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**Design • Engineering • Construction**

Volume 8  
Number 2  
February 2006  
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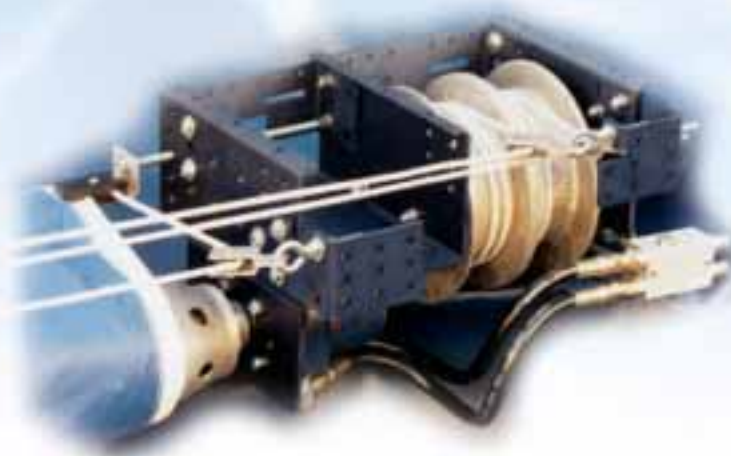
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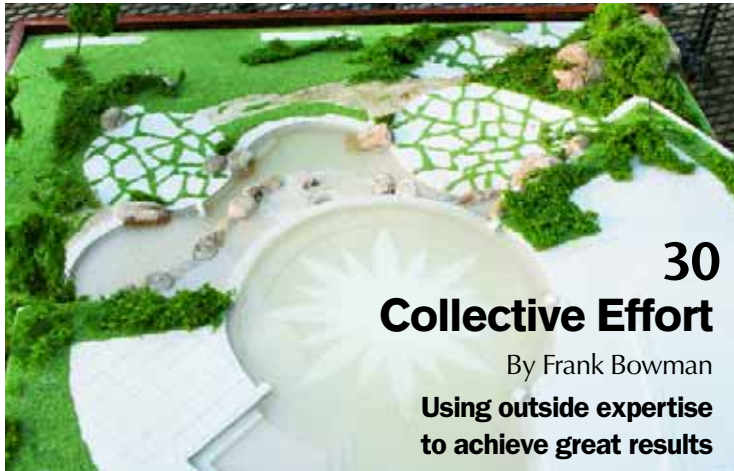


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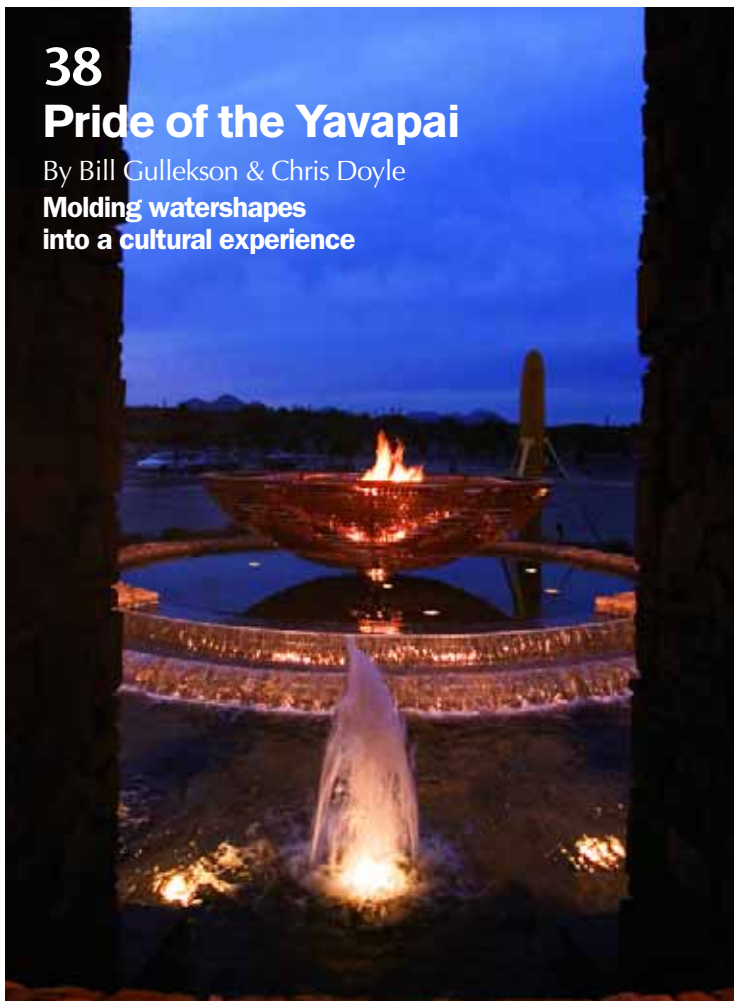
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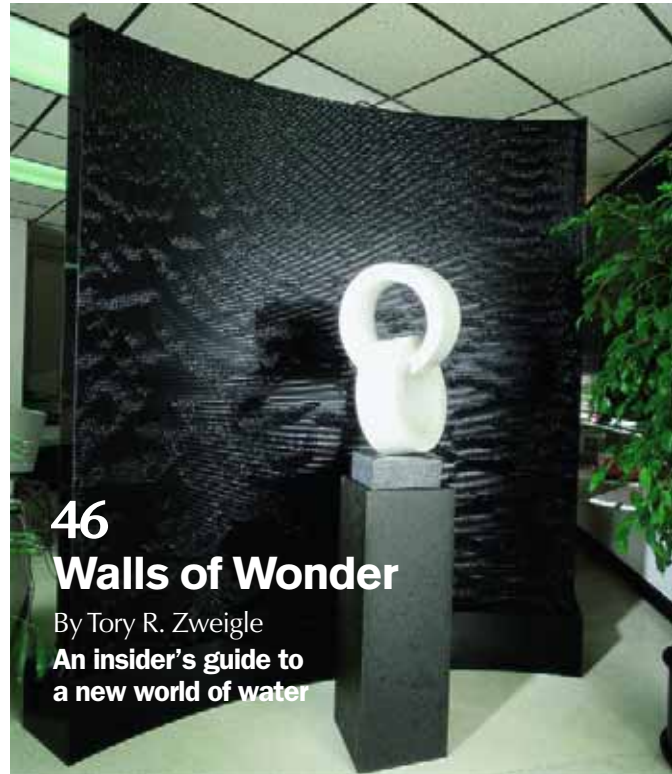
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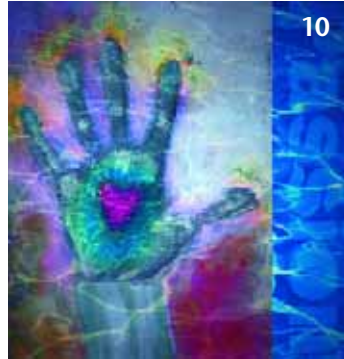
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Photo by Jeff Kida, courtesy Shasta Pools & Spas, Phoenix.

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By Eric Herman

# The Color of Wisdom

The 19th Century poet Eden Phillpotts once wrote, "The universe is full of magical things, patiently waiting for our wits to grow sharper." I've always loved that line and the way it shines a light on the rewards of investigation and study.

If there's one thing that *WaterShapes* is about above all else, it's encouraging you to explore elements of design, engineering and construction more deeply – or to approach them anew with wide eyes and open spirits.

Some of those elements are covered in articles or columns focused directly on key topics – hydraulics, soils science, structural engineering, lighting, plant selection and the like – but in many cases, those subjects are subtopics or side notes in the midst of features and columns on seemingly unrelated topics.

One of those common subtopics – color theory – has been brought up as a side-light in dozens of articles and columns, for example, but we've never offered an article specifically focused on the subject. That may be a sin of omission on our part: In fact, that message came through to me loud and clear as I was working with Mike Farley on his "Book Notes" item for this issue.

From his familiar slot inside the back cover, Mike offers an unusually impassioned discussion this time of the value and importance of color theory and how a class he took and a book he read have transformed the way he thinks about color and what he now sees as its overriding importance. As he points out, color influences designs across the broadest possible spectrum: From the most elaborate to the simplest of projects, color choices can spell the difference between success and failure.

This is only the latest among dozens of insightful discussions Mike has presented in these pages, and I've always been impressed by the response his words draw from readers – compliments on his suggestions, words of appreciation for book recommendations and general praise for the fact that he opens readers' eyes to available resources.

What amazes me most is how willing he is to share his personal forays into the unknown: It takes a generous, secure person to consistently point out areas in which he or she needs to improve and grow, and this is something Mike does month after month before an audience of his peers. On one level, I have to admire the self-knowledge it takes to be so open; on another, I am simply thankful for his ability and willingness to point all of us to trailheads of inquiry that are certain to elevate the watershaping craft.

We hear lots of talk about the value of education, so much so that it's become a drumbeat that pulses behind just about every article and column we print. But I can think of no better testimonial to the simple power of learning than the commitment to professional growth carried in every page Mike Farley has ever written for *WaterShapes*. And the fact that what he says resonates so surely with other features and columns we publish simply lends depth and increased value to his role.

Whether it's color theory, proper flow rates or the construction of believable streams and ponds, there are indeed "magical things" in the world of watershaping that are sitting out there, waiting for more of us to sharpen our wits.



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**Frank Bowman** is president and founder of Frank Bowman Design, a high-end residential swimming pool design/construction firm based in Wake Forest, N.C. A long-time competitive swimmer and lifeguard, Bowman started in the pool industry while attending the University of North Carolina, running a full-service aquatic-management firm for local commercial and municipal pools. After graduating in 1997 with degrees in accounting and business management, he moved into swimming pool renovation and new construction. For the past five years, his work has focused almost entirely on ultra-high-end residential projects.

**Bill Gullekson** is director of sales and design director for the semi-commercial and custom-

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**Chris Doyle** is project manager for Shasta Pools. Born and raised in Washington, D.C., he started in the pool business there in 1980 and worked his way up the construction ladder, ultimately building high-end residential pools and spas in the area and becoming a member of the Master Pools Guild. He later moved to Florida, where he was a project manager for a commercial pool company that built resort pools and

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spas, fountains, waterparks and high-rise pools. He now manages projects for Shasta's semi-commercial pools division.

**Tory R. Zweigle** is president, founder and chief creative force for Acqua Werks, a manufacturer of water-wall systems with headquarters in Corona, Calif. A successful inventor and entrepreneur since his early teens, Zweigle has designed and manufactured a range of products for the automotive and sporting goods industries, among others. He designed his first water wall in the early 1990s and quickly developed a full catalog of products, some that are now mass-produced and many that are still purely custom. To date, he has completed more than 40,000 custom waterfeatures in 144 countries.

**Steve Sandalis** is founder and president of Mystic Water Gardens, an Encino, Calif.-based designer and installer of custom streams, waterfalls and ponds. Sandalis founded the firm in 2000 after several years of pursuing watergardening as a serious hobby. Since then, he has immersed himself in arts and crafts of watershaping and currently designs and installs highly detailed watershapes for a range of mostly residential customers across the United States. A former model and actor, Sandalis appeared on more than 700 covers of romance novels published by Topaz, a division of Penguin Books, and has appeared in a variety of movies, television programs and commercials. A native of Commack, N.Y., he began working in the construction trades as a child with his father and uncles – all of them contractors in the area.

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By Brian Van Bower

## Passion in Fashion



Something inspired and inspiring is happening in the watershaping industry – something I doubt has ever really happened before: In almost every encounter I have with industry people lately (and believe me, I've seen a *lot* of you in the past few months), I get the palpable sense of a passion that is driving all of us in a process of creative and professional growth.

I see it in the enthusiasm my fellow watershapers have for what they're doing, and I see it being directly translated into their projects and, perhaps most important, being conveyed to their clients and the attitudes everyone has about the results. From where I sit, this is a spectacular time to be in this business, and that notion has been reinforced countless times in the recent past.

I received a concentrated dose of this broad impression during the recent Aqua Show, which became almost as much an outpouring of the enthusiasm I'm describing as it was a conventional trade show. Instead of being about products, in other words, the show was in a greater sense about our industry's true potential.

Right up front, let me say that I'm not an unbiased witness, as Genesis 3 is a major participant in the show and plays a large role in defining the watershaping side of its educational programs. Be that as it may, the ex-

Creative and professional growth has become fashionable, and we're now expressing an art form and a craft tradition that is finally, after years of frustration, coming into its own.

perience I (and, it seems, many others) had at the show made it less about a single event and who staged it than it was about a trend that is transforming our industry into something extraordinary.

### far and wide

In all my 25-plus years of attending trade shows in the pool/spa and other industries, I can honestly say that I've never been in a place where more people were actively engaged in discussing their work with one another and truly taking advantage of educational programming.

Yes, I take pride in the fact that Genesis 3 is a significant part of the "scene" at the show, but stepping beyond that simple fact, it's obvious that an event of such energy and overwhelming professional focus was the result of something greater and more powerful coursing through the veins of the industry at large.

It's as if creative and professional growth has become fashionable and that we're now expressing an art form and a craft tradition that is finally, after years of frustration, coming into its own.

There were dozens of instances I could point to during the event where others expressed similar feelings – many of them manufacturers who, like me, have years and years of experience on trade show floors. One of the most inspiring moments for me involved Scott Frost, Southeast Regional Manager for Jandy, who has never been closely involved with Genesis 3 events (although his employer certainly has).

He caught onto the buzz at the show in a big way and, unsolicited, told me, "This is the only time since I've been in the industry where people have come up to me during the course of a show and were truly excited and passionate about their profession and the educational programs they



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were taking.”

He wasn't alone in perceiving this sense of being caught up in a wave, but his comment defined the core of the matter, that industry trade shows going back as far as I can remember have had in common a notable lack of the passion we were experiencing. And all it takes is a few minutes in an environment where

that creative energy exists to recognize how deprived our industry has been without it.

What we're seeing, I think, is a moment in time when people working at all levels of the design, engineering, construction and supplier segments of the watershaping industry are openly and happily approaching their work with optimism,

confidence in the future and, most uncharacteristically, a revolutionary sense of idealism about their roles.

## into the light

I don't think it's going too far to say that what's going on in the watershaping trades today is in diametric opposition to what went on in the past and is even a departure from the doldrums that currently seem to be affecting other industries. It's thrilling to think that, for a change, watershaping is the field that is inspiring and leading people in other industries to aspire to bigger and better things.

That's a bold statement, but I see it in meetings I have as part of big design teams, where too many professional voices are accustomed to discussing conventional approaches and to doing whatever it takes to avoid pushing the envelope of creativity. If you'd told me ten or even five years ago that watershapers would be providing creative leadership at that level, I might have nodded in agreement, but deep down I would've had serious doubts.

And it's all about that one little word: *passion*.

I remember a meeting about seven years ago at which Jim McCloskey, publisher of *WaterShapes*, stood up in front of a room of landscape designers and invited them to see and use his brand-new magazine as a forum for expressing and sharing ideas. What he was looking for, he said, was people with passion of the sort that made it impossible for them to keep quiet, a passion that flowed from an idealism that made communication about the work mandatory, valuable, provocative and enriching.

For my part, I see an analogy between my profession and marriages: Both begin with passion and enthusiasm, but as time passes and the weight of the world settles in, the passion fades and may completely vanish if the relationship isn't sustainable. What we've seen lately in this trade is akin to what happens when a couple rediscovers the romance within their marriage: We all wonder how we ever lived without it.

That's why I conclude every presentation I make these days with the simple statement that I'm more excited about



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**What's going on in the watershaping trades today is in diametric opposition to what went on in the past.**

watershaping than I've ever been before. And I find that I'm not alone, as the vast majority of people I speak with are saying the same thing: We all look back across years in which the industry was defined less by passion than by day-to-day concerns over business as usual – and we wonder how we managed to hang in there through those passionless times.

### forming a community

The people I saw at the Aqua Show were genuinely excited to be there, to be among their peers and able to take advantage of educational offerings that were aimed at increasing their vocabularies with respect to design, technology and product choices. Yes, every trade event in every industry promises those sorts of elevating experiences, but in this case it really happened.

It was a convention in the truest sense, a forum where the trade gathered to consider its future. I'd never been in a room where so many quality-minded professionals were poring over each others' plans, sketches, photographs and laptops full of digital images, solving problems together and making professional connections that almost certainly will lead to collaborations. The sampling of projects that people shared with me alone was amazing in scope, creativity and ambition.

My suspicion is, among the thousands of watershapers who weren't on hand for the show, that this sense of passion is springing up all over and that most of you could attest to this trend in your own day-to-day experience. We're all working in a time in which the endeavors of pool, pond and fountain people from both the pool and landscape industries are fusing into a free-standing Watershaping Industry that is advancing the state of the art.

I know plenty of pond and stream spe-



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cialists who are learning as much as they can about formal architectural systems – and just as many pool, spa and fountain specialists who have a growing appreciation for the potential of working with naturalistic designs. It's all coalescing as a magnificent creative stew, with ideas flowing back and forth, up, down and across all barriers.

Why is this happening now? Certainly the economics of real-estate appreciation have been part of it, as has the trend toward cocooning and the growing inclination on the part of homeowners to seek integrated indoor/outdoor spaces – all factors that encourage sophistication in creating home environments. I also think that informational and educational outlets including Genesis 3 and *WaterShapes* have stoked the fires.

The upshot is that it's becoming *necessary* to be passionate and creative. It doesn't matter whether you are personally driven to it or get there because your clients demand it: However you determine that pride and passion increase the value of your work, I have to say that you're better off when that switch flips to the "on" position.

### embracing the future

Part of what's so fun about all of this is that we're in a situation where the intangible concept of passion is being directly translated into tangible results. Sticking with the Aqua Show as an example, the spectrum of products being marketed to watershapers is so much broader than it used to be, and it's been made possible because people are able to visualize more diverse and more refined possibilities than ever before.

Just consider the tile companies on hand at the Aqua Show. There was more high-end product on display than I've ever seen, and I couldn't help thinking that these were products of such refinement that I would never have considered using them just a few short years ago. What we've all seen in the past few years has broken us out of the creative box so many of us were in, and as a consequence an entire facet of the supplier segment of our industry is evolving and expanding.

Passion is like a virus that we all

should try to catch. The more we perpetuate a value system based on passion for our work (and, indeed, for our lives), the more it will inevitably infect others with whom we come in contact. It is a rare and golden opportunity that we can all embrace, and in coming together we can raise individual flickers to a glorious, collective flame. **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](mailto:bvanbower@aol.com).



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By Stephanie Rose

## Feeling Strapped



**M**ost of my clients don't know a *Pittosporum* from a *Loropetalum* – nor would I expect them to.

Unfortunately, however, this often leaves me to describe plants to them, a process that often makes me feel like I'm reenacting that television commercial where the homeowner tries to mimic the creature seen crawling across the kitchen floor for an exterminator: I'll stand there with my arms up or out, attempting to look like the botanical specimen I'm suggesting for use in their garden.

One of the easiest groups of plants to describe in this or any other way is a collection I call the strappy-leaf plants. I didn't make up the term, and I'm sure many of you have also used it yourselves to describe plants with foliage that looks like straps – generally long strips that emerge from a central clump and arc up, sometimes flopping over to create an upright or fountain-shaped structure.

These plants come in all shapes and sizes, with leaves ranging from narrow

Strappy-leaf plants add texture to any design, break up otherwise flat plant planes and can also be used to lead the eye in various directions.

to wide and long to short. As a group, they are among the most important plant forms I use in any of my designs.

### design sense

I value the strappy-leaf plants for a number of reasons: They add texture to any design, break up otherwise flat plant planes and can also be used to lead the eye in various directions. But perhaps most important in the current context, these plants are *great* alongside watershapes: Look at almost any stream or pond – whether in nature or in a backyard – and you will surely find one strappy-leaf plant or another at the water's edge.

The effect of these plants is strongly visual and occurs on several functional levels. Even something as small as a 'Jack Sprat' Flax or *Liriope*, for example, may guide the eye of the beholder to a plant behind it. By contrast, if the strappy-leaf plant has an arcing or "weeping" form, it may be used to attract attention to a plant in front of it – or point to some other focal point, such as a well-placed garden statue.

Lines of *any* kind in *any* design direct the viewer's eye. When those lines are vertical (as we often see with strappy-leaf plants), they guide the eye up or down and can be used to bring visual energy to a setting. In addition, simply by placing strappy-leaf plants next to mounding plants or in front of larger plants or behind boulders, you can create contrasts and/or highlight certain spots relative to the rest of a planting.

The larger the strappy-leaf plant, the more overt is the eye guidance. Take a flat wall, for example, and place a big *Phormium tenax* (commonly known as Flax) in front of it: The plant will guide the eye up to a detail at the top of or high on the wall or beyond to a distant view – or simply break up the flat wall and give the visual plane some depth. If the wall is low, such

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## natural companions

a plant can draw the eye up and make the space feel "taller." The larger the plant, the more emphasis, power and dominance it will have.

These plants also can be used to provide visual breaks. In a flat field of ferns or other fine- or medium-textured plants, for example, strappy-leaf plants serve well in breaking up long expanses or leading the eye up at designated intervals along the visual plane. Or in the case of a long wall with evenly spaced pillars, the verticality of Flax or one of the larger varieties of Agapanthus might be used to emphasize the cap on the pillar by guiding the eye to that spot. If the cap is unadorned, perhaps the visual guidance refers to a planter, statue or some other garden accessory that needs to be accentuated within a design.

One of my favorite uses of these plants is all about water: The same way stones are used to suggest flowing water in Asian-style landscapes, the arcing forms of strappy-leaf plants can be used to invoke wa-

terspouts, water in a fountain or some other watershape that shoots up in the air. I've even combined the two, interplanting fields of stone with strappy-leaf plants to suggest a pond set up with waterspouts.

### plant preferences

This truly is a case where design possibilities are limited only by creativity and imagination. It's also a relatively rare case where geography is not so great a factor, as these concepts can be translated to any strappy-leaf plants that grow in your area.

Here are a few specific plants that have worked well for me. I'm confident your local nurseries will have varieties that can work as reasonable facsimiles for my selections, keeping in mind that the most important factors to consider are the sun/shade tolerances and mature sizes of the plants you're considering.

► **Agapanthus (Lily of the Nile).** With its slightly arcing form, this highly versa-

tile plant has probably been over-used in southern California. It is quite hardy, requires little or no maintenance, comes in many sizes, can grow in the sun or shade and will live virtually forever, all of which explains its extensive use in commercial installations. If those are your plant-selection criteria, I'd recommend tweaking your design by finding varieties with either dark blue or white flowers so that your client's garden has something a little different from everyone else's.



► **Clivia miniata.** This staple of the shaded garden is similar in appearance to

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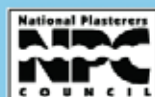


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Agapanthus, but its leaves are almost twice as wide at maturity. It will grow and produce beautiful flowers in darker spots than will either Liriope or Agapanthus. Hybrid versions in yellow offer some relief from the traditional orange (usually the least-desired color in the spectrum) and make these plants more usable. A slight warning: At this point, the yellow-flowered varieties sell at a significant premium above their orange counterparts – as much as ten times at nurseries I frequent.



► **Dianella tasmanica.** This is probably my best “find” to date in this plant category, as most clients have never seen Dianella anywhere. It has some similarity to Liriope (but with slightly wider leaves) and comes in a solid medium-green form as well as a variegated version. Both have flowers so small that they are almost insignificant, but the blossoms are followed by striking purple berries that are about an inch in diameter. With the variegated plant, the berries stand out particularly well against the white leaves. The plants prefer a bit of shade and don’t thrive all that well in direct sun, especially not in hot climates.



► **Hemerocallis (Daylily).** Daylilies tend to have a more arcing/weeping form than most of the other selections mentioned here. Their tremendous advantage is the range of flower colors

available: Most common seem to be in the orange and yellow ranges, with many unusual hybrids available through catalogs and specialty growers. This plant is definitely worth researching if you need a specific color inserted into a shady spot in a design.

► **Iris.** There are so many varieties of

Iris that entire books have been devoted to them. Suffice it to say they have found homes next to many watershapes, whether simulated or real, and are particularly prominent in Asian-style designs. The most common flower colors are blue or lavender, but it’s reached a point among growers where almost the entire spectrum is now covered.

Continued on page 20

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## natural companions

► **Liriope (Lily Turf).** Liriope is slightly more upright than Agapanthus and has narrower leaves. It comes in regular- and giant-size varieties that range from 18 inches to about three to four feet high and wide. I particularly like Liriope spicata 'Silver Dragon,' a variegated white variety that works in shady spots to create the illusion of light and can be used to break up shady designs that feature the finer textures of ferns or coarser large-leaf textures. The white variegation also offers a strong contrast against the darker greens that often thrive in shady environments.



► **Phormium tenax (Flax).** The largest of all my strappy-leaf suggestions, Flax ranges in size from the dwarf 'Jack Sprat' at about 12 to 18 inches in height and width to species that can reach heights of eight to ten feet. Hybridizers have made great strides in the past decade with these plants, offering selections of various sizes and colors (including white, yellow, pink, orange, red, burgundy, bronze and a large range of greens).

Lines of *any* kind in *any* design direct the viewer's eye. When those lines are vertical (as we often see with strappy-leaf plants), they guide the eye up or down and can be used to bring visual energy to a setting.

There's one for almost any design, and backlighting these plants can further enhance their visual appeal in a nightscape.

### in the garden

Once you've incorporated any of these plants in your designs, it's important to remember that, although they are quite self-maintaining in most cases, they do require annual clean-out.

To that end, I suggest to my clients that they should never let their gardeners cut them back to the ground or chop off the ends of sunburned leaves. For the best appearance and the health of the plant, I instead suggest having the gardener remove any individual leaves that have wilted or burned by cutting them off at the base.

There is nothing more unattractive in a garden than a strappy-leaf plant that has been leveled to within an inch or two of the ground. It's just not necessary where a little extra care and a marginal expense will keep them looking good year-round. **WS**

**Stephanie Rose** runs Stephanie Rose Landscape Design in Encino, Calif. A specialist in residential garden design, her projects often include collaboration with custom pool builders. Stephanie is also an instructor on landscape design for the Genesis 3 Design Group. If you have a specific question about landscaping (or simply want to exchange ideas), e-mail her at [sroseld@earthlink.net](mailto:sroseld@earthlink.net).

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By David Tisherman

## Perfect Forms



One of the things I've referred to repeatedly through the years is my interest in quality forming for watershapes.

I look at it this way: If the job is about creating quality reinforced-concrete structures, then precisely controlling their dimensions and contours stands at the very heart of the art and craft of watershaping. And all I'm recommending here is simply following the lead of the experts who install building foundations and structural walls by using completely rigid materials and support frameworks.

To drive that point home, I want to discuss the forming of one specific detail – and define a right way of getting it done.

One of my trademarks is the fact that I build many pools that are raised some 18 to 21 inches out of the ground. That basic chair-height dimension comes from Henry Dreyfus' seminal work, *The Measure of Man and Woman: Human Factors in Design* (John Wiley & Sons, 2002), a fantastic treatise that looks at the physical relationships between humans and their environment.

In designing and building these low walls around watershapes, you must

Working with raised walls in aesthetically pleasing ways means dealing with three interrelated keys that make them work: tolerances, finish materials and coping treatments.

consider the fact that raising them usually exposes them on both sides, which means that in addition to being a key structural component of the design, they also play an important aesthetic role in the overall composition.

### no compromise

Working with raised walls in aesthetically pleasing ways means dealing with three interrelated keys that make them work: tolerances, finish materials and coping treatments.

If, for example, you are working with an above-grade pool on flat land that is to be finished on the outside face with ledger stone, the tolerances you use in setting up the wall can be a bit looser than would be the case if you were working with a more demanding material such as glass tile.

With ledger stone, the wavy irregularity of the material's finished surface will cover variations in the finish of the concrete structure behind it. With something like pavers or tile, however, variations as small as plus or minus a fraction of an inch can spell the difference between spending huge amounts of time cutting and chipping to smooth the concrete surface or proceeding efficiently with the installation.

The nature of the coping dictates tolerances as well. For structures that are basically level with surrounding grade, the coping will be seen only from inside the pool. With a raised pool wall, by contrast, you're creating a free-standing structure and the coping becomes a form of wall cap. Again, if you're using a rough-cut natural stone, a bit of play in the underlying concrete structure probably won't amount to much visually. But if you're working with a dry-cast bullnose or wall cap – any material made itself with more precise tolerances – you want a much cleaner appearance, and a six-

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teenth of an inch can make a world of difference.

In my work, I choose to adhere to exacting standards in forming all of my raised walls. This far exceeds the practices I observe on most pool-construction sites, where I see forming made up of bender board and flimsy supports – that is, stakes that are spaced anywhere from 24 to 40 inches apart. Assembled in this way, these elements move like drapes in a breeze when you hit them with concrete.

Staking practices in general really get me going. I often see one-by-twos used for the purpose, and on the East Coast, I've even seen pieces of rebar used as form supports. (The rebar is first used to mark the layout; after excavation, bender board is tied to the steel and concrete is applied. The problem is that the excavating process undermines the rebar and allows it to move, often a good bit.) In these cases, dimensions can vary by inches instead of tiny fractions of inches, yet I'm constant-

ly surprised by those who defend this shoddiness as coming "close enough."

All of my forms feature two-by-four stud construction (instead of bender board) with plywood veneer and stakes with kickers at 16 inches on center. I also use two-by-four top and bottom plates, and all inside surfaces are lined with tempered Masonite. In my book, this should be the norm for any portion of a pool that is not surrounded by soil. This isn't a high-end detail: It's all about proper construction practices.

To be sure, we're talking a different realm with respect to time and cost, but it's the one sure way to ensure provision of a precise gunite or shotcrete structure. When I talk about this difference with clients, I tell them that we're going to build a wall just as if we were building the foundation of a house.

## why and how

I have some very practical reasons for

taking such an uncompromising approach to quality when it comes to forming. First of all, the alternatives – that is, the use of bender board, button board or even dry wall as a forming surface – simply don't work as well as the materials I choose to use.

Whenever you shoot or pour concrete against one of those inferior materials, the support structure is invariably going to flex with the weight and impact of the concrete and you're going to lose anything approaching tight ultimate tolerances. I've seen jobs where an entire wall has blown out during a gunite shoot, but more commonly I see cases where the unfinished side of the raised wall against the form ends up being plus or minus three inches.

Often what happens in such situations is that to make the raised wall workable in aesthetic terms, you have to go in with hammers, chisels and chippers and remove all sorts of extraneous material. I've known clients who've asked, quite

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reasonably, why a crew is taking all that stuff off after just putting it on – and who can blame them, as it's a manifestly dumb way to get things done.

In my work, I use solid stud construction lined with plywood because I don't want the structure to bend at all during the guniting phase. Bottom line: Concrete forms really should not move, and if you're among those who play these things fast and (literally) loose, you're not building to true professional standards.

As large an issue as the forming's rigidity is the fact that the inferior support materials will stick to the concrete and serve up a frustrating, expensive and time-consuming mess. (The same is true of plywood, which is why I line it with Masonite.)

There are three ways to finish forms for easy stripping: You can cover the wood with some form of penetrating, log or release oil. That works well, but you must be sure the *entire* wood surface is coated. More important, you must also be certain

**As large an issue as the forming's rigidity is the fact that inferior support materials will stick to the concrete and serve up a frustrating, expensive and time-consuming mess.**

that *none* of the oil gets on the structural steel, as concrete will not adhere to the oiled steel and the structural integrity of the shell will be seriously compromised.

Some swear by lining all of the plywood with two-mil plastic sheeting tacked down with a staple or tack gun. That works just fine – unless, that is, you get a crease or wrinkle in the plastic that gets encased in concrete, which can be very difficult to remove. It's a good material, but it's not my particular choice.

Instead, I use 1/8-inch tempered Masonite – a smooth, hard, non-porous surface. It has a rough side and a smooth

side, and you want to put the rough side toward the plywood and leave the smooth side exposed. You'll be amazed at how easily it will come off later on, leaving you with a perfectly smooth surface.

## considering steel

Once the forms have been set, it's time to lay the steel cage that will give the raised structure much of its structural integrity. Again, there is a right way to do it.

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depending upon the wall's ultimate thickness and where the steel should be within the wall to lend it maximum strength. This is similar to the familiar practice of blocking steel up off the bottom of the pool and helps to make certain the steel stays in place and is encased in concrete at the proper depth.

In placing the dobies behind the steel, we angle them slightly off the vertical, adding a bit of tension to give the steel extra support during gunite application. A few degrees is all it takes—just enough so the blocks push firmly against the steel and make the steel more rigid and better able to hold the blocks in place when the concrete is applied.

Where many builders seem to think that forms and steel are distinct elements, I see them as a combined, unified structure. After all, if the framing isn't solid, the entire structure will move and the steel will vibrate with the impact of the concrete.

Continued on page 28

## good practice

I'm startled when people say that the construction details I describe in these columns are only for high-end clients and expensive projects. Little could be farther from the truth.

Take the accompanying "Detail" as an example: What I describe in this column on raised pool walls is simply good construction practice, a method of work that is virtually certain to deliver results that will simplify the construction process, please my clients and sustain my reputation as a watershaper who never compromises on quality.

To be sure, some of the work I do may seem outlandish and over the top, but if you look carefully, you'll see that behind most everything I've ever done is a determination to build well-engineered structures that represent the best in on-site construction practices. The upshot is that my work is bulletproof and serves my clients well, year after year.

To me, it's not outlandish: It's just common sense.

—D.T



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This pool is set on piles with grade beams and is exposed to the air on all sides – one end on a grade beam, the other on compacted soil. All sides were to be visible, so the tolerances are set at a sixteenth of an inch and the forms set up for maximum rigidity with two-by-fours, plywood veneers and tempered Masonite. It doesn't matter if the forms are eight feet tall (as these are) or just 18 inches – the same basic construction principles *always* apply.



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This creates minute voids around the steel that sap the potential strength of the structure. Any structural engineer will tell you that this is a very bad thing. At that point, the structure is essentially not being built according to the plans and specifications.

This weakness can result in all sorts of problems, including structural failure on the one hand or aesthetic problems on the other. The consequences of structural failure are obvious in the form of cracking or collapse. On the visual side, I've seen exposed walls where calcium precipitates form on the wall to mirror the exact pattern of the steel as a result of the chemical reactions between the concrete and any water that finds its way into voids in the structure.

Keep in mind that steel and concrete work so well together because their expandability ratios are just about identical, which makes them stable, reliable companions to one another. When you break the working bond between them – which is what happens when you have voids around the steel – the entire shell is compromised.

In other words, if you build forms that move during gunite or shotcrete application, not only are you building a structure that does not conform to any precise dimensions, but you may also be building structures that are unsound. What this all boils down to, in my mind, is that the cost of doing it right with good, solid forming and best practices in laying steel is basically what it takes to work to professional standards.

I know which path I prefer to follow. **WS**

*In an upcoming "Detail," we'll look at the forming of troughs, dam walls and vanishing-edge walls.*

**David Tisherman** is the principal in two design/construction firms: David Tisherman's Visuals of Manhattan Beach, Calif., and Liquid Design of Cherry Hill, N.J. He is also co-founder and principal instructor for Genesis 3, A Design Group, which offers education aimed at top-of-the-line performance in aquatic design and construction. He can be reached at [tisherman@verizon.net](mailto:tisherman@verizon.net)

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BY FRANK BOWMAN

# Col



# lective



PRESENTED WITH A PROJECT WHOSE COMPLEXITIES PROMISED TO TAKE HIM TO A WHOLE NEW LEVEL OF OPERATION, NORTH CAROLINA WATERSHAPER FRANK BOWMAN SOON SAW A NEED TO ASSEMBLE A TEAM OF EXPERTS TO SUPPORT HIM IN MATCHING HIS CLIENTS' LOFTY EXPECTATIONS. THE IMPORTED TALENT — A TRIO OF CALIFORNIANS FAMILIAR TO ANYONE WHO READS THIS MAGAZINE — GAVE BOWMAN ALL THE SUPPORT HE'S NEEDED TO SET THINGS UP FOR A BRILLIANT SUCCESS.

It's a tale of two visions.

One contingent in the family wanted a formal, architectural pool that would reflect the geometry of the home. The other wanted to borrow the natural look of the lake and rock formations that flowed down the sloping backyard. Such divergent themes are generally difficult to blend into a coherent design, but I managed to do it with a little help from some friends.

The project, which involves placing a formal, geometric pool atop a formation of artificial rock that looms over a grotto and lagoon-like pool below, is still under construction at this writing. At this point, I'd have to say that the results should be just as spectacular as the design process was arduous.

My company is based in Wake Forest, N.C., which, although it is hardly a backwater, is not exactly at the epicenter of watershape design or construction expertise. To integrate this diverse clutch of elements, I felt a need to seek out the best talent I could find, wherever it turned out to be. My hunt began and ended in California, where I engaged the services of artificial-rock guru Philip diGiacomo from Azusa, structural engineer Ron Lacher from Tustin and watershaper/landscape architect Mark Holden from Fullerton — each one a professional clearly able to deliver a level of quality far in excess of the clients' expectations.

The key to attracting their attention was the unusual nature of the conceptual design.

## FAMILY MATTERS

Let's set the scene: From the home, all that will be seen is a formal body of water overlooking the lake beyond. As you move down the slope from the upper terrace, you begin seeing a wealth

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To build on the steeply sloping site, we had to remove the existing material down to bedrock, then add structural fill up to the bottom of the watershapes. We also had to clean and shape the bedrock before moving on to the forming stage, which at that point involved a sequence of freestanding structures set atop a compacted but boulder-strewn base.

of rich natural textures surrounding a lower lagoon-style pool. The upper space is connected to the home to please one side of the family, with the lower one tied into the natural surroundings to please the other.

Behind this simple solution, however, is some dazzling complexity – so much so that I knew I would have to elevate my game to a point where I needed expert assistance. I have to say that having the opportunity to work with these top professionals has been both enjoyable and *extremely* educational.

First of all, I learned that in design work, the whole truly can be greater than the sum of the parts. Each of us contributed ideas to the mix, but the power of the collaboration expressed itself most clearly in the fact that everything we did was subordinated to a greater goal of delivering responsible solutions to the clients.

I also learned with great clarity that being a great watershaper does not mean that you personally have to be the best excavator, for example, or the best tile setter. Instead, it means that you are able to assemble people, ideas, services and products and carry them all along at a level that produces quality environments that have positive influences on people within them.

But getting back to the project at hand: It all began about two years ago, when the clients and their homebuilder approached me with a hand-sketched plan for a house on a lot overlooking a lake – a truly spectacular location. One of the clients asked me if there was any way we could “incorporate a little pool” in the layout.

Not knowing what I was about to get myself into, I told them it would be no problem. I sketched an initial shape on the concept plan as a placeholder, and we parted company at that point with an agree-



ment that we'd revisit the pool later on as the house plans took shape.

As is my usual practice, I began asking questions before we parted about how the watershape was to be used and what they had in mind when it came to appearance and style. Little did I know that these two simple questions would end up being the most difficult to answer and that I had plunged myself into a gulf between sharply divergent interests in the family.

## MODELING VISIONS

As mentioned above, one camp wanted a formal watershape that would function primarily as a visual element and a match for the crisp, clean lines of the Mediterranean-style house. The other part of the family wanted a lagoon-style watershape with waterfalls, slides and places to play. Given the site, both ideas were entirely appropriate; given the strong wills in the family, they also seemed at first to be irreconcilable.

In sketching up ideas after our initial meeting, I lit on a bi-level solution that dealt with the split-personality issue and, to my delight, found that everyone was happy with it. We went our separate ways, but in the year that followed and as home design moved along, we met occasionally to discuss and incorporate more and more details into the design. One detail that emerged along the way was the fact that we'd need to install the substructure for the pool before home construction could begin.

I could see through this process that the clients were truly excited about the design and were delighted by the fact that it met both visions for the space. But as our discussions continued, I could also tell that we were headed toward a project that would be *enormously* complex.

This is when I turned to my trio of experts. A major portion of the lower pool was to feature artificial rockwork, which led to my meeting with diGiacomo. An enormously

*This project required an amazing volume of concrete, which we delivered to the shells by whatever means was needed to speed placement. As we did our work on the upper, formal pool, the general contractor was moving forward rapidly with construction of the home above and around us.*



creative artist, he immediately came up with a range of suggestions. Before long, we gave him full artistic authority to transform my abstract rock outcroppings into his own cohesive vision.

We stayed in contact in the months that followed, relaying ideas back and forth until di Giacomo built his *maquette* for our project – an exact scale model of the setting. It was simply amazing: When we presented it to the clients, they were able to visualize their watershape in a three-dimensional view rather as a flat piece of paper, and their excitement grew by leaps and bounds.

The clients asked for just one change: They wanted increase the size of the slide, which diGiacomo had ingeniously

designed to look like a piece of rock that had broken off a larger outcropping.

His response was nothing short of profound: “I don’t mind compromise,” he said. “What I really want is to have the project change the quality of your lives as a family. A house, a pool, a rock are all meaningless crap unless they can be designed to enrich you and fill your family with enjoyable experiences that will stay with you forever.”

The room went silent. I looked around, and everyone from the clients to the homebuilder and even the secretary had small grins on their faces and were all nodding in agreement. He had just put into words a goal toward which all architects, designers and watershapers should strive: not awards, not peer recog-



With the main portion of the upper pool nearing completion, we jumped right into the middle and lower pools, which were separated from the upper pool structurally and hydraulically – and aesthetically, as we managed the key transition from the formality of the home to the natural character of the slope down to the lake.

nitition, not money – those are rewards that flow from changing the quality of people's lives and are not goals themselves.

## HARD GROUND

With that, the entire project took on the air of work being done for a higher purpose: It wasn't about creating a project with lots of bells and whistles, but was instead about creating a space in which a range of human experiences could and would take place.

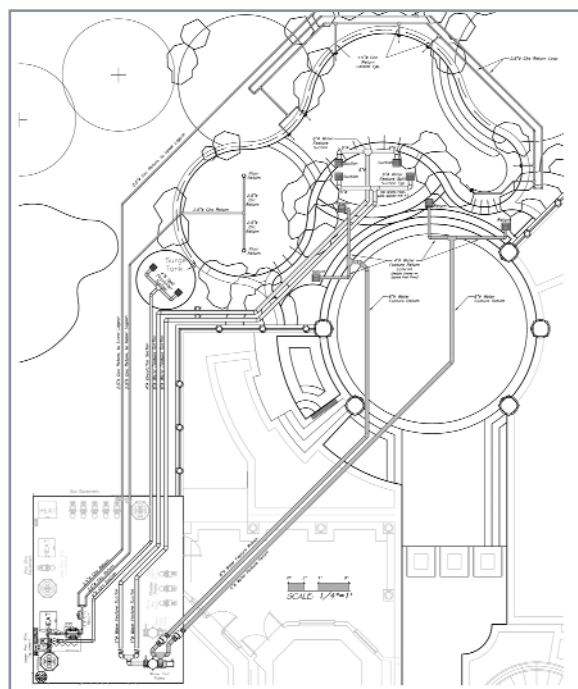
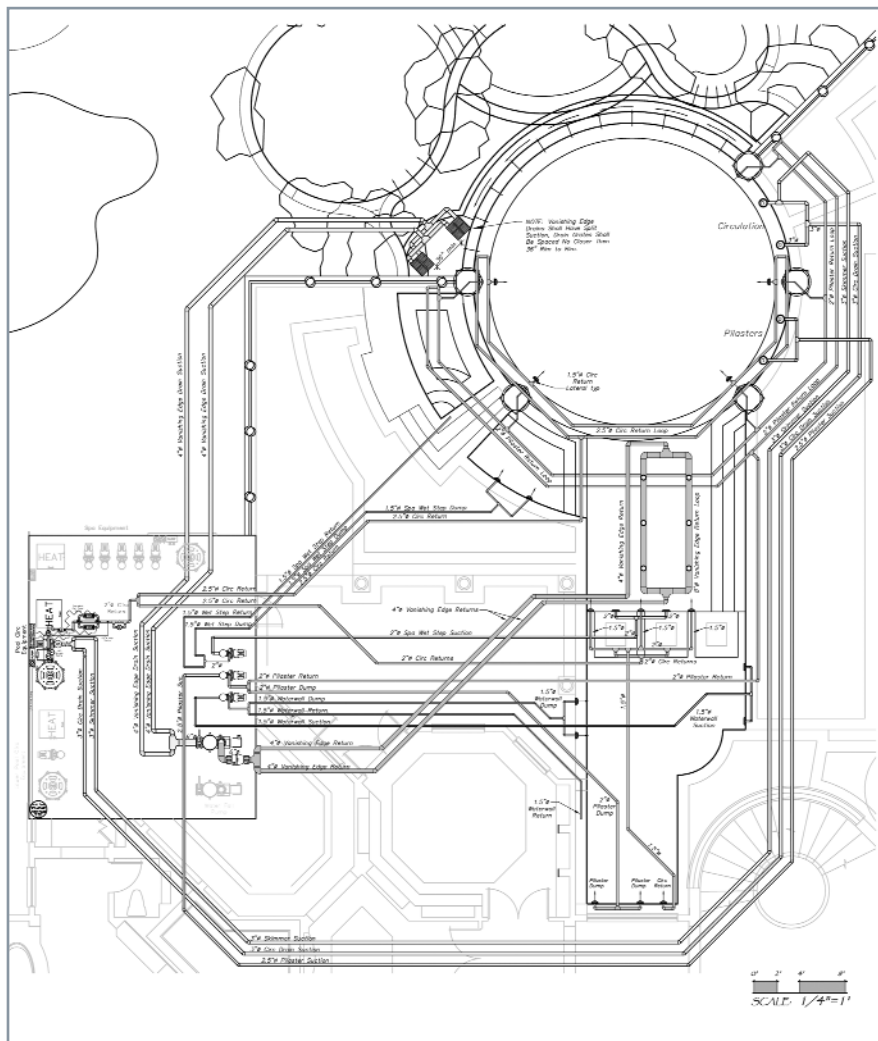
I was truly inspired and eager at this point to get down to the work of seeing the project come to fruition – and that meant it was time to engineer the structure and generate detailed plans, which is where Ron Lacher's and Mark Holden's firms stepped into the picture.

The project was being built on a former home site with extremely rocky underpinnings on a slope that drops approximately 80 feet from the front of the house to the back of the lower pool's patio before dropping another 60 feet or so to the lake. I knew this called for expert engineering, so I turned the plans over to Lacher. We immediately agreed that the greatest challenge would be stabilizing the subsurface and building the watershapes in such a way that they would not move.

Test borings and soil sampling indicated that the soil on site was not adequate to support the watershapes. After a great deal of discussion, it was decided to remove all soil from the site down to bedrock – and that the bedrock itself would have to be benched and cleaned to allow us to install structural fill up to the bottom of the watershape structures.

With the substructure issues solved, Lacher turned to the pools themselves. These turned out to be fairly routine, although there were a handful of elements that required special attention. These included a 35-foot waterfall constructed of 12- to 20-inch-thick concrete and limestone that needed to be self supporting as well as a large diGiacomo-generated, rock-covered grotto with skylights and a 16-foot-wide opening.

Then there was the Big Question: Should the entire structure be monolithic or should its various elements be separated by isolation joints? Lacher's team



The splitting of the circulation system from one integrated system into two separate ones for the upper and lower pools dramatically increased the cost and complexity of the plumbing, but in the long run the initial investment will make for much greater energy efficiency and lower ongoing utility bills.



crunched the numbers and eventually came back with the answers we needed: The waterfall stayed as designed, the opening to the grotto was shortened by a few inches and the upper pool was to be isolated from the middle and lower pools by a one-inch isolation joint.

Now that the structural issues were settled, we could begin work on the other key design components.

## EFFICIENCY QUOTIENTS

At this point, I turned to Holden to develop the hydraulic design and generate a full and complete set of working drawings that would drive the project to completion. He was the perfect choice, as I had long admired his work and had been particularly impressed by his compulsion to get every detail of his plans just right.

We basically had two vanishing-edge pools, a slot-overflow pool, a tall waterfall

Philip diGiacomo built this *maquette* for the site before construction began, and it did an amazing job of helping all of us – especially the clients – visualize quite precisely how everything would come together from every conceivable angle and exactly how the key formal-to-natural transition would work.



and a spa – all interconnected in my conceptual design. Holden took that scheme and generated a preliminary set of plans for review and discussion with the client.

It was a crucial meeting, and the clients expressed hesitation at what looked to be relatively high energy-consumption levels of the fully integrated system. After some creative back and forth, they expressed their willingness to make a higher initial investment if it meant a reduction in ongoing energy consumption.

This new goal of greater energy efficiency meant scrapping about 80 percent of the hydraulic design and basically starting over. The big system pumps fell off the drawing board, replaced by a series of smaller pumps – and then he followed through in reshaping what had essentially been a single body of water into several smaller systems that will run and be heated independent of each other.

Starting at the top, Holden isolated

the 35-foot waterfall from the upper pool, dramatically reducing heat loss from the pool. Then he isolated the spa while preserving the illusion that it spills down the steps to the tanning shelf in the pool. Next, he separated the upper pool from the lower pool by having the vanishing edge flow into a slot on the backside of the wall for re-circulation only within the upper pool. This gives us the ability to heat the upper and lower pools separately.

Through these changes, Holden's team was able to reduce projected energy consumption by more than 65 percent, meeting the clients' desires while not sacrificing even a single design element of the watershape complex. That simple fact was extremely gratifying: Through all the effort to date, my basic design scheme has held up, and the bi-level complex my clients and I had begun envisioning a year earlier is actually taking shape.

At this point, we've moved beyond the planning stages and have begun construction work on site. I can say without hesitation that surrounding myself with expertise has been crucial to delivering excellence. Those I brought in to work on the project have exceptional talent, and what impresses me most is that each has been willing to set ego aside and pitch in with real passion.

They all performed their individual roles to perfection and were each perfect team players. In retrospect, I suppose I could've tackled this project on my own and done a creditable job, but I have the sense that the process would have been very different, much harder and probably less assured of success. Bottom line: Their participation removed any uncertainty and promises extraordinary results.

*In a few months, we'll present a follow up article to show off the finished product.*





# Pride of the YAVAPAI

*In a project that brought state-of-the-art watershape technology together with a design that drew its aesthetic cues from the Sonoran Desert and the cultural heritage of the Yavapai Nation, the staff at Shasta Pools of Phoenix found themselves caught up in the trend toward greater creativity and intricacy in aquatic designs. Here, Bill Gullekson and Chris Doyle discuss how a complex set of relationships led to artfully spectacular results.*

**By Bill Gullekson & Chris Doyle**

The area surrounding Phoenix is graced by the presence of numerous Native American tribes and nations. In fact, Maricopa County hosts one of the largest concentrations of such communities in the United States.

As Phoenix and its suburbs have sprawled in recent years, several communities have had to forge constructive relationships with these sovereign nations to make continued growth possible. At first, there was often tension and conflict, but now relative tranquility and cooperation flourish to the point where it's a cultural environment that defines the character and charm of many communities in the region – on both sides of the tribal borders.

A case in point is the relationship between the Fort McDowell Yavapai Nation and the city of Fountain Hills, Ariz. – situated next to one another about 23 miles northeast of Phoenix. Theirs may be said to be a model of cooperation between civic and tribal governments: Through the years, the two entities have managed to forge a remarkable synergy that has boosted the local economy while respecting the cultural and national sovereignty of the Yavapai.

## Exploring Opportunities

The 400-square mile reservation is home to some 600 tribal members and is just part of the ancestral territory of the formerly nomadic Yavapai people, who hunted and gathered food in Arizona's desert lowlands and mountainous Mogollon Rim country.

Not long ago, the Yavapai became one of the first Native American communities to embrace gaming, a phenomenon that has since resulted in an explosion of wealth on Native American soil across the country. One of the centerpieces of the Yavapai's remarkable affluence is the newly refurbished Fort McDowell Casino & Resort, which is where we at Shasta Pools, a Phoenix-based watershaping firm, entered the picture.

Located on tribal lands, the resort includes a beautiful, 250-room Radisson hotel and big casino that were re-dedicated after extensive renovations on November 30, 2005. The site also boasts a PGA championship golf course and a



The outdoor recreational space is bisected by a feature called The Walk of Life, a 'dry riverbed' that flows symbolically for 450 feet through a landscape filled with water, Yavapai decorative motifs, grassy areas and desert plants and gives visitors a relaxing break from the action inside the casino.





The walkways and decks and even the splash pad all feature asymmetrical patterns borrowed from Yavapai pottery, and every single color we developed and used had to pass review by the tribal council for consistency with their traditions.

variety of other outdoor attractions nestled in the stunning Sonoran Desert landscape.

The arid surroundings are contrasted by the comparatively lush vegetation along the shores of the nearby Verde River, which flows north to south through the reservation. East of Fort McDowell by about 30 miles, the Four Peaks rise from the desert floor to elevations of more than 7,000 feet.

It's a beautiful and unique setting—one that called for an appropriate set of watershapes and landscape treatments. It would fall to our firm to develop and install a set of beautifully designed systems and play a role in expressing the rich cultural history that continues to unfold and define this region of the southwest.

We were sent a request for proposal by the general contractor, W.E. O'Neil, based on conceptual plans devised by Viet Dam of the well-known Phoenix landscape-architecture firm, Leo A. Daly. The plans



## Performance Based

The artistry of the aesthetic design discussed in the accompanying text is backed up by watershape systems designed to provide high water quality and reliable performance.

The pools, for example, are designed to exceed the required six-hour turnover and feature pumps and a bank of gas heaters from Hayward Pool Products (Elizabeth, N.J.), sand filters from Pentair Water Pool & Spa (Sanford, N.C.), and a chemical-treatment system featuring ORP and pH controllers from USFilter Stranco Products (Bradley, Ill.) that feeds acid and liquid chlorine via a set of peristaltic chemical pumps from G.H. Stenner & Co. (Jacksonville, Fla.).

The plumbing is large, ranging from three to six inches, and is configured in a loop to ensure even distribution of water and overall hydraulic efficiency. Our firm is unique in that Shasta Pools has its own in-house manufacturing firm, A&A Manufacturing (Phoenix, Ariz.). The entire plumbing system, including skimmers, valves, main drains, return fittings and water levelers, were all developed and manufactured by A&A, which also provided a series of customized valves, fittings and wireless switches for use in the splash pads and the waterfall feature.

The health department required the interior finish of the pools to be white plaster, but we achieved more individuality with the waterline tile, which has an earth-tone pattern based in the Yavapai design tradition.

—B.G. & C.D.



called for two large, free-form swimming pools and spas, a grand architectural waterfall feature, a splash pad, a fire pit, an elaborate water/fire system at the entrance to the hotel and an interesting set of hardscape treatments including a winding pathway dubbed the “Walk of Life.”

From the start, the project ran through our Semi-Commercial Pool Division, a group within our large company that focuses entirely on the construction of pools that are not open to the general public but are still built to commercial standards mandated by local health departments.

## Authentic Scheme

In recent years, we at Shasta Pools have seen a dramatic increase in the number of truly creative watershape environments in both commercial and residential environments. The project we’re describing here is certainly right in line with that trend and bears ready witness to increased complexity as well as the desire on the parts of owners and designers to integrate every element of entire settings into consistent, coherent packages.

For us, the opportunity to work with O’Neil’s terrific staff, with the talented professionals at Daly’s firm and with the



Yavapai Tribal Council was intriguing and, ultimately, quite rewarding. From start to finish, the project unfolded with high levels of cooperation and precision.

Particularly exciting (and challenging) was the mandate for cultural authenticity embodied in the design. As is true of Native American peoples, the Yavapai are enormously proud of their heritage and intensely interested in celebrating and honoring their roots. Accordingly, the entire resort, inside and out, highlights themes and design elements that reinforce the tribe's cultural uniqueness.

The hardscape, for example, includes a variety of symbols and icons that are directly rooted in Yavapai rituals and beliefs. On a broader scale, the use of earth tones, natural stone and native plant materials all work together in creating spaces that blend seamlessly with the vast desert beyond.

One of the recurring themes in Yavapai arts and crafts is an asymmetrical geometric pattern found in their basketry, an art form for which the Yavapai are widely known. The windows of the hotel are all offset to reflect this traditional pattern, and the same woven motif is picked up in much of the hardscape, including the pool decking and in the striking details of the Walk of Life area, the waterfall and the water/fire feature.

As we worked with the conceptual plans and fleshed out a number of details, all of the key aesthetic decisions had to be submitted to and approved by the tribal council – a fascinating process that gave us the pleasure of working with a num-

Many of the configurations and contours we worked with followed the traditional Yavapai asymmetry, including the unconventional sweep of the pool's perimeters and the fact that the four waterfall towers at water's edge are all different heights with varying dimensions at their bases.



## From Conflict to Cooperation

The Fort McDowell Yavapai Nation was created by Executive Order on September 15, 1903, with the name derived from the once-remote outpost that served as a center for trade between local Native Americans and white settlers.

Today the nation and its surrounding communities exist in economic and cultural harmony, but that was not always the case: As is true for many native peoples of the American west, the Yavapai had to fight for their land and their cultural identity – struggles that extended well into the 20th Century.

In the early 1970s, for example, construction of the Orme Dam was proposed at the confluence of the Verde and Salt rivers a short distance from the reservation's southern border. Had the project proceeded as proposed, the reservation would have been flooded and its people displaced from what was left of their ancestral homeland.

With scant financial resources, the community spearheaded an opposition movement that rallied other local tribes and non-native groups. On November 12, 1981, after consulting with the Yavapai Tribal Council and the Arizona Governor's Advisory Committee, then-Interior Secretary James Watt announced the cancellation of the Orme Dam project. To this day, a tribal fair and rodeo are held to commemorate the event.

The Yavapai squared off against the federal government again in 1992, when a dispute over gaming laws prompted the U.S. Justice Department to send in federal agents to shut down the Yavapai's casino and four others in the area. Agents blockaded the casinos in a three-week stand-off that occasionally erupted into violence.

The state government moved quickly, ratifying a gaming pact with the Native American Nations and ushering in the state's era of "Indian gaming." The now flourishing relationship between the Yavapai and surrounding communities – not to mention a thriving resort – are living testament to the tremendous progress that's been made in a relatively short period of time.

– B.G. & C.D.



ber of tribal officials including Rafael Bear, council president and current leader of the Yavapai Nation.

### Native Waters

As is true of most conceptual designs, the plans we received required a great deal of work in creating a good set of construction drawings. Our team spent hundreds of hours in developing drawings for everything from the plumbing and electrical systems to specific architectural details and equipment sets.

The asymmetry running through the designs brought interesting challenges to us as pool builders: The free-form swimming pools, for instance, feature a series of irregular radii that robbed us of the usual contours and points of reference

and ultimately required intricate dimensioning of the gunite shells.

We also had to design a custom detail in which the two pools appear to be the same body of water but are, in fact, separated from one another by decking beneath a large wooden bridge that crosses over the "junction" between the two vessels.

Asymmetry was also an issue with the waterfall feature we installed on the edge of the smaller of the two pools. It's a stone-covered architectural feature consisting of four tapered spires at heights ranging between eight and 12 feet with varying dimensions at the base. Although it's a single feature, each tower required a separate design as a result.

The pool complex also includes more



than 12,000 square feet of decking. This was topped by our company's Shasta Deck finish, which we customized to include a variety of authentic patterns in five interwoven colors – each of which had to be approved by the tribal council. The same review-and-approval process applied to application of the rubberized surface used with the interactive splash pads. Even these utilitarian surfaces are emblazoned with elaborate Yavapai symbols.

Of all the features and details we worked on, however, perhaps the most unusual and spectacular in the entire program is the water/fire feature we installed at the hotel's entrance. Here in particular, it was all about the historic culture of the Yavapai meeting the modernity of contemporary watershaping.



The fire-on-water feature we developed for the hotel's entrance is the culmination of the design program, with the fire basket's surface prominently featuring the Yavapai's asymmetrical weaving patterns over two tiers of flowing water. At night, subtle turns to spectacular with the fire becoming a beacon that can be seen for miles.

### Bold and Subtle

This feature is really something special: The water portion of the design consists of a circular, vanishing-edge pool that measures some 30 feet across and is surmounted by an upper pool of the same description, but just 25 feet across.

Faced in ledger stone of a sort found throughout the entire design (including the aforementioned waterfall feature), the pools' water flows gently over the edges to create a mesmerizing aural experience along with dancing reflections of the incendiary element.

Mounted atop the tiered pools is a 12-foot-diameter copper basket that glows at night with an intimidating gas-fired inferno. The basket itself is a work of art, again featuring the Yavapai's asymmetrical basket-weave design. The enormous burner system is fed by a four-inch gas line and generates a flame that can, at night, be seen from miles away.

Fountain lights supplied by Crystal Fountains (Toronto, Ontario, Canada) were arrayed inside the pools to light the walls and basket from below. The structure is serene and sculptural by day, but at night, when it erupts as a column of flame, it creates a dynamic focal point that suggests a great gathering is taking place just inside the hotel doors.

By way of stark contrast, the Walk of Life pathway is a study in subtlety. Winding on for 450 feet, the path represents a dry riverbed – a common sight in the Sonoran Desert landscape. It's finished with an imported Italian tile that contains flat, smooth river rocks, and the surrounding landscape is filled with traditional artistic details, grassy areas, rolling desert landscaping and numerous benches designed to give visitors a means of escaping the casino and taking in the desert's natural beauty.

As was mentioned at the outset, water-shaping projects in our area are getting more ambitious – and more adventurous – with each passing day. From our perspective as designers, engineers and builders, it's a great time to be in this business, and projects such as this one are rewarding on more than financial terms.

Indeed, our work with the Yavapai has reinforced our awareness of local history and culture while giving all of us the opportunity to create works of art. We've certainly installed systems of equal or greater technical complexity, but given the intangible resonances of the design and the uniqueness of the setting, we consider ourselves fortunate indeed to have participated in this rare and unique project.

# Walls of



# Wonder

**The art of the water wall has come a long way in recent years, observes inventor and manufacturer Tory R. Zweigle, and he isn't shy in pointing out that his company, Acqua Werks of Corona, Calif., has led the charge. Building on the basic concept of water flowing down vertical surfaces, he has created hundreds of variations on that theme in both custom and mass-produced formats for hundreds of thousands of clients around the world.**

**By Tory R. Zweigle**

In a real sense, I want to build antiques: My goal in designing and shaping water walls has always been to develop systems of beauty that will be around and appreciated decades or even centuries from now. Not only are they built to the highest standards of quality – as are many antiques – but they're also meant to hold running water year after year.

I don't know who created the first water wall, but my best guess is that they've been produced in one form or another since the late 1960s or early '70s. I became aware of them in the early '80s, at which point a number of craftspeople were making them from stone, copper, and bronze.

Some of these products aspired to be works of sculptural art, but for the most part I thought that the medium's artistic potential hadn't been fully explored or expressed. My idea at the time was to expand the concept with respect to shapes, sizes, materials and styles. I also wanted to check into the possibilities of combining water-wall effects with a variety of sculptural and illustrative visual elements.

In 1994, things had advanced far enough that Acqua Werks was formed and has now become a substantial operation with headquarters in Corona, Calif., and manufacturing facilities in China and India.

### **Spirit of Innovation**

As an entrepreneur and inventor, I've been involved through the years in more than a few creative ventures, including several in the custom-automotive and sporting-goods industries. My companies have built custom golf carts, motorcycles and other recreational vehicles as well as products for automobiles and high-end custom furniture.

All of that other work is steeped in modern industrial materials and manufacturing processes, but I have to say that I take my greatest inspiration from good, old-fashioned water – largely because I am completely intrigued by its history and its influence on ancient cultures.

The attractions of decorative water truly span the centuries and the globe. We see it used in nearly every design tradition, from Feng Shui, Japanese gardening and Islamic design to the works of the ancient Egyptian, Greeks and Romans. I see what we're doing with water walls as a continuation of those traditions as expressed in modern materials, designs and manufacturing methods. In all cases (including ours), water represents nature, prosperity, spirituality, good fortune, fertility and tranquility.

I've always had the thought that the watershaping industry has made it much too difficult for residential and commercial clients to obtain decorative water and moreover were offering them far too limited a range of aesthetic options. That's changing, I think, but until very recently, it was almost absurd how few choices consumers really had, especially in light of the vast possibilities water provides us as an artistic medium.

The idea of building water walls myself first dawned on me during a visit to New York in the early 1990s, when I saw a sculpted waterfeature that had a thin sheet of water flowing across and adhering to a stone surface. As beautiful as the natural rock was, it struck me that other materials would work just as well if not better. So when I returned home to Beverly Hills, Calif., I began making prototypes.

In nine days, I had dozens of designs. Within two months,



I had opened a store – and the demand was instantaneous and nearly overwhelming. Before long, the company was selling water walls through specialty stores including Sharper Image and later moved into all the biggest mass merchants. Through the next ten years, the business expanded almost exponentially, with sales in 144 countries. It takes no monumental insight to see that this demand is based on the fundamental attraction that every human has to water and its qualities.

Our production capacity has expanded through the last 10 years – and continues to grow at an amazing rate by incorporating state-of-the-art manufacturing equipment that enables us to integrate materials old and new, including glass, stainless steel, copper, granite, Avonite, brass, fiber-optics, LED lighting and rear-projection video technology.

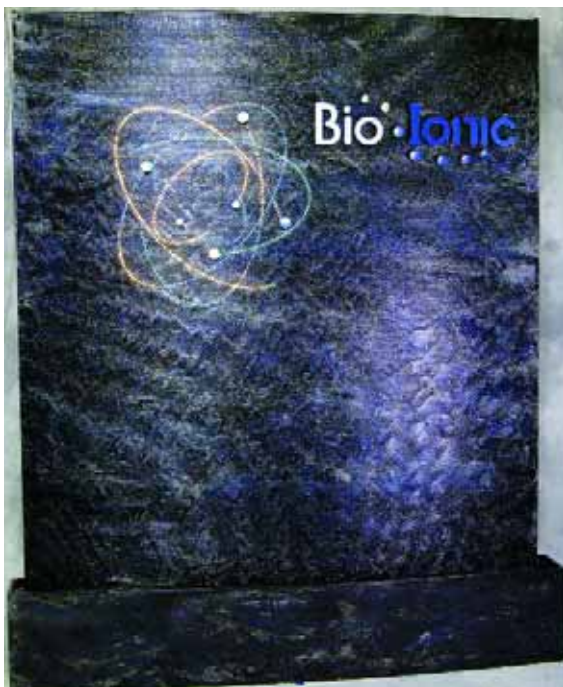
Each of our water walls is a work of art, from conception of the idea through delivery and installation. All are hand-built (with machine-integrated parts), and some of the larger models rise more than 100 feet in height and include more than 6,500 components – every single piece being architecturally correct.

### Creative Bandwidth

In our facilities, we use multiple media in designing our water sculptures – whatever it takes to capture the spirit and imagination of the client and the nature of the setting. Our goal is to complement those settings with artistic designs featuring the life-enhancing characteristics of water, whether the location is a private residence or a lavish resort hotel.



Many of our water walls begin with simple shapes that we curve, bend, ripple or color to serve our purposes. The products can stay this way, but often they are transformed, decorated and thoroughly customized to meet specific clients' wishes.



To make our watershapes more accessible to consumers, we've started a line of retail stores called Water Wall Galleries. (Our first, Cascade Water Gallery, is located in the heart of San Diego, Calif. Others are set to open in Florida and central California, with a nationwide rollout planned for 2010.) Open to the general public as well as tradespeople, these shops are run by trained personnel who understand water in both technical and design terms.

We've also assembled a custom catalog that now contains hundreds of water walls that provide appropriate accents for a staggering range of settings. There's a mass-production catalog as well that covers our most popular designs, with many lines offered for exclusive distribution through select merchants so each has its individual line.

In my view, this meets a need I see to make decorative water much more accessible than it has been to date. To be sure, there are watershapers out there creating truly innovative and interesting designs, but their output tends to cost a king's ransom to obtain. Our view is that more-accessible water does not have to be monotonous and uninspiring. Given the basic simplicity of a water wall, it's particularly suited to eradicating

those sorts of conceptual and financial barriers.

We also do custom work, of course, to meet the needs of our high-end clients. In that vein, we have the ability to combine illustrative art and commercial graphic images with water effects in ways that have proved irresistible to many such clients.

Because these water walls invite viewers to come closer, study the rippling effects, listen closely to the soothing sound and/or reach out and touch the flowing water, they serve as compelling vehicles for com-

We use our basic walls in countless ways, applying logos and imbedding them with fiber optics, setting them up as backdrops for sculpture, designing them as retail or corporate displays or painting them with just about any and every image imaginable.





munication. That is why many of our corporate clients are displaying their logos on our water walls in their lobbies and corporate offices: There's no way these icons will be ignored.

Our work with these sorts of displays has led us more recently to pursue the potential of a specialized form of water wall in which we permanently affix images into the finish of the wall itself instead of applying or transferring images using another medium such as paint or ink. We can now place any type of digital image imaginable on a water wall, ranging from modern art or classic mythological images to nature scenes or replications of classic paintings or corporate graphics.

### Building Images

But the images or materials are only part of the overall impression to be made: By texturing the wall surface, we increase the range of effects almost infinitely.

In systems with grooved surfaces, for example, we've learned ways to use surface tension to create a wide range of vi-



Not all of our work involves water walls. In fact, our approach and technologies have involved us in numerous fountain projects around the world, including these large-scale projects that put our special skills with surface tension and system design to work.

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sual textures. We've also developed designs that feature grooves of varying depths, widths and spacings to create flows that will adhere to surfaces of varying dimensions, contours and angles. These surfaces are machined on a custom, computerized manufacturing system we developed to enable us to produce (and reproduce) these highly refined surfaces quickly and reliably each and every time.

The system variations we've developed are fantastically numerous. We've developed walls that use ultrasonic waves to make water adhere to steeply angled or nearly horizontal surfaces. For some of our systems, we imbed fiberoptic lighting in the surface, and we also have numerous techniques for embossing text or images. There are even systems that have three-dimensional artwork mounted to the surface.

In the interest of making these water walls

even more accessible, a great many of our systems are self-contained, stand-alone units that can be placed just about anywhere. Other systems, however, can be fully integrated into the basic architecture of settings as diverse as living rooms, conference rooms, lobbies, art galleries and museums.

To date, we've sold systems in 144 countries and executed more than 40,000 custom designs. Even so, we appreciate the fact that water walls are generally new as manufactured products, which means we devote a great deal of time and energy to educating professionals – architects, landscape architects, interior designers and watershapers as well as prospective commercial or residential clients – about all the possibilities.

(Other companies make water walls, of course, but from what we've seen they tend to focus on limited design vocabularies

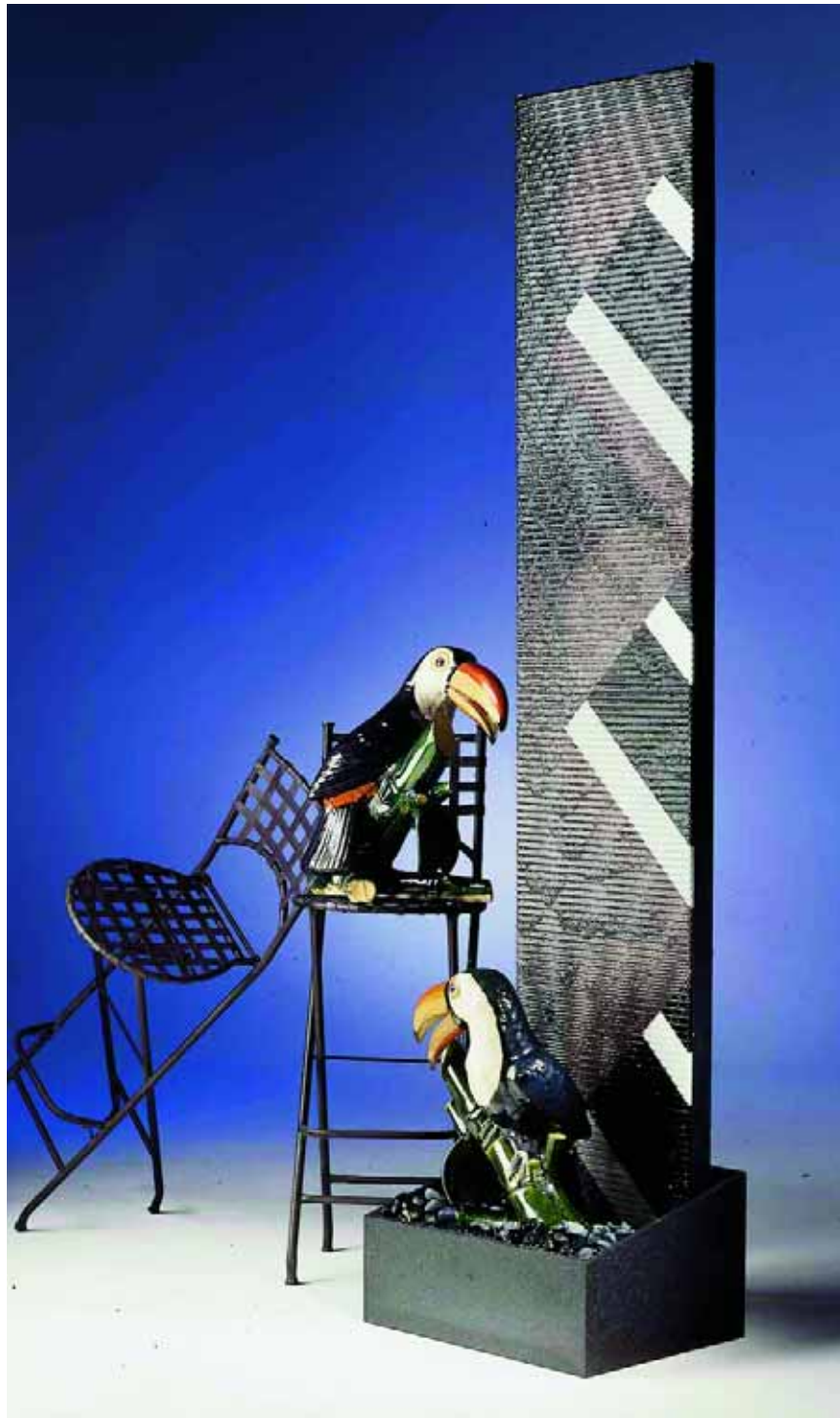


and single types of material – usually acrylic, stone, copper or stainless steel.)

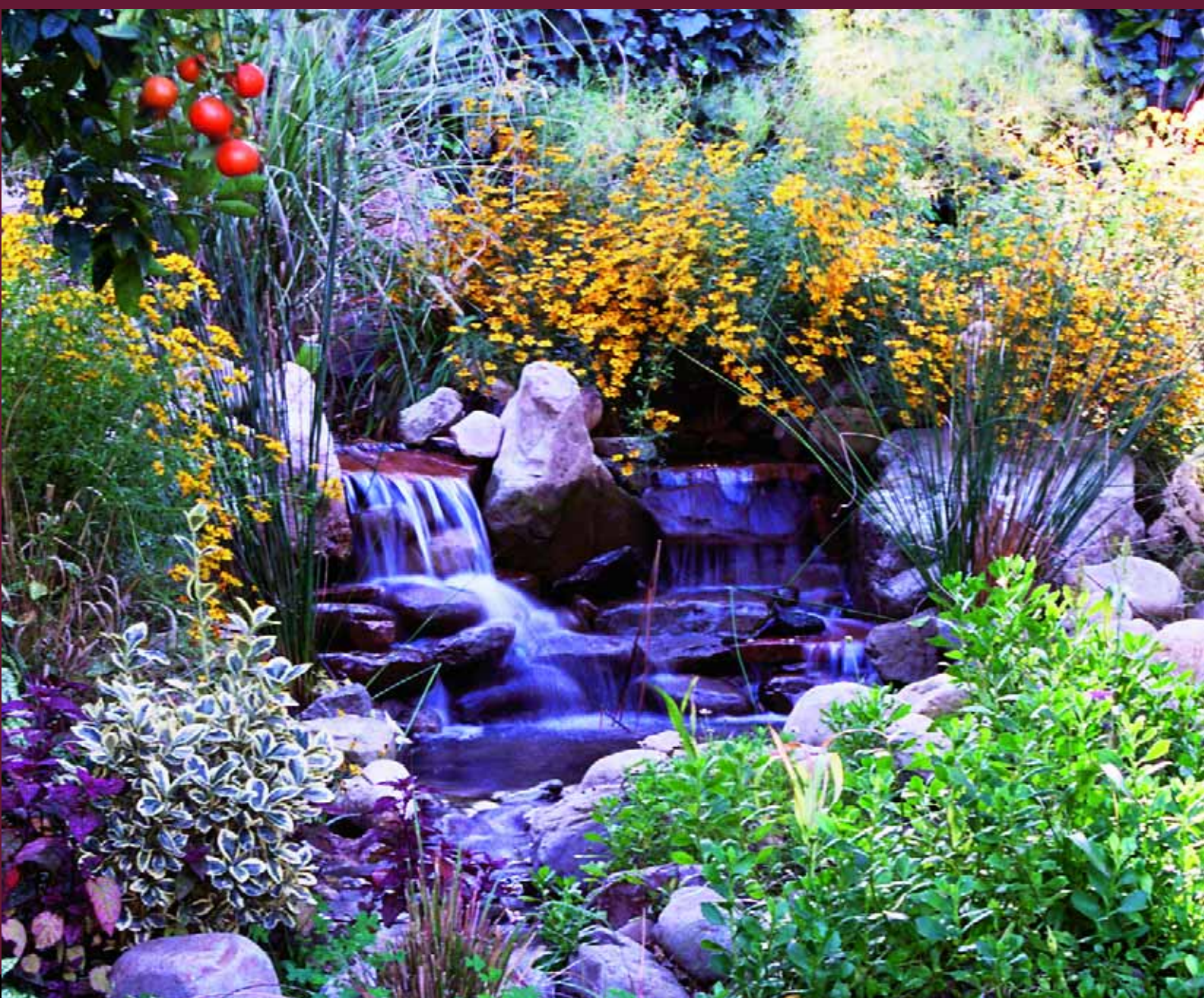
At this point, I enjoy the process of weighing hundreds of options when it comes to materials, finishes, sizes, shapes and illustrative possibilities. Through the years, these processes have led us to produce surfaces that look like wood, all forms of marble, granite or pebbles. We've made "walls" that mimic the appearance of the trunk of a palm tree as well as some that look like paintings by Picasso mounted on a sheet of water. We've also done pieces that stretch up over 100 feet tall.

It's a unique amalgam of high art, commercial art, industrial design, advertising, garden ornamentation, technology, manufacturing and determination – anything and everything that has to do with bringing the enjoyment of water to increasing numbers of people. I consider this an art form so vast, so flexible, that I think it may even dominate the watershaping world in years to come.

As I wrote at the outset, someday these systems will become collectible antiques in the same way that fine furniture, artwork and textiles are today, with each water wall having its own unique design and vintage. That's an enormously ambitious way to look at a product the nature of which is so simple, but for us, part of the fun of pioneering an art form is seeing the sky as the limit.



Many of our projects involve taking water walls in new and adventurous directions – so much so that we see no limits to their potential use in an infinite variety of settings. These are works of art, each in its own way, and all of them spring from water wall technology.



He came to the profession by an unusual path, but pond, waterfall and stream specialist Steve Sandalis has taken to his work with rare passion, turning a one-time hobby into a thriving business. Here, he describes what he's after in working with his clients, the openness with which he operates and the approaches he takes to offer his clients watershapes that bring peace, tranquility, beauty and a generous dash of romance to their backyards.

# A *Fine* Romance

By Steve Sandalis

I believe it's fair to say that many of us who are now in the business of creating naturalistic watershapes have been intensely influenced and inspired by experiences we had as children playing near streams, waterfalls and ponds.

That was certainly true for me as a kid growing up on Long Island, N.Y., where I was constantly exposed to beautiful natural bodies of water. When I grew up, I found myself in the entertainment industry for several years. It was exciting at times, but no matter where I went, I always felt myself being drawn back to the water's edge.

About ten years ago, at a point where my interest in acting and modeling had begun to wane, my wife and I decided to settle down and buy a home. It wasn't long before I started thinking about building a stream in the backyard to recapture my childhood sense of wonder at being surrounded by natural beauty – and it wasn't long before I became a bit obsessed by working with water.

At first it was just a serious hobby. I'd spend hours fine-tuning our stream and

couldn't wait to get back to the water when I was off doing other things. Not much time passed before I started putting streams in the backyards of friends who'd seen ours. Soon, almost without knowing it, I became a water-shaper and had left the entertainment industry far behind.

About five years ago, I opened my own company, Mystic Water Gardens of Encino, Calif., and am now entirely devoted to this wonderful medium of aquatic art and the power it has to transform almost any garden into a place where peace and tranquility reign.

## Key Collaborators

Despite the fact that my journey from the world of acting and modeling into building ponds and streams was more or less accidental, I have taken to it with unmistakable passion and have found every step of my progress as a professional to be endlessly rewarding.

It's never really felt like a job, even though it can involve an incredible amount of hard, physical labor. And I

It wasn't long before I started thinking about building a stream in the backyard to recapture my childhood sense of wonder at being surrounded by natural beauty.



think I see an advantage in having come at it as a homeowner/do-it-myselfer, because I learned just how profoundly a beautiful stream can affect one's daily life. Absolutely, my approach to my clients' projects has always been informed by that personal sense of conjuring pleasure and tranquility.

At the same time, I appreciate the fact that one of the most exciting things about this line of work is that it's impossible to know everything. Each and every project provides me with an opportunity to fine-tune my craft and learn and apply new skills and techniques.

The fact that I'm so open to new approaches and ways of thinking is one of the reasons I've taken the somewhat unusual approach of networking with every pond builder in my area who's willing to talk with me. We share ideas and methods, discuss projects and challenges – and generally work as colleagues in creating more exceptional watershapes for our clients.



The way I see it, the demand for naturalistic watershapes has expanded so rapidly that there's more than enough work for everyone who's already in the field – and then some. By cooperating with each other and operating with a collective pool of insight, skill and experience, we're all better able to meet clients' needs and expectations.

The alternative, which would have us approach each other as competitors wary of one another, doesn't make much sense to me. Of course, I understand the natural inclination some people have to protect their businesses and their knowledge bases, but I've found that cooperation has created a positive working culture within the local trade that makes life more pleasant and enjoyable – and has actually opened doors for all of us.

I see this spirit of cooperation and collective energy as crucial to the success of any of my projects, no matter how small or large. If my mission is to create pockets of relaxation and beauty, it makes sense to me that the entire process should move forward with an open, positive spirit.

### Planned Improvisations

Good intentions and creative openness are one thing, but the actual planning and installing of these features is quite another and takes lots of hard, detailed work.

I start by talking with the clients to get an idea of what they're really after, taking cues as I listen to them from the way they talk about their home and the lifestyle they're after for themselves, their families and friends. I also spend a great deal of time on site, studying the lay of the land, thinking through possible focal points and figuring out the vertical transitions.

If there's a natural slope, I consider what would be the most natural course for water and think things through accordingly. When I'm dealing with a flat space, I envision subtle vertical transitions that don't go too far toward violating the nature of the setting while still providing adequate drops from the top of the system to the bottom. This can mean grading the lot and adding soft contours, or it might entail over-excavating the stream course to provide depth for necessary transitions.

I'll sketch ideas to give my clients a basic feel for the end result, but the thing about



Each and every project provides me with an opportunity to fine-tune my craft and learn and apply new skills and techniques.





sense of the randomness of their natural patterns. In setting stone, we work to mimic those patterns using a wide range of stone sizes, using some as major focal points within the stream and others to create a sense of the natural dispersion of stones by floodwaters.

## Stone Factors

Whenever possible, I try to work with stones that are indigenous to the area in which I'm working. I've seen some projects that look fantastic except for the fact that the materials have nothing to do with local environments. This is why I always tell clients that their watershapes will be better served using materials that can be seen locally, because the alternative might involve creating a system that looks as though it's been picked up from some exotic region and plopped in their backyard.

As important as working with local material is the exercise of a great deal of care in selecting individual stones. In our projects, we carefully sort through the materials, setting aside pieces with an idea in mind of where they'll specifically be used in the design. I'm always intrigued by pieces that have weathered surfaces, interesting shapes and textures and signs of character such as moss or lichen – but if they don't fit with-

naturalistic watershaping is that showing the general stream course and/or pond size and location is about all you can do: Almost all of the detail comes as work progresses on site.

In other words, for all the careful planning that goes into conceiving them, streams and ponds don't lend themselves to precise designs on paper. Mostly that's because rockwork is an improvisational art form: We select stones with interesting features but only start piecing them

together when the real work starts. Those outcomes aren't very predictable, and I'm always confronting the balances between meeting expectations and working with fluid combinations of topography and rock materials.

In my book, the only way you can understand how those relationships work is by studying nature. Indeed, when I started down this professional path, I spent a great deal of time in local mountains studying natural streams to get a



in my particular set of design parameters, I'll leave them behind.

Once the selected materials arrive on site, we start the process of positioning and repositioning each piece until everything looks and feels right. This is a crucial stage for us, because we know we are essentially setting the "bones" of the watergarden. It doesn't hurt that I work with craftspeople who have years of experience in working with stone and possess a knack for placing them in wonderfully artistic ways.

Every piece is important, of course, but we spend relatively more of our time detailing the waterfall areas to create a level of natural complexity. We rarely see water spilling over a dramatic weir in nature (although it *does* happen); more often, we see flows of water down slopes highlighted by waterfall fragments. This is why our designs are marked by lots of small pools with irregular weir edges and rivulets of water that divide and recombine. Not only does this look more "natural" to me, but it also gives us the opportunity to "tune" the sound of the falling water.

Once the bones are set and the waterfalls make sense to us, we attend to the edges and work very hard to blur the boundary between the stream and the surrounding landscape. Distributing rock

Continued on page 62



For all the careful planning that goes into conceiving them, streams and ponds don't lend themselves to precise designs on paper.

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material in the water, at the waterline and outside the stream course is our key to binding stream and landscape together.

In all cases, we studiously avoid the dreaded “string-of-pearls” effect in which a line of similarly sized stones marks a pond or stream edge. One of the keys to avoiding even the *suggestion* of such a line involves the strategic use of plantings to partially or even completely obscure some stones along the edges.

### Flora and Fauna

When it comes to functionality of our water systems, I’m a big fan of making them self-sustaining, which in almost all cases means extensive use of aquatic plants. Not only do plants add to the natural beauty of almost any system, but they are also critical to maintaining top-notch water quality.

To that end, we set up pockets and shelves for hyacinths, water lettuce and lilies throughout the system. The root systems absorb nutrients, which in turn pro-

motest clear water – and the plants go crazy.

For filtration, I prefer to set up bog-type systems in which water wells up through a layer of gravel, rock and plant roots. To me, that technique is far more desirable than deploying large, separate filter systems to perform a job that nature is more than capable of handling if systems are built correctly. I’ve encountered some people who seem more impressed with an elaborate equipment pad than they are with the watershape itself, but I have the feeling that if my job had more to do with engineering mechanical sorts of systems, I wouldn’t be nearly as enthusiastic about it.

Fortunately, natural filtration, chemical uptake by aquatic plants and the natural aerating action of waterfalls combine to give me the option of keeping equipment use to a minimum. From time to time, we’ll run into water-quality issues related to issues such as fertilizer runoff, but for the most part our systems have always been self-sustaining.

And there’s nothing better in these systems than clear water. It draws observers’ eye first to the water’s surface and then into the depths, where underwater rockwork, fish, turtles and other animals offer diversion and even a sense of wonder. Most of my projects include Koi, and I’ve heard over and over again from clients that these colorful fish have become cherished pets, each with a distinct personality.

Again, the use of extensive plantings helps keep fish-bearing water clean – and also gives fish a place to hide from predators or escape the heat of summer.

I never lose sight of the fact that I’m in business to provide my clients with exactly these sorts of full-spectrum sensory experiences. It may all have started in my own backyard, but with each succeeding project, I keep uncovering new ways to embrace a sense of romance and spiritual beauty in my work. Fish and plants have always been key components in that mix, but now I’m



drawn as well to the use of artwork, underwater lighting, fire elements and more to accomplish my mission.

### Finishing Touches

That word I just used – *romance* – is increasingly the focus of my work in clients' backyards, and it's a goal that can be achieved in myriad ways.

In daylight hours, it's all about personalizing a space and getting my clients involved in making the watershape their own. Design elements as simple as bridges, benches and stepping stones that create pathways and destinations can get this job done, as can developing elements of surprise that reward those who venture off into the landscape to find the source of certain sounds, whether it's water in motion or the rustling of reeds.

When the sun goes down, the setting can be even more magical and romantic. Whether it's using soft lights to accent certain plants or stones or setting up torches or fire rings to enhance the beauty of the setting at night – or even leaving the job entirely up to moonlight – we look at shadows and light to create a mood and atmosphere in which the daily grind falls away and romance prevails.

Many of these features are planned into a project, but many times they find their ways into the garden after we've completed the job. In fact, it's enormously gratifying to return to a site and see what the clients have done on their own. Sometimes what I find is a bit disconcerting, but what the simple effort on their part tells me is that they are interacting with the environment in ways none of us could have predicted and that they are willing to get their hands dirty to add finishing touches of their own.

In other words, the fact that they've made the pond and stream interactive is brilliant affirmation that they're spending time outside, caught up in the romance of the setting and making it completely theirs to enjoy. This is where I find my greatest joy in designing and building streams, waterfalls and ponds: It's the sort of work that sets your creative spirit free and enables you to bring beauty and tranquility to people's lives.

There's nothing I'd rather do!



## STONE PRODUCTS

### Circle 135 on Reader Service Card



**HARRIS BROTHERS** is the exclusive U.S. importer of marble and limestone products quarried and processed by Sofikitis Marble of Greece. The line includes standard and custom copings, drain grates, decking, staircases, wall cladding and more, with a number of finishes. All are produced using precise, state-of-the-art machinery and are ideal for use in overflow-type pool designs. **Harris Brothers**, Monterey, CA.

## LANDSCAPE-LIGHTING GLOBES

### Circle 137 on Reader Service Card



**LASORGENTE GLASS STUDIO** offers NightOrbs lighting fixtures. These colorful outdoor lighting fixtures are made of hand-blown artisan glass produced to exacting specifications. The glass

for the 8-inch globes comes in 8 color patterns and is 1/4-inch thick for strength and durability in harsh weather conditions. Each is mounted on a corrosion-resistant, bronze-tone base. **LaSorgente Glass Studio**, Media, PA.

## POOL PUMP

### Circle 139 on Reader Service Card

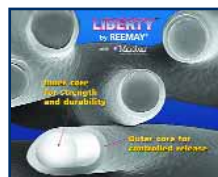


**HAYWARD POOL PRODUCTS** has introduced the TriStar pump as part of its integrated Totally Hayward line. The unit features optimized hydraulic elements – impeller, diffuser and volute – for maximum flow capacity and energy efficiency and is available with

a variety of bases for easy installation and retrofitting. It also has an easy-opening lid with a large, no-rib strainer basket. **Hayward Pool Products**, Elizabeth, NJ.

## FILTRATION MEDIUM

### Circle 141 on Reader Service Card



**BBA FIBERWEB** has introduced Reemay's Liberty pool/spa filtration medium. Engineered to include Microban antimicrobial product protection in every fiber, the new product inhibits the growth of bacteria, mold and mildew that can foul conventional filters. It is also available

with a range of filtration efficiencies and weights to meet the exact needs of pool and spa filtration. **BBA Fiberweb**, Old Hickory, TN.

## INTERACTIVE WATERFEATURES

### Circle 136 on Reader Service Card



**WATERPLAY** has introduced Toney Tube and Tappin' Tunes. These interactive components feature sound effects activated when the water flow is blocked, offering children new ways to play in the water together. Toney Tube is a six-foot-tall horn that sprays water from its keys, while Tappin' Tunes is a five-foot-long keyboard with a ground spray in each key. **Waterplay**, Kelowna, British Columbia, Canada.

## DRAINAGE SYSTEMS

### Circle 138 on Reader Service Card



**ZURN** offers Flo-Thru drain systems for a variety of applications. Available in 10- and 12-inch widths, the modular channel sections are made of fiber-reinforced polyester fiberglass with interlocking ends and can be topped with a variety of grates. A heavy-duty steel frame distributes weight between the grate and the fiberglass channel. End, bottom and side outlets come in various diameters. **Zurn**, Falconer, NY.

## VALVE ACTUATORS

### Circle 140 on Reader Service Card



**INTERMATIC** offers the model P/N PE24VA 24-volt valve actuator. Designed for reliable control of two- and three-way diverter valves for pool/spa combinations and waterfeatures, the device uses an adjustable cam to rotate diverters to multiple degree settings and is compatible with all current pool/spa valves (including the company's PAV Series) in new-construction or retrofit situations. **Intermatic**, Spring Grove, IL.

## CONCRETE IMPRINTERS

### Circle 142 on Reader Service Card



**L.M. SCOFIELD** offers Lithotex Pavecrafters, a line of professional imprinting tools and embossing skins for use in creating authentic textures and stone patterns on concrete surfaces. Virtually any texture – cobblestone, brick, clay tile, sandstone, pebbles and more – can be replicated on pool decks, patios, walkways and entries to match any style or décor with strong, durable and wear-resistant results.

**L.M. Scofield**, Los Angeles, CA.

## WATER-PURIFYING SYSTEM

### Circle 143 on Reader Service Card



**PARAMOUNT POOL & SPA SYSTEMS** offers ClearO3, an ozone-generating system for new or existing pools. The device uses ultraviolet light to create ozone in a chamber sealed to prevent ozone loss and inject less air into the circulation system. The ultraviolet bulbs are easy to change, and the housing features adjustable tabs for easy mounting near other pool equipment. **Paramount Pool & Spa Systems**, Tempe, AZ.

## DIGITAL POOL/SPA HEATER

### Circle 144 on Reader Service Card



**RAYPAK** offers pool/spa heaters with digital control centers that provide constant readouts of water temperature and allow for push-button adjustments. The self-diagnosing systems come in four sizes from 200,000 to 400,000 Btus. They are compatible with remote controls and feature condensation-free, rust-free heat exchangers, stainless steel burners and efficient ignition systems. **Raypak**, Oxnard, CA.

## TALL POOL SLIDE

### Circle 145 on Reader Service Card

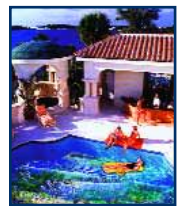


**S.R. SMITH** has introduced the TurboTwister slide – the largest the company has ever offered for residential pools. Designed to bring waterpark thrills to backyards, the sandstone-colored slide features an enclosed ladder for safety, stands more than 8 feet tall at the top of the handrails and comes equipped with a valve-adjusted water-delivery system that can deliver a flow of up to 40 gallons per minute.

**S.R. Smith**, Canby, OR.

## CUSTOM TILE AND MURALS

### Circle 146 on Reader Service Card



**IMAGES IN TILE** offers custom tile and stone murals for commercial and residential spaces. Working from a range of sources – photographs, paintings, company logos or digital artwork – the company infuses images directly and permanently into the tile using dye-sublimation technology. This results in durable, full-color, vibrant images on porcelain, ceramic, stone or glass tile. **Images in Tile**, Joplin, MO.

Continued on page 66

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## SIDE-POST UMBRELLAS

### Circle 147 on Reader Service Card



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**SHADESCAPES USA** offers the Isla side-post umbrella as a shade solution for pools, patios and decks. The umbrella turns 360 degrees on its base and locks into two tilt positions for blocking the sun at different angles – and in the horizontal position to block overhead sun. It comes in ten standard colors (custom colors are also available) in two shapes (square or octagonal) and four sizes. **ShadeScapes**

## STONE PRODUCTS

### Circle 148 on Reader Service Card



**LM NATURAL STONE PRODUCTS** offers limestone and marble pool copings, wall caps and stair treads for residential and commercial use. The copings come in 8 colors with 12 profiles, many featuring drops that can be used to cover old copings in remodels. The wall caps have a range of decorative profiles for topping 9-inch walls; the stair treads come in wide and narrow depths. **LM Natural Stone Products**, Stanton, CA.

## COPPER PATH LIGHTS

### Circle 149 on Reader Service Card



**VISTA PROFESSIONAL OUTDOOR LIGHTING** offers a range of copper path and spread lights for use in garden applications. Available with a range of spun solid-copper shades and heavy-gauge copper posts, the fixtures are brush-finished and will age to a rich, bronze-like color. They also feature top-grade ceramic sockets with nickel contacts and stainless steel springs. **Vista Professional Outdoor Lighting**, Simi Valley, CA.

## LEDs FOR WATERFEATURES

### Circle 150 on Reader Service Card



**CRYSTAL FOUNTAINS** has introduced submersible LED lighting for water displays. Intended to give designers the ability to bring the dramatic colors and dynamic effects of LED technology to waterfeatures at a reasonable cost, the system mixes primary colors to render nearly 17 million possibilities. The long-lived, low maintenance LEDs come in 5-, 15- and 25-watt models. **Crystal Fountains**, Toronto, Ontario, Canada.

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## LARGE-DIAMETER FITTINGS

Circle 151 on Reader Service Card



**LASCO FITTINGS** offers Class 125 fittings with 10- and 12-inch diameters. Designed for large-scale drain/waste/vent applications with retention ponds, lakes and other large watershapes, the PVC fittings are injection-molded rather than fabricated from pipe or molded components, so the tees, ells, couplings, bushings and caps offer smooth flow paths and compact profiles. **LASCO Fittings**, Brownsville, TN.

## WATERFALL SYSTEMS

Circle 152 on Reader Service Card

**WATERFALL SOLUTIONS** offers a range of waterfalls. Designed for easy installation, the products come in seven models with falls spanning up to six feet. All are framed in stainless steel in sizes that allow for easy tiling with minimal cutting. The water plenums provide arc, rainfall and other flow options and adjust forward and backward to accommodate finish variations. **Waterfall Solutions**, North Manchester, IN.



## CONCRETE PIGMENTS

Circle 153 on Reader Service Card



**CONCRETE CHEMICALS OF CALIFORNIA** has introduced Liqui-Cobalt, a pigment that offers long-lasting color for concrete, mortar or plaster even in constant, bright-sun conditions. The product is available in three colors – aqua, gray and blue. When added to the mix, the liquid's immediate, uniform dispersion ensures even color throughout. **Concrete Chemicals of California**, Redwood City, CA.

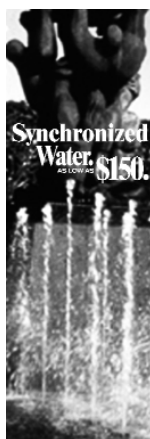
## AUTOMATIC POOL COVERS

Circle 154 on Reader Service Card

**IMPERIAL POOLS** now offers automatic pool covers. The devices feature a top-track system that exceeds ASTM safety standards and are custom-made to fit both free-form and rectangular pools with a low-profile track mounted on the deck. Fully compatible with optional fiberoptic lighting, the tracks make the covers disappear into a recessed housing below the deck when retracted. **Imperial Pools**, Latham, NY.



Continued on page 68



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## POOL ENCLOSURES

Circle 155 on Reader Service Card



**OPENAIRE** offers enclosures for residential and commercial pools, patios and more. Standard motorized roof panels can open up to 50% of the roof area, while custom systems are available that can open up 100%. The enclosures feature maintenance-free aluminum framing in various colors, are made with retractable glass or polycarbonate panels and can span more than 140 feet. **OpenAire**, Mississauga, Ontario, Canada.

## FOUNTAIN LIGHTING

Circle 157 on Reader Service Card



**PENTAIR WATER POOL & SPA** has modified its Spectrum Amerlite (SAm) lights so they can be used inside fountains and to illuminate waterfeatures. Housed in rugged copper exteriors, the colored lights offer the same functionality and color cycles as the standard SAm lights for swimming pools and also feature selectable beam-pattern lenses in standard and wide-angle options. **Pentair Water Pool & Spa**, Sanford, NC.

## ILLUMINATED WATERFALLS

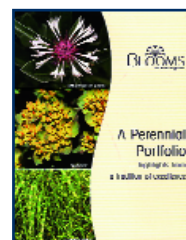
Circle 156 on Reader Service Card



**SUPER VISION INT'L** offers Novafall waterfalls to stimulate the senses of sight, sound and touch with smooth-falling water and dramatic fiber optic lighting. Intended for either residential or commercial applications, the waterfall system features a near-perfect laminar flow and is available in straight sections spanning up to 8 feet that can also be adapted to curving contours. **Super Vision Int'l**, Orlando, FL.

## GARDEN PLANTS

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**BLOOMS OF BRESSINGHAM** offers a portfolio of garden-worthy perennials. The 8-page, full-color brochure covers company history, a range of new releases and time-tested cultivars – many developed in the company's nurseries. All have been extensively tested throughout North America, and the company offers full information on regional plant performance. **Blooms of Bressingham**, Bressingham, Norfolk, England.

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## SURVEY INSTRUMENT

### Circle 159 on Reader Service Card



**GOTTLIEB INVENTIONS** offers Digital Geometer DG-1, a land-survey instrument that speeds area-measurement and square-footage calculations. When rolled around the perimeter of any area, the unit will calculate the area inside in square feet, yards or meters at the touch of a button – even with odd shapes – thereby eliminating cost overruns from underestimating. **Gottlieb Inventions**,

Escondido, CA.

## BARBECUE ISLANDS

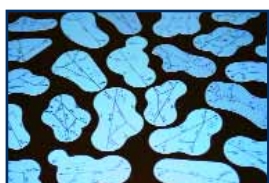
### Circle 160 on Reader Service Card

**FIRE STONE HOME PRODUCTS** offers grill islands for outdoor kitchens. The units come in six models and with a broad range of stucco finishes and tile colors, with tumbled marble available as an upgrade. Each style includes a convection grill and comes with features including side burners, sinks, storage spaces, sound systems, coolers, refrigerators, bar seating, lighting and more. **Fire Stone Home Products**, Bloomington, MN.



## POOL-DESIGN TEMPLATES

### Circle 161 on Reader Service Card



**MASTER SUPPLY** has added the "Californian" to its Template Pro line. The design tool for custom architectural pools is the seventh series in the line and evokes the spirit of California in packages of 25 to 50 designs in rounded, rectangular, oblong and other shapes. The templates are made to 1/8-inch scale with radius points and distances for easy transfer to construction plans. **Master Supply**, West Covina, CA.

## FIBEROPTIC WATERFALLS

### Circle 162 on Reader Service Card

**FIBERSTARS** offers Lighted Rain Waterfalls to bring light and excitement to pools and other waterfeatures when the sun goes down. They come with paintable housings in five different sizes (easily expandable to 6-, 7- and 8-foot spans) and can be applied in straight or radius applications. They also come with 45 feet of pre-attached fiber for easy installation, and fiber replacement is easy. **Fiberstars**, Fremont, CA.



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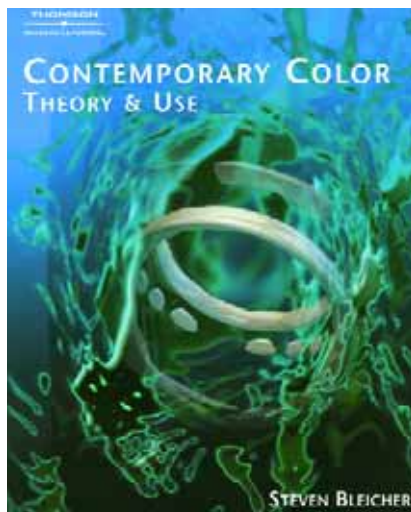


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By Mike Farley

# Color Keys



Every once in a while, I run across an area of design theory or philosophy that is so fundamental that I'm left to wonder how I've been able to do what I do for a living without a complete understanding of it. Color theory is one such field of study.

For a long time now, I've known that what very often makes or breaks a project is not the price of the materials or the presence of bells and whistles, but rather how well the colors work, both with each other and in the context of the overall setting.

Even simple projects with modestly priced materials can be ranked among the beautiful if the colors work. By the same token, there are extremely elaborate projects that fail to live up to their potential (or fail altogether) when color choices are off base.

My sense that this was something I needed to know more about led me to enroll in a four-day course on color theory at the Aqua Show in Las Vegas last November. The course – part of Genesis 3's advanced design school – was conducted by artist and educator Judith Corona and was a terrific experience that I'm sure will influence my design work from this point forward.

What she made clear is that color theory is a vast topic that requires careful and sustained study if you are to grasp the concepts fully. Along the way, Corona suggested several books and references for further reading, but the main text she used was *Color Theory: Contemporary Color Theory and Use* by Steven Bleicher (Delmar Thomson Learning, 2005).

I now understand why Corona made this choice: Color theory can be complex and tricky, but Bleicher breaks the subject down into concise discussions that shed ample light on the often-profound implications of color in our lives, cultures and designs. It's a wonderful book, beautifully illustrated and written in a plainspo-

ken style that is always easy to follow and absorb.

The areas of discussion include perception and how the mind and the eye pick up on colors; making sense of color; the naming of colors; and the psychology of color and how it influences moods, emotions and even appetites. It also covers practical issues of pigments, paints and brushes and how digital color and the Information Age are influencing the ways we perceive and use color. In addition, there are discussions of using color to create three-dimensional effects; how the use of color defines various styles, movements and periods in the world of fine arts; and the future of the use of color.

Nowhere in the book does Bleicher mention swimming pools or spas, and discussion of architecture is quite limited. Instead, the book focuses on the big picture and such issues as why color is so important to our perception of everything around us. It also offers fascinating observations on the cultural meanings of color and how different colors work in different ways in different contexts.

I didn't know, for example, that white is used in eastern cultures to represent death, while in our western cultures it represents purity and life. There are countless such observations that open your eyes to the ways people respond to colors in their environments – including, by implication, their backyards.

For my part, I found chapter 4 (on color theory and harmony) to be among the most useful. In it, Bleicher delves into color theory and use of color wheels, and I love the way the text systematizes things and helps the reader understand why some colors work well together and others don't.

For my part, I've always had a good, intuitive sense of good color combinations, but Corona's course and the book have given me a technical understanding of those relationships – and I know I'll be able to use this information in stronger terms to guide and inform future clients in the selection of colors as well as materials. **WS**

**Mike Farley** is a landscape architect with more than 20 years of experience and is currently a designer/project manager for Gohlke Pools in Denton, 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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