all that, the photos are beautiful and the pools themselves represent some truly inventive thinking on the part of these architects – enough to make it a useful "idea book" despite its pronounced geographical limits.

Next is *Picture Perfect Pools* by Tina Skinner and Dinah Rosenberry (Schisser Publishing, 2007) – the least inspiring book in this sampling. Its 120 pages are graced by several lovely pools, the photography is good and the projects cover a range of styles, but for the most part it's stuff we've all seen before, at least in spirit.

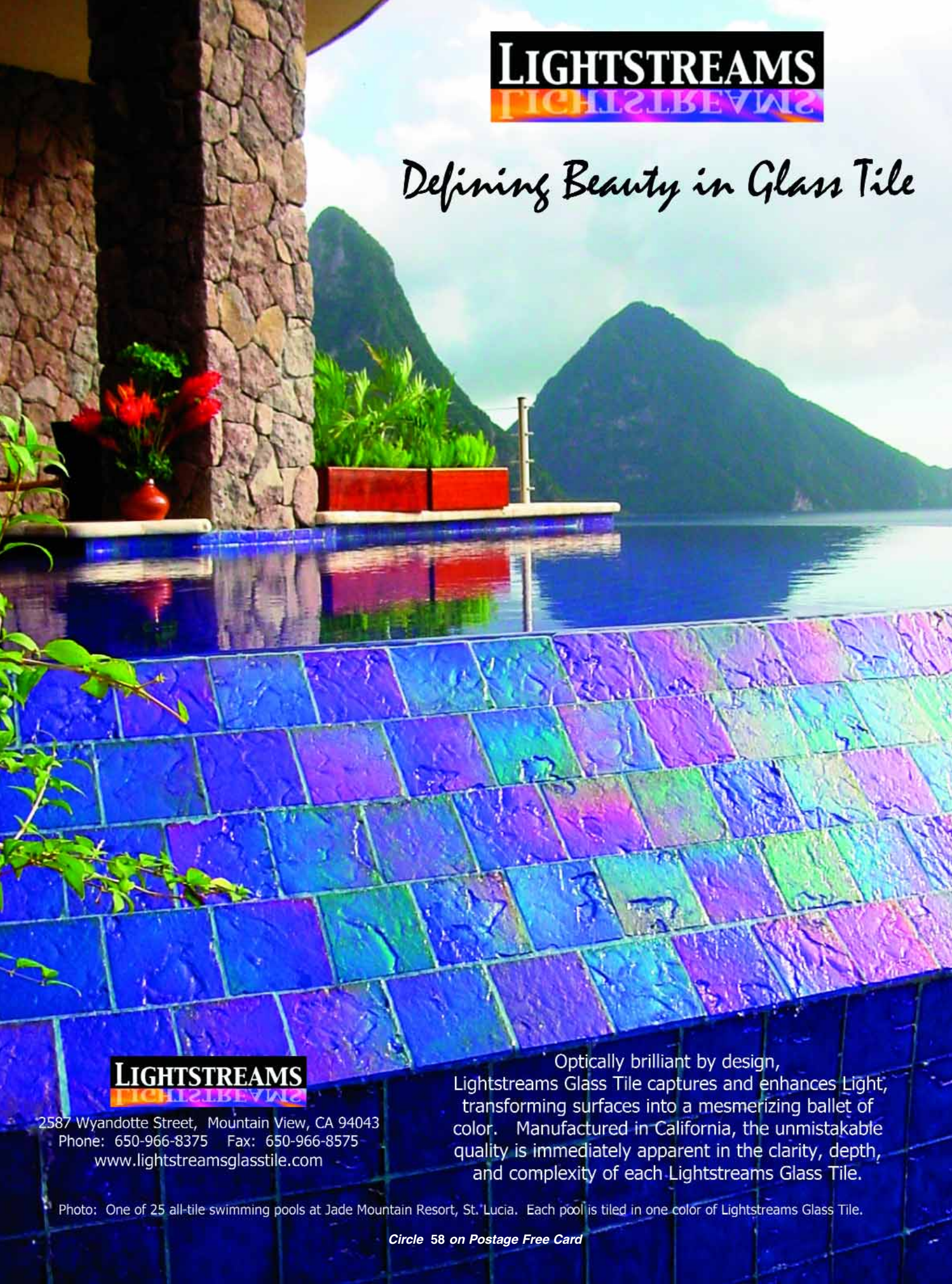
Yes, there are a few cutting-edge projects worth checking out, but compared to other available publications, this one falls flat for me in the imagination department.

Our final book here caught me by surprise, mostly because one of my own designs is featured in it and nobody had bothered to let me know. (I've been published in books like this before, but never without notification!) That minor rub aside, *Great Pools, Spas and Outdoor Living* (Meredith Publishing, 2008) is a worthy purchase. There's no author: It's a compilation of articles from *Homes & Gardens Magazine* that highlight beautifully crafted outdoor environments.

Beyond being pleased by the obvious wisdom that inspired selection of at least one of these projects, what I like most about this 290-page collection is that the pools and spas featured here are shown in the contexts of fully developed outdoor environments. Along with various watershapes, you'll also see terrific outdoor kitchens, spectacular fire elements, great entertainment areas and several beautiful gardens.

All in all, it's clear that book publishers are more interested than ever before in giving consumers access to information on a wide range of watershaping possibilities. In the process, I'm glad to see that what they're producing is good enough to give us professionals the inside track on a number of useful ideas – a fact that will keep me combing bookstore shelves for more of the same in years to come. WS

Mike Farley is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Claffey Pools in Southlake, Texas. A graduate of Genesis 3's Level I Design School, he holds a degree in landscape architecture from Texas Tech University and has worked as a watershaper in both California and Texas.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