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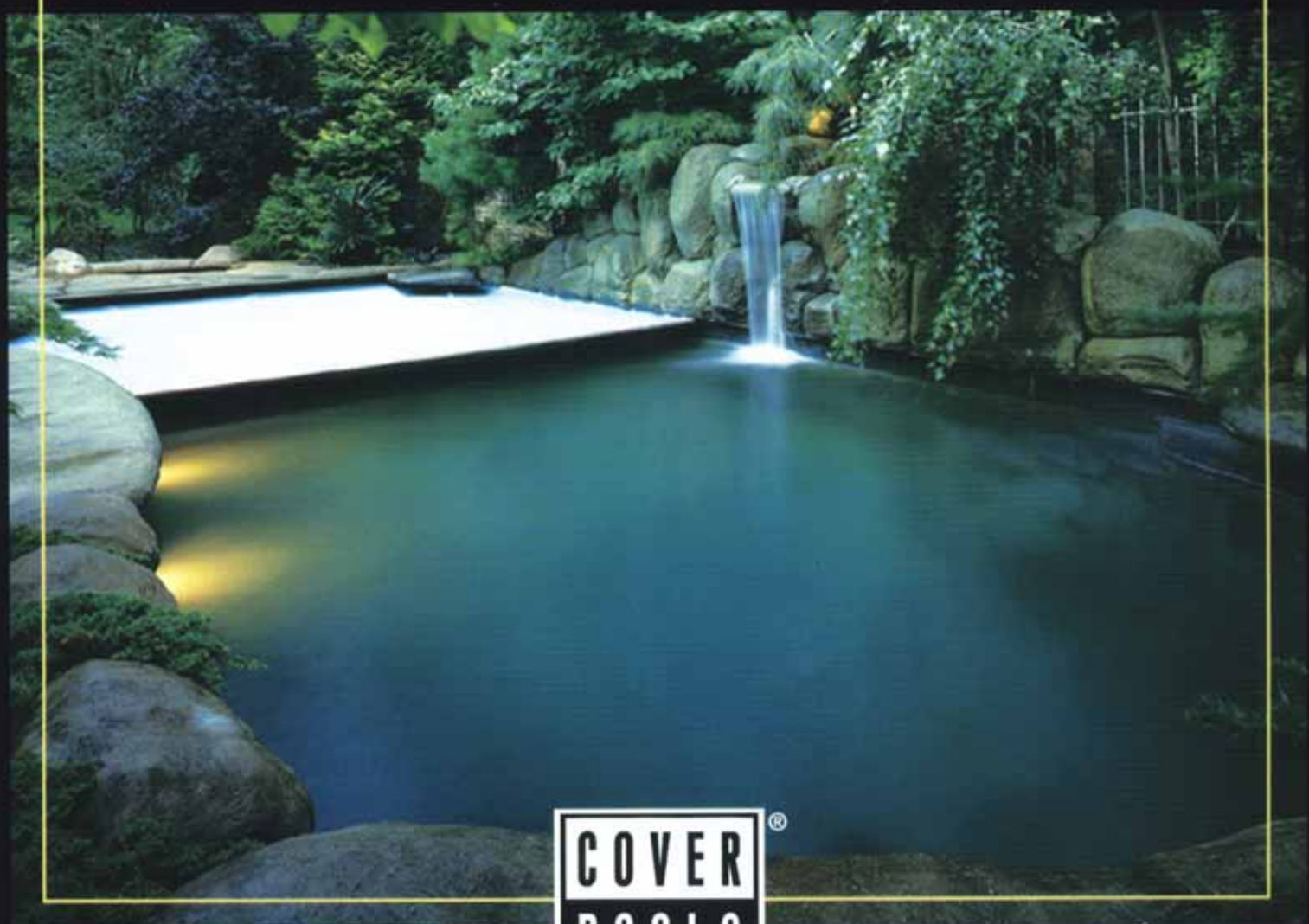

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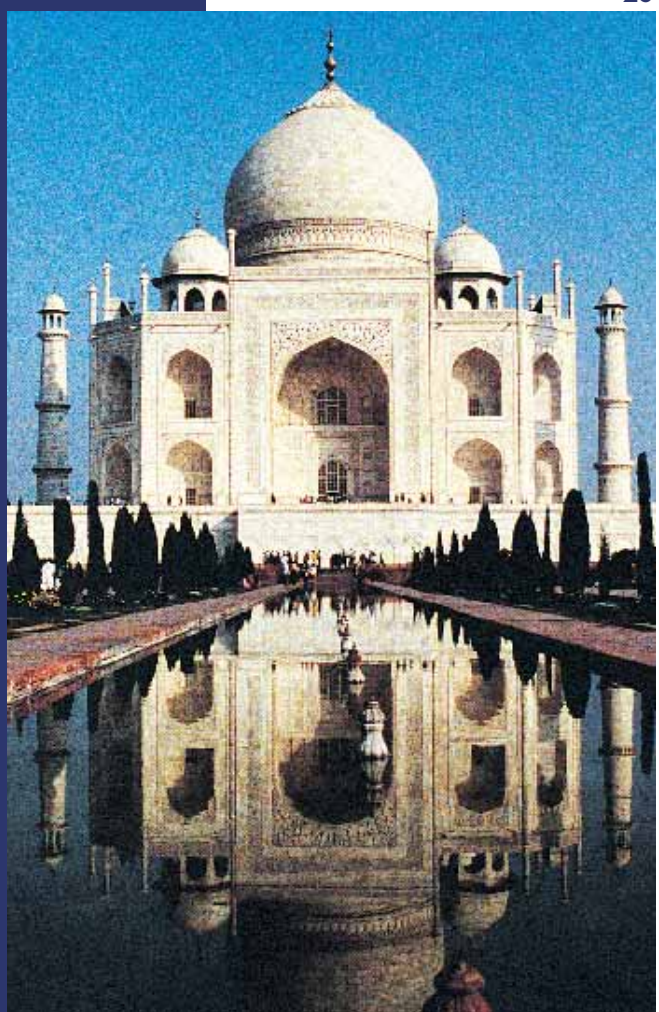

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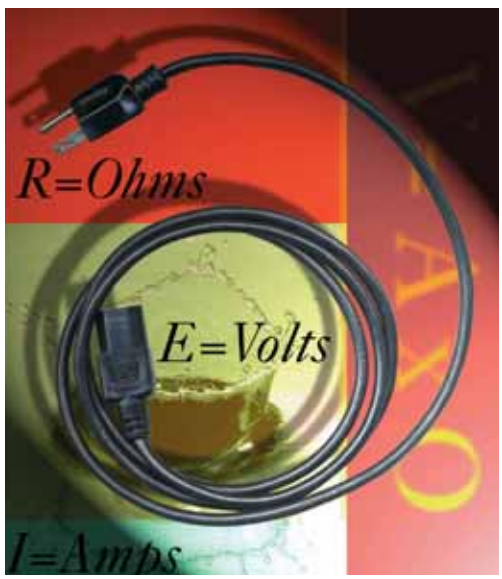

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DEPARTMENTS

On the cover:
Photo courtesy
Roman Fountains, Albuquerque, N.M.

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By Eric Herman

Easing Troubled Waters

Just think about what can happen if a customer seeks compensation for some problem that has arisen in the course of installing a watershape: Whether the complaint is justified or not, very often the customer finds the only pathway to resolution through suing the builder, who in turn sues subcontractors, who complete the circuit by suing their suppliers – all in search of someone else to take the blame and pay the damages.

Before it's over, everyone and anyone whose received money for involvement with the project is caught in a litigious loop. Seems crazy, doesn't it?

And by the time the cement dust settles, sometimes only after years of conflict, the customer walks away disillusioned, resenting the watershape and poisoning the well of future business or referrals. Attorneys have profitably plied their trade at the expense of all sides, of course, and the watershapers all leave the table poorer and angrier (but often none the wiser).

Placing this mess in the context of a recent *Aqua Culture* column by Brian Van Bower, isn't our job basically one of not spoiling the customer's good mood? So often, it's not the problem itself that leaves a bad impression; rather, it's the ugly rounds of "It's not my fault – they did it" that follow.

This sort of in-fighting is all too often the Achilles' Heel of the watershaping industry, and I suggest it's time to try something new.

Of course, acknowledging the problem is a good first step – but it's also the easy part. What can be done to stave off conflict is another question entirely – one addressed in this issue on page 46 by aquatic consultant and professional mediator Curt Straub. Here, he offers a practical, sensible program designed to prevent the sorts of blame-fixing lawsuits that come to plague so many projects.

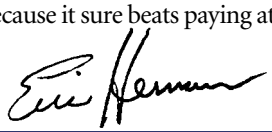
In describing "The Power in Partnering," Straub outlines a process that can be used in *any project to* define conflict-resolution procedures right from the start. His focus is clearly on the commercial side of the business, where the financial stakes are at their highest, but the principles he offers can be applied anywhere that multiple parties are involved in bringing a customer's desires to fruition.

Through partnering, he explains, potential combatants join forces upon a foundation of their shared financial and professional interests. Common or possible problem areas are identified ahead of time, specific needs are discussed and planned for, schedules are coordinated – and many possible problems are eliminated before they have a chance to occur. That oversimplifies things a bit, but the genius of Straub's suggestion comes in the fact that it accommodates the fallibility of the construction process and of the people involved.

This is not a fool's paradise he conjures, but a direct method through which the greatest weakness of the industry can be overcome – if not ultimately turned into its strength.

Certainly, conflicts will continue to arise. When all is said and done, there may simply be too many steps in the process and too many independent operations involved for everything to flow together seamlessly. Straub isn't suggesting that we must all be perfect; instead, what he's after is a proactive stance that implements a problem-solving process that resolves issues before anyone phones an attorney.

To me, partnering is food for thought – if only because it sure beats paying attorneys' fees and court costs!



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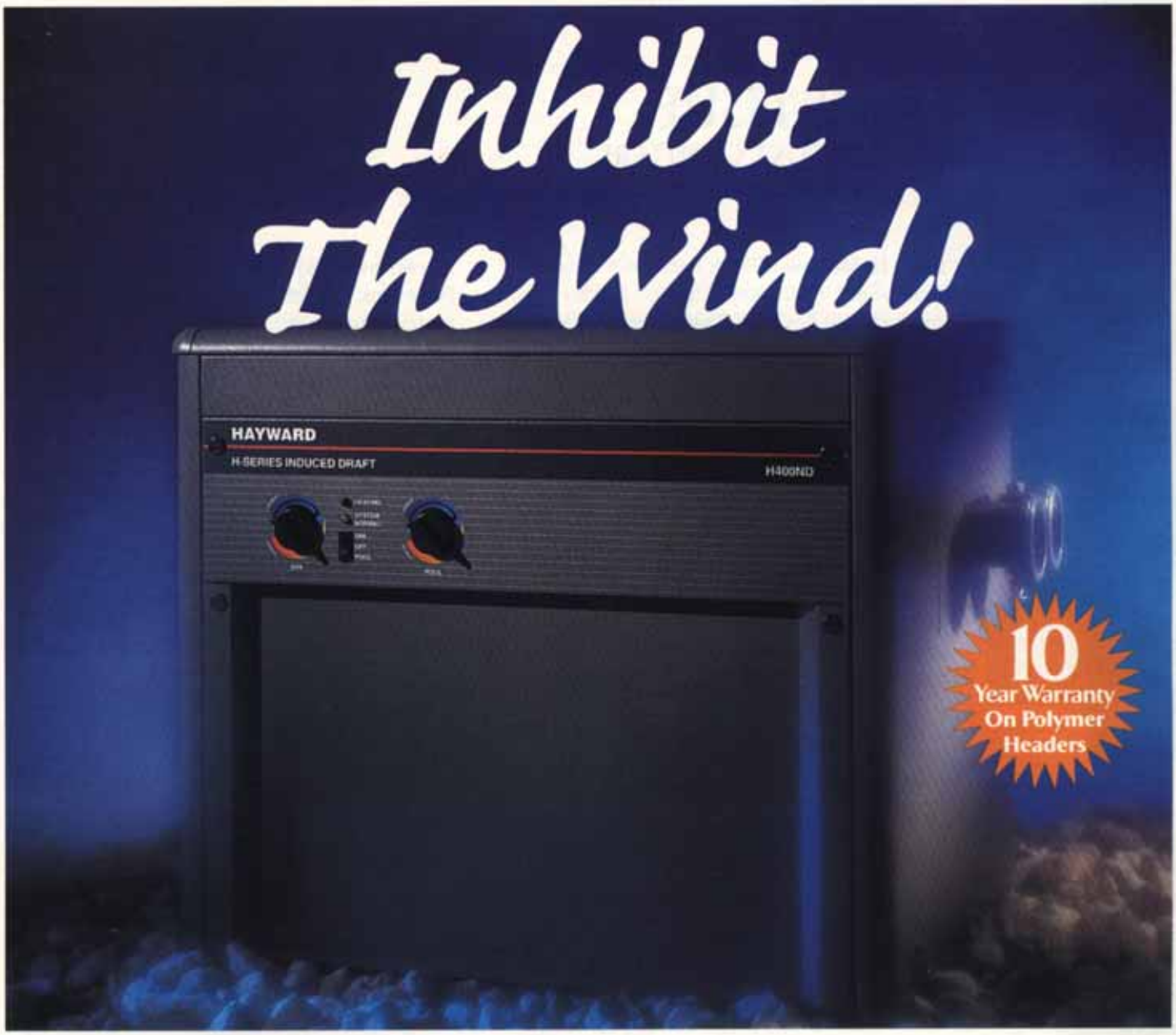

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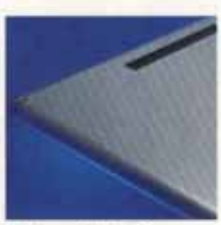

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IN THIS ISSUE

AUGUST'S WRITERS

Mark Holden owns Earth Patterns in Long Beach, Calif. A landscape architect and licensed contractor, he has been designing and building watershapes for more than 15 years, specializing in creating dynamic spaces that use water as a primary feature. While his own business combines his roles as designer and builder, he believes firmly that it is important to reach past his own resources and make contact with (and consult for) other architects and builders as a means of elevating standards in both trades. That thought in mind, he is an instructor in art and architectural history for the Genesis 3 Design Schools and also teaches senior landscape-architecture students at Cal Poly-Pomona.

Jon Mitovich is president of Roman Fountains, a fountain-design and component manufacturing firm based in Albuquerque, N.M. He has been with the company since 1977, first as vice president and general manager, then as president. Well versed in all aspects of commercial fountain application, from design and development to contract management and corporate administration, he is a graduate of Southern Methodist University in Dallas and has completed classes in fountain design at both UCLA and the Harvard School of Design. Mitovich is also a member of the Construction Specifications Institute and the American Society of Landscape Architects.

Interested in writing for WaterShapes *on design, engineering or construction topics? Contact Eric Herman at (714) 685-1854!*

David Tisherman owns and operates David Tisherman's Visuals in Manhattan Beach, Calif. A designer and builder of high-end custom swimming pools since 1979, he is widely known in the pool and spa industry as an advocate for the highest possible standards of design, engineering and construction. He has degrees and credentials in industrial design, scientific illustration and architectural drawing from Harvard University and Art Center School of Design and has taught architectural rendering and presentation at UCLA. An award-winning designer, he serves as an industry expert for California's Contractor State License Board and has been a member of NSPI's Builders Council since 1994. Tisherman is a co-founder of and principal instructor for the Genesis 3 Design Group.

Curt Straub has been active in the pool industry since 1962, when he joined his family's construction company as a laborer working on backyard installations in the greater Kansas City, Kan., area. In 1970, Straub moved into the front office and headed up the company's design and sales teams, a position he held until 1990, when he founded Aquatic Consultants. A specialist in pool and spa design, he offers mediation and conflict-resolution services along with his emphasis on structural evaluation. Straub is a longtime member of the American Concrete Institute's Kansas Chapter and is past chairman of ACI's swimming pool committee. He is also a past board member of the Master Pools Guild.

TISHERMAN

STRAUB

Value by Design

By Brian Van Bower

Consider this scenario: You call up an interior designer. In the course of the conversation, you ask him or her to come to your home, walk around, take measurements and listen to your ideas about a new look for your home. That done, you want this design professional to go back to the office, draw up a plan, select materials and price the job.

Would you be expected to pay for this service? If you know anything about interior designers, you know the answer is a loud (and not inexpensive) "Yes!" It's a trade where nobody works for free: Whether you buy 100 yards of carpet, a gallon of paint or nothing at all, you have to pay this professional for the design because, in and of itself, he or she assigns real value to the work.

Where you'd never get away with asking a professional with years of experience in designing home or office interiors to ply their trade for free, that is *exactly* what we tolerate and even encourage in the pool industry. We undervalue our design expertise by giving it away for nothing – a huge mistake.

Good Intentions

As watershapers, many of us have years or even decades of experience in developing designs for clients who are shopping for what can be the second or third largest investment they'll ever make. To give that design away demeans the value of that investment. After all, anything worth having is worth paying for – or should be, anyway.

Amazingly, however, that's not how we collectively view our design work. For years, we've been taught that by offering ourselves as a "resource" to customers and prospects that we effectively bond with them, build rapport and draw them in as future buyers. Certainly there's merit to that notion and its service orientation, but these good intentions very often lead us astray.

A quick example: Dave, a childhood friend of mine, bought a home with a pool not far from where I live. Before long, he ran into a problem with the equipment and asked me for a referral to a local service business. I suggested one, and my friend made the call.

The well-meaning owner of the service business answered the phone and proceeded to spend an hour telling Dave how to fix the problem. The owner did this with no expectations – not for a repair job nor with any real idea of whether or not my friend would ever set foot in the store or become a service customer. Once Dave hung up the phone, he called me laughing his head off and saying he wasn't accustomed to getting that kind of information for free.

That's the point: This customer wasn't looking for a freebie – and he didn't expect one, either.

Now, lots of people in the pool trades will praise the owner for sharing what he knew and criticize my friend's callousness in ridiculing his generosity. I side with Dave here, however, because I believe the owner, despite good intentions, seriously devalued his professional expertise by giving away the service for free to someone who wasn't even a customer and had no stated intention of becoming one.

This is exactly the sort of thing we have been encouraged to do in designing pools, spas and other watershapes for customers who have not yet signed on the dotted line. Through no one's fault but our own, we have helped to turn our products into commodities. I, for one, prefer instead to think of what we do as providing a lifestyle at the

same high level as architects, interior designers and other top professionals.

Pools As Art

This whole question of whether or not to sell design services (or even to do custom designs at all) really cuts to the heart of the industry and how we view ourselves. And that's just as true of volume builders as it is of the custom builder who tackles six or eight top-dollar projects a year.

I see this devaluing of our products as a collective lack of self-esteem, which is highly ironic when you consider the power and importance of what we bring to the table for our customers. To those who look at design work merely as a sales tool, I offer another perspective: I see watershapes as art as well as craft and suggest that if we all looked at our work as an art form, there would a far greater value placed on our design contributions.

Our *customers* certainly are willing to look at things that way and indeed want to think of their watershapes as being something special. Absolutely, the people I work with want more from a design than something that can whipped up in an hour in their living room – and I'm pleased and proud to oblige.

Consider the difference between the

Consider the Rectangle

When you think of a rectilinear pool, odds are you don't see a great deal of artistic merit or design potential there. If that's the case, please look again: There are many aspects of backyard design that have nothing to do with vanishing edges and fancy features that work to define the overall value of the design.

Consider materials such as coping, tile, decking and interior finish as parts of that rectangle. Consider lighting and placement of the watershape within the overall setting and landscape. Step back further from the rectangle and capture the relationship of the pool to the home itself, the pathways to various portions of the yard, the entertainment areas and Zen-like places of repose and quietude. There are points of entry and egress and safety features and equipment needs as well.

Perhaps the rectangle perfectly echoes the architecture of the house or offers a visual counterpoint to its features and surroundings. Maybe the pool is rectangular because it is intended for lap swimming or volleyball or just because the customer loves the elegance and simplicity of its basic geometry.

All of these elements come into play in the design of even a simple rectangle. All are best balanced and employed with the help of a skilled designer – one whose experience will help clients achieve their goals no matter the shape the project ultimately takes.

– B.V.B.

painter and an artist. The painter comes in with gallons of paint and dutifully coats the inside or outside of a home. He or she does a professional job, working hard at a fair price. The paint goes on, the contractor is paid and the customer pays little further attention to the work other than to take note of little flaws here and there.

By contrast, an artist may come in with just a little bit of paint and skillfully splash bits of it all over the place, declaring it a "work of art." That person will collect a bigger fee than will the painter; what's more, the work will be valued and enjoyed to a far greater extent by both clients and visitors alike.

We should count ourselves among the artists rather than the painters. In many cases, I've seen designs done for free that are incredibly good, even for what would be considered simple installations. In giving that drawing away for nothing, an opportunity is missed to connect the client to the project. By forgoing the opportunity to place a value on our design experience, we also miss a chance to earn money for time spent working!

Personally, I charge for my designs and drawings, whether I end up building the pool or not. Customers don't question my doing so; more important, they are immediately more involved in the process – and they can't wait to see the ideas in which they've chosen to invest.

Questions Of Value

This discussion of design value, art and customer perception leads to some key questions that can be asked of individual companies and of the industry as a whole: What percentage of clients are truly satisfied with the design and the overall performance of their watershapes? How many are satisfied with the total backyard environment? Are they happy with what they have relative to what they paid? Would you have done better if you had been paid more? Finally, who truly sets the price for what we do?

The answers to those questions may vary from client to client, of course, but how you answer them says a lot about the value both you and your customers perceive in the products and services you're providing.

The final question about who sets the price is particularly important because it has to do with a bigger question: Are you making the money you deserve to make based on the work you do, the experience you bring to the process and your overall responsiveness to the customer's needs? This is absolutely critical, because your success is based on your ability to turn the answer into sufficient revenues and profits.

However you define "sufficient," the bottom line here is that these numbers are too important to be left to the client: *We* must determine the value of our service. The customer may decide what he or she is willing to pay, but *we*

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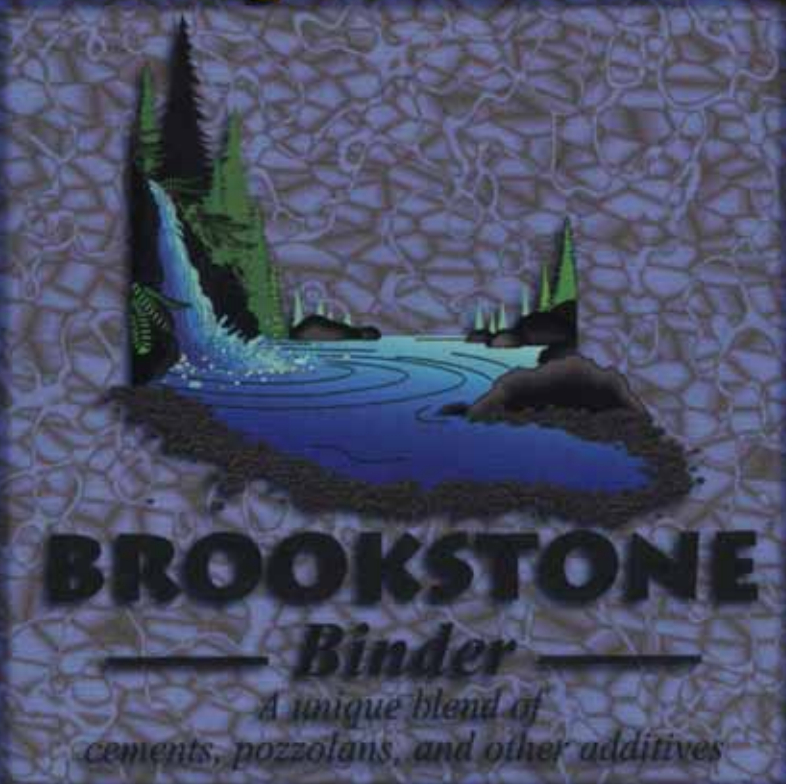

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should set the value of what we do.

I also think that we have far more control over what we charge than some would have us believe. Competitive pressures are great in many markets and margins can be thin, they say, and the best response to those pressures is to devalue the product in order to get the selling price as low as possible.

My response is just the opposite. In fact, I think the best strategy for any builder, custom or otherwise, is to *add* value to the service and to the product, and one way to do so is to set a price on the initial design service. Doing so informs the customers' attitudes from the outset and puts us in the position of working for the customer as a lifestyle provider – a win/win proposition, because you make money for your skill and experience while the customer perceives and receives value simply by speaking with you.

In other words, charging for design work raises the bar for the entire design process and the subsequent installation.

A Range Of Possibilities

I know that part of the natural resistance to our doing designs and commanding a price for them is that most people in this industry are not trained designers – as are architects, for example. I recognize that I'm not in that professional league, but, fortunately, I also recognize the fact that I don't have to be in order to place a value on my designs.

When it comes to this part of my work, I have several options at my disposal but choose in almost all cases to do my own hand drawings. This is where I apply all of the detective work I've done with my clients and site, working on quality vellum sheets with artists' pens, pencils and watercolors. I use various templates for things such as roofing materials, and I've worked hard to learn various techniques for conveying details like trees, the water's surface and various hardscape elements.

Another option for those who face too great a volume of work to take time with hand drawings (or who simply don't want to draw) are computer-aided design systems. Although I believe that my clients value the hand-crafted look of my drawings, there's no doubt that computers are wonderful tools for those who don't have the inclination or ability to draw by hand. Especially for companies that work at higher volumes, computer drawings are great because designs can be done more quickly. Some of these programs also generate equipment specifications and sizing details once basic parameters are set.

If you want to offer hand-drawn plans but lack the necessary skills or inclination, you also have the option of hiring a graphic artist to do the work for you. Many of these professionals offer services ranging from basic line

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drawings to full 3-D renderings complete with perspective and tremendous detail. This involves developing a working relationship with an artist and a fairly high level of communication as you discuss the scope and elements of the design, but it's an effort that can pay off, particularly as a custom touch with higher-end jobs.

Bottom line: Even those builders who don't put a great deal of time or effort into each and every design should think twice before giving away a design, even for something as simple as a rectangular pool with few bells or whistles. If my own designs were less elaborate than they are, I'd still want to charge a nominal fee for the service just to reinforce the value of the time, energy and skill involved in the design process!

Pick Up The Pen

As I just noted, I lean heavily toward hand-drawing – and I strongly recommend picking up the skills yourself if you have even the slightest inclination to learn.

You don't have to be a natural to pursue this path, and take it from me, the process of gaining skill and confidence as you learn how to draw can be exciting. Lots of community colleges offer introductory courses in basic drawing or even architectural drawing or landscape architecture. Trade shows sometimes offer drawing courses, and drawing is the cornerstone of the Genesis 3 Design School.

I find the drawing process itself to be rewarding and personally satisfying, and I'm always learning new tricks. I remember how excited I was when I learned what I could do after filling in the water surface with a blue background: By placing a piece of sandpaper underneath the paper and lightly rubbing a white pencil over the rough surface, you can create an effect of foaming or churning water – a small detail, but one that looks great (and can't be rendered with a computer).

These tricks and techniques all can be used to accentuate features and call attention to details you've included in the plans. For example, I prefer to include details of pathways in and around my watershapes; I'll even highlight the loca-

tion of the nearest bathroom to show that I've paid attention both to my customers' needs and the full layout of the property. This is where all the attention I pay to my clients and their home before putting pencil to page truly pays off.

In other words, your ability to customize your renderings – whether they're done by hand, computer or hired artist – demonstrates value to the customer to a far greater extent than would listing a long set of features in a written proposal.

This brings me to the final point about drawings – one that applies whether you're charging for the service or not: Drawings enable customers to visualize their watershape and the overall environment you've designed. This visualization is a *wonderful* selling tool: The better job you do in preparing the drawings, the better able your customers will be to see just what you're talking about and place themselves mentally in the space you want to create.

Presenting The Drawing

It's not enough to do a nice drawing: You also need to use it effectively to get full value from your investment of time.

The way I see it, my drawings pull clients into the design process and prepare them to work creatively with our firm. Presentation counts, so I always mount the original drawing on a white background, frame it with a black mat, stow it in a nice leather case and make a big production of "unveiling" it when the time comes.

I've been selling design services this way since 1988. In the intervening years, I've had only one client reject a design outright. Many other customers have had lapses in wisdom and hired someone else to build the project, but I was in all cases compensated for my work.

In most cases – upwards of 90%, I'd say – my clients accept the design as is, offering little or no feedback for revisions. When they *do* ask for revisions, I'm happy to oblige (sometimes for an additional fee), and I do so knowing that their imaginations are fully engaged in the process.

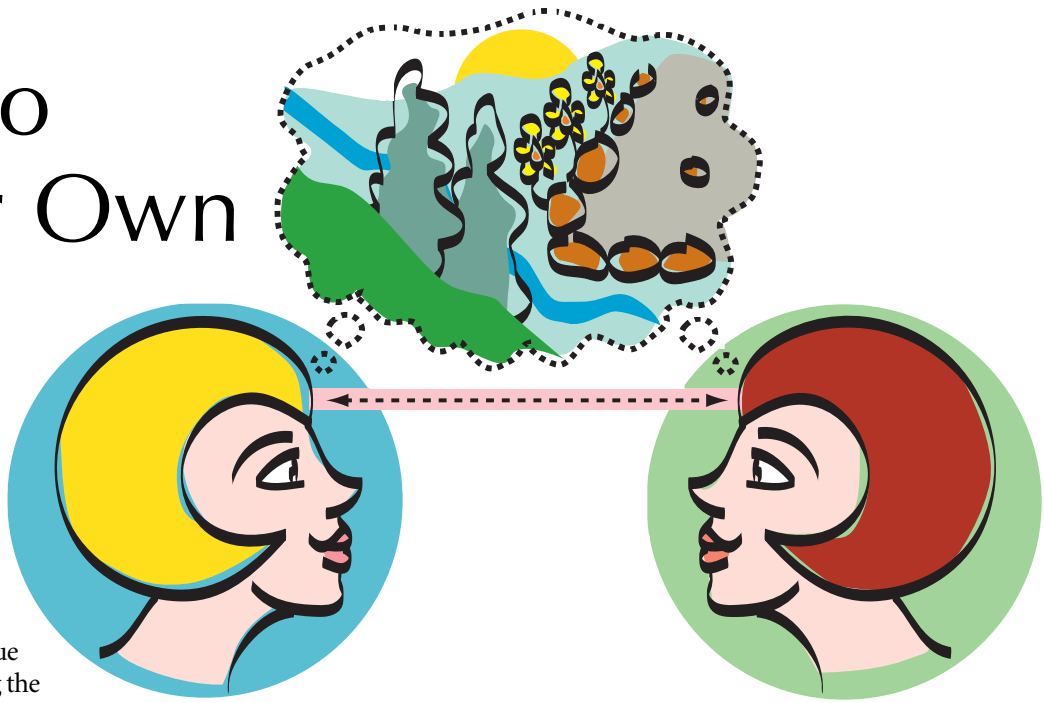
That's when the work gets both rewarding and satisfying: When you engage the customer in the process and see the excitement in their eyes, when you see them seeing themselves enjoying the design you've brought to the discussion, then you know deep down that you are providing something that has real value.

As a client, I'd pay for that. As a designer, you can be damned certain I'll charge for it.

Brian Van Bower runs Aquatic Consultants and is a partner in Van Bower & Wiren, a pool-construction firm in Miami. He is also a co-founder of Genesis 3, A 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.

A Style to Call Her Own

By Stephanie Rose



I've had the pleasure over the past few years of working with a client who ultimately has become a good friend – and with whom I created a very unique garden. The process of designing the space was lengthy, but it afforded me time to *truly* understand my client and her wants.

As we progressed, many issues arose that needed to be addressed; over time and at many points, patience was indeed a virtue. Her yard had existing structures as well as large Eucalyptus, Pittosporum and Chorisia trees and other plantings along with features that dictated much of the final style we achieved. From the start, however, it was clear that she wanted something different from her garden than she'd seen anywhere else.

This left us with questions about how to implement her unique style and how to maneuver around the obstacles and challenges we encountered along the way. In the end, the two of us worked to achieve something of which we are both very proud. Here's the story.

Something Different

My client was in the midst of building a spa/pond combination when I was called in. During our first meeting, she told me she wanted:

- an "Asian" look without sticking to the strict principles of planting a Japanese garden but using plants normally seen in Japanese gardens, such as maples, junipers, pines, and bamboo
- a natural-pond look with the edges blurred by plantings
- a back slope different from the pond area, mainly featuring natural cutting perennials
- a front yard that needed to be a blend of all the backyard areas (Asian, cutting perennials and tropicals)
- a rose garden along the front driveway, separate from everything else
- plenty of herbs and some vegetables
- unusual plants that you don't see in everyone else's yard
- no orange
- "*No blueprints*," she insisted. "Let's decide exactly what to do as we are doing it!"

We softened the rocks of the spa and pond with a backdrop of trees and bamboo and plantings with an Asian/tropical look.

So how do you mix Asian features, natural cutting perennials, roses, unusual plants, herbs and vegetables along with pond plants? By spending a lot of time learning and listening and by having lots of patience!

We started by spending many hours poring over books, focusing first on identifying "looks" that appealed to her and then defining what about a particular look she liked and didn't like. To test my understanding of what she wanted, I then went through other books identifying pictures that, to my understanding, showed what she wanted.

Making It Happen

This process of conversation and discovery went back and forth for about six months. That may seem a very tedious and time-consuming interval, but it gave the watershaper time to finish the spa and pond and gave us time to make some suggestions about plantings and discuss how those ideas affected his work.

While looking at styles, we also identified an initial palette of plants to work with, then put together lists broken out for various areas of the yard.

Then, at last, we were off to look at plants. During the next six months, we must have visited about 20 general nurseries, specialty nurseries, botanical gardens and arboretums – any place we could find plants to suit my client's desires. At times I began to feel like we were searching for things that didn't exist; I had to keep reminding myself to be patient and that this was to be the

We eased the transition from the pond area to the slope with maples, angel wing begonias, junipers and some of the tropical plants used in the pond area.

hardest part of the job.

I also knew that by learning as much about what she wanted as I could, I would be better able to reconstruct the picture she had in her head and turn it into her garden.

While on these excursions, we identified many plants that we would never have found anywhere else. We should have bought some of them when we had the chance: Unfortunately, some weren't available when we were ready to do the actual installation.

That's a key point: Many plants are only available seasonally and are not sold when dormant. Or maybe the supply gets short, but the growers have to wait to make them available to the nurseries. Or maybe it's simply supply and demand: If there's not enough call for a particular plant, they won't grow it or stock it. (By the same token, if a plant gets "hot," they'll raise the price and sell it at a premium!)

It's important to recognize that growers and nurseries are also at nature's mercy: They may have to wait a while for their inventory to build. Many people don't recognize that this is the case: They get impatient and end up planting something they aren't really excited about instead – only to rip it out later when the plant they wanted is for sale.

Back in her garden, if we felt a plant was important, we placed a stake to mark a location for it, took our time and bought it when it became available from the nursery. Yes, it could be a tedious waiting game, but it's always worth waiting to plant the right plant in the right place.

The front yard is separated from the back by fences and walls, but we unified the looks by repeating elements in both areas.

When we had the final plant lists and were ready to decide quantities and locations, the biggest question was still to be solved: How could we effectively mix Asian, perennial cutting, roses, tropical, and the "don't seem to go with anything" plants?

A Strong Beginning

We started by taking the most distinctive area of the yard and working out from there.

The spa/pond area was our choice – and had a lot of rock that needed to be softened. We started by placing maples at various locations around the watershapes where they would be prominently displayed.

Next, a backdrop of black bamboo served three purposes – screening out the neighbors, sending the sound of water back into the yard as it tried to escape, and framing the area with an Asian look. We added junipers and smooth groundcovers to the foreground, then placed tropical plants and rushes to soften the formal look of these plants. The result was a blend of tropical and Asian looks.

Spots were left to add in the unusual plants. In many cases, we purchased just one of these plants: She wanted to see little one-of-a-kind "surprises" all over the place, popping up at various times during the year.

We also added herbs to this space. Chives have a very grassy look, similar to the rushes we placed at the edge of the pond. We used different varieties of basil, sage and thyme to blend in with the larger tropical and Asian plants, either as accents or to fill in the spaces. Purple opal basil is great in salads, and it looks great next to bright green scotch moss.

With the planting done around the watershapes, we moved on to the slope. This particular slope is very steep and can be seen from everywhere inside the house. As you'll recall, she wanted the slope to be mainly cutting perennials with a natural look – but not chaotic.

To blend this with the adjacent Asian/tropical watershape area, we created a transition from the shady pond area to the sunnier slope area by using maples, angel wing begonias, junipers and some of the tropical plants used in the pond area.

Repeating many of the plants in this divider area up on the slope served to create continuity. Plants such as Abutilon, irises, junipers, herbs and maples can do double duty in both these areas, working with either style and bringing cohesiveness to the design through repetition.

The color scheme is another element that can bind different styles together. We stuck mostly to pastels (with a few exceptions) and avoided oranges and certain reds.

Final Decisions

My client had originally told me that she hated anything common, but eventually she insisted on having white daisies and even hoped we would put in some agapanthus. After spending a year and a half figuring out what she wanted, I had to put my foot down (good naturedly, of course) and insist that something about these two plants had to be unusual or different from the norm.

As it turns out, we found white daisies with a pale pink/beige center. (We knew it was the right plant when two other customers at the nursery tried to buy this "last of its kind" plant off of us as we were leaving. It felt great turning them down!)

If you are compatible with your client, collaboration becomes a kind of marriage with the purpose of creating a work of art together.

And there was no way I was putting ordinary agapanthus in this yard. Again, we were both happy to find a variety of variegated agapanthus that we could place in a shadier area to brighten it up.

We then sculpted a pathway from two-foot sections of railroad ties and rocks left over from watershape construction. This helped pull the overall look together even more. Plants were then placed in a pattern on the slope, leaving pockets to emphasize unique specimens or unusual varieties of more common plants. For example, we chose five roses with either outstanding

or unusual color – Intrigue (dark magenta), St. Patrick (green), Brandy (just like the drink), Dainty Bess (a five-petal pink rose) and Mr. Lincoln (red). I objected to the Mr. Lincoln on principal as being too common but was told it was one of her favorites. I had to give in.

These roses also tied the backyard design to the front yard. Now, even though the back and front yards are distinctly separated by fences and walls, we've unified the looks by repeating elements in both areas to build overall continuity.

The final planting is a very full one and has taken a couple of years to fill in. This is another exercise in patience, but it's also a practical issue for the landscape designer who should perform regular check-ups to be sure the balance and continuity of the design are maintained as the plants mature.

Gardens are built through many years of nurturing and trial and error: Not everything you put into the landscape will survive. Plants may succumb to poor watering, soil conditions, climate or various other conditions – including dogs or rude houseguests!

As the accompanying photographs show, even styles that initially seem quite opposed can be drawn together by identifying and using versatile plants that work in different styles and by repeating their use to pull the whole yard together. Repeated colors and other features (such as rocks) also will strengthen the flow of the design.

The Case for Collaboration

Beyond our creation of something unique, this story is about the value of working closely with a client.

If you are compatible with your client, this collaboration becomes a kind of marriage with the purpose of creating a work of art together. Food, talk and plenty of time spent together ultimately led us to create something unique – and she's told me that it is now exactly like the picture she had in her head. That's where the patience pays off and the satisfaction begins.

I hope you have similar experiences with *your* clients.

If you have any questions about this project, or any others, or simply want to exchange ideas, e-mail me at sroseld@earthlink.net. We apologize for printing the incorrect address in the last issue. If you were trying to e-mail me after last issue, please try again now!

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. She can be seen this season in four episodes of "The Surprise Gardener," aired Tuesdays on HGTV.

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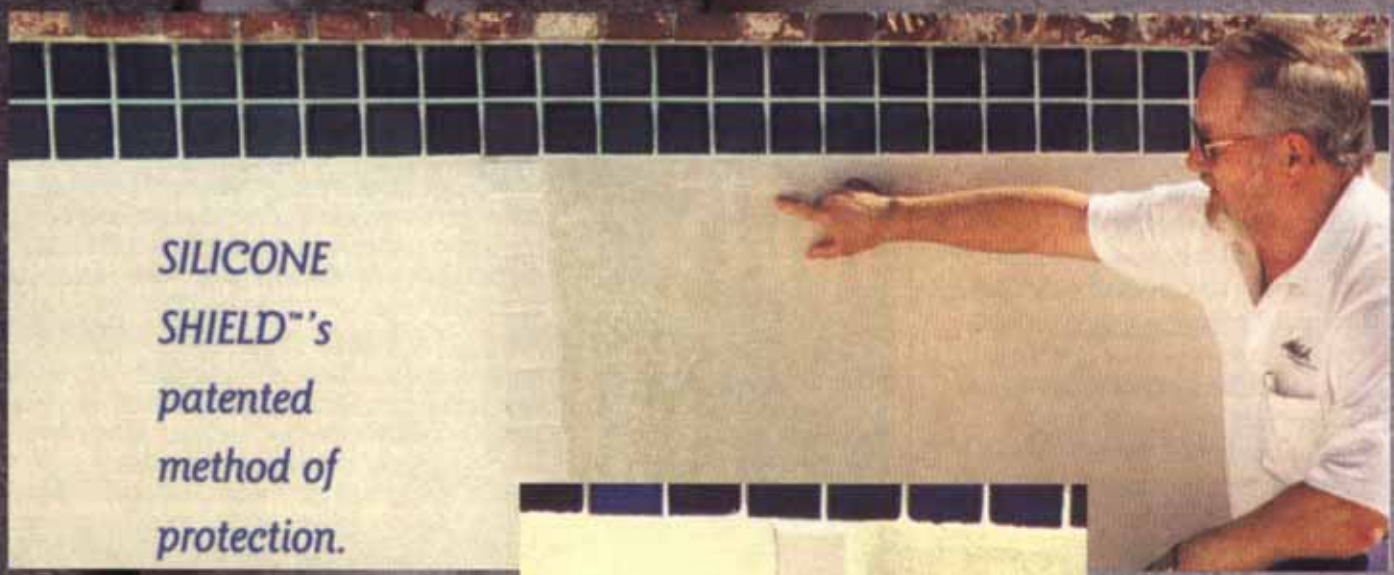

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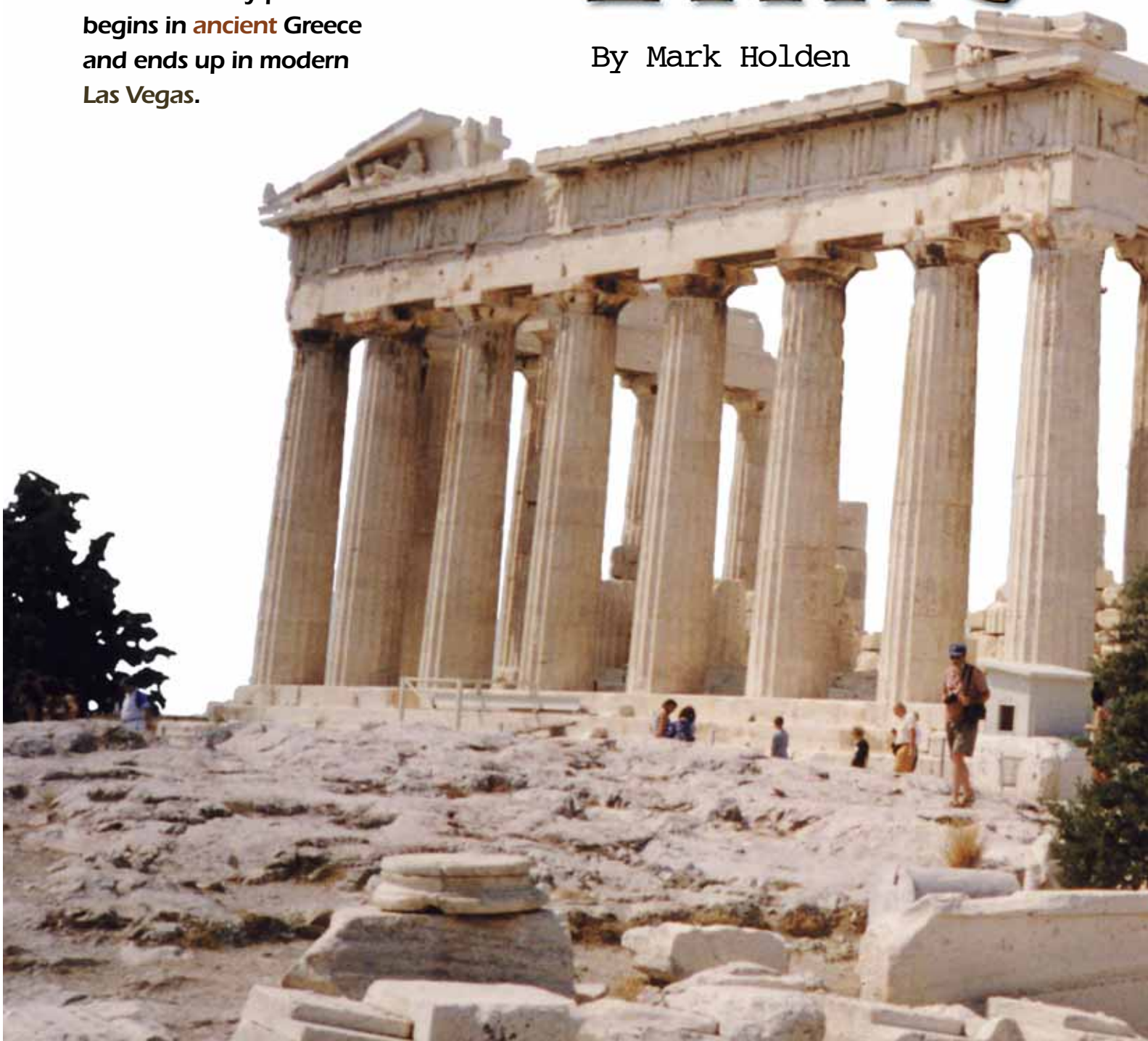
Images in Time

By Mark Holden

From the earliest urban settlements to the most modern architectural settings, watershapes have played both functional and decorative roles in expressing the values of their societies. In the first of a series of articles on the lore of aquatic design, landscape architect and pool designer Mark Holden follows an introductory path that begins in ancient Greece and ends up in modern Las Vegas.



As designers and builders, we might feel with every new project that we have created the most profoundly original setting in the world.

In most cases, however, our most likely achievement has to do with adapting an architectural concept developed long ago, putting a modern twist on it and calling it our own. For me, in fact, the more I learn about the history of watershaping, the more I feel connected to ancient watershapers and recognize that we haven't created anything really "new" in a long time.

We all know clients, for instance, who want their backyards or public spaces to look like Spanish or Italian villas, French or English formal gardens, or maybe peaceful Japanese-style Zen gardens. The question isn't about where we and our customers go for ideas; instead, it's about how we, as designers and builders, can best fulfill these demands and pull the projects off with an underlying sense of quality.

In my case, I look to the best examples of the past and use them to inform and inspire my work. Indeed, there are invaluable resources available to us all in the annals of watershaping, and the following pages provide just a glimpse at what's available. Here and in articles to follow, we will meander through the columns of the Parthenon, travel across the Islamic world and conclude by looking at how some of our watershaping colleagues have benefited from using architectural precedents in their modern-day projects.

GRECO-ROMAN FOUNDATIONS

Thousands of years ago in ancient Egypt and Mesopotamia, smart, observant people devised systems for directing water to where it was needed by using pipes and aqueducts. These early systems watered the Hanging Gardens of Babylon and helped to irrigate and control flooding in the fields along the banks of the Nile.

Early hydraulic engineers discovered something interesting: Pressure was produced in a pipe with increased height of water – a single principle that stands behind every pool, bath and waterfeature built until the modern development of mechanical pumps. Indeed, this initial spark of insight is responsible

A

for thousands of years' worth of pools, baths and fountains across the ancient world.

The ways in which designers used this hydraulic principle tended to change right along with the social needs and architectural styles of their cultures. The Greeks and Romans, for example, created vast bathing pools as well as recreational swimming pools using a sense of proportion and shape familiar to us from structures like the Parthenon in Athens, built in what we know as the Classical style (see A on pages 26-27).

The Olympia Pool, built in 500 BC, was a 16-by 24-meter vessel set outside the Temple of Zeus at Olympia using construction techniques that would be familiar to any modern contractor. The Greeks also built the 10.6-meter-wide Baths at Delphi as part of a large gymnasium complex. (This facility was subsequently remodeled by the Romans to include hot water piped from local volcanic springs.)

Greek and Roman conquerors carried their cultures' sense of style from the mountains of India to all of Western Europe and North Africa. In modern Turkey at Ephesus, for example, exists a Greco-Roman swimming pool that may be the oldest that still holds water (B). Water usage here wasn't limited to recreation: Ephesus is also home to the oldest known restroom (C) – a 24-seat affair with an aqueduct-fed flushing system!

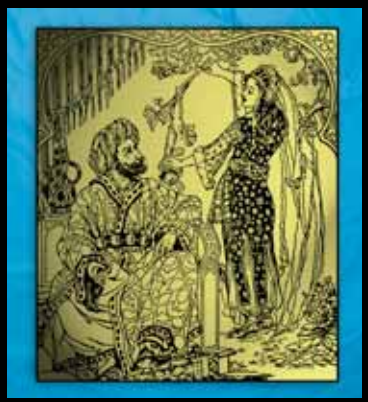
Farther south in ancient Palestine (modern Israel), Masada is home to some of the oldest extant public baths – created under irregular and unfortunate circumstances.

The people of the area had been forced to this high plateau by a Roman siege that lasted more than 60 years. Cut off from food and ordinary supply lines, they made do with available resources and built plaster-lined baths that still hold water nearly 2000 years later (D). They also channeled hot water under wooden floorboards that were supported on limestone pillars, creating what may have been the world's first saunas (E). Although at war with the Romans, builders at Masada were nonetheless clearly influenced by Greco-Roman styles, technology and materials of construction.

The wealth of the Roman Empire ultimately gave rise to great extravagance in architecture and to expressions of personal power. The Emperor Hadrian's Villa is an amazing example: Around 100 AD, he started construction of this "royal getaway" to ease the stresses of exercising absolute power. The country refuge featured a 1,500-foot hippodrome (a sort of flat racing stadium) bordered by long porticos (an architectural theme we'll see again on page 34 with Hearst Castle's Neptune Pool). His Maritime Theatre – a miniature version of a citadel complete with reduced-scale buildings – served as the emperor's private playground.

Amid all the excess, Hadrian commissioned spectacular waterfeatures and effects, all in classic Greco-Roman style except for the famous Canopus, which depicted Hadrian's voyages to Alexandria and shows flashes of an older Egyptian style – right down to the crocodile statues.


D
E



Islamic Influences

The Islamic culture of the Middle East played an invaluable (if less recognized) role in the history of watershaping by contributing to a refinement of hydraulics – advances that were used throughout Europe during the Renaissance and in our own pools today. This hydraulic knowledge, intertwined with Islamic architectural style, spread both east and west from Persia from the 7th Century onward – toward two very different regions that came to have remarkably similar and influential design styles.

Heading westward, the Moors came to dominate North Africa and eventually crossed the Straits of Gilbraltar to control much of Spain for more than 600 years.

Islam also headed east, venturing into India and influencing its culture and architecture for a far longer period that culminated in the 17th Century with the Mughal Gardens and the Taj Mahal.

• In Spain, the Moors took the design ideas left behind by Greco-Roman culture and extended them with the elegant archways and quatrefoils that highlight Middle-Eastern styles. At the Alhambra ("red castle"), the Moors created a bold, forceful environment featuring the Court of the Lions, where rigid geometric forms dominated each scene for aesthetic as well as religious and spiritual purposes (F).

This hilltop castle is an amazing feat of hydraulic engineering – a knowledge later picked up by European masters who applied its principles to designing the great waterfeatures of Renaissance Italy and France, from the fountains of Rome to the gardens at Versailles. Here and elsewhere, the Moors took the rigidity of Greco-Roman design and created human-scale, comfortable settings that nevertheless displayed their complete mastery of materials and monumental design (G).

Generalife, the summer villa of the lord of the Alhambra, is home to the Court of the Canal, which is where we clearly see the link between Moorish/Spanish and

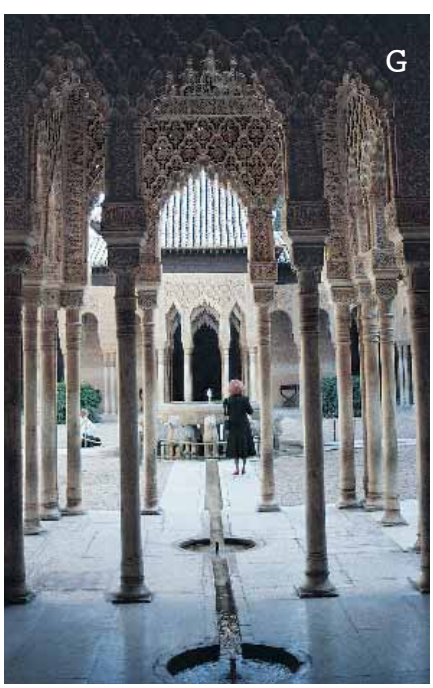


Photo courtesy Tourist Office of Spain, Los Angeles

Photo courtesy Tourist Office of Spain, Los Angeles

Islamic/Indian watershapes.

What we see is the shared notion of threading water through many different spaces using long, thin pools set off with small spouts along their length (H). The water thus serves as an axis that separates the garden into quadrants. (This breaking into fours is a prominent theme in Islamic/Moorish architecture.)

We also see this axial arrangement at another Moorish site: the Alcazar in Cordoba, Spain (see I on page 32). Here, the designers have incorporated what has since become a common watershaping theme – the placid pool lined by graceful jets of water – that finds a recent echo in the gardens of the new J. Paul Getty Museum in the hills above Los Angeles (see page 35).

• In India at Agra, the Taj Mahal takes basic concepts seen in Moorish Spain, but elevates them to a much higher plane and far grander scale. Few people in the west know that the Taj Mahal is actually a tomb, a beautiful memorial to lost love surrounded by the Mughal Gardens near the Jama River. Using advanced hydraulic techniques, designers channeled that river to power waterfeatures in much the same way Moorish designers put water pressure to work at the Alhambra and the Alcazar.

To achieve various water effects, engineers created large holding tanks that feed an intricate network of pipes and spray heads. The reflective qualities of these long basins accent the immense size of the Taj

The Water Thing

Why do we feel compelled to manipulate water? The answer takes us in two directions, one spiritual, the other very practical.

Water was once seen as a divine essence that flowed from the heavens and brought with it the gifts of the gods. The Nile, Tigris and Euphrates were all sacred rivers that inspired our ancestors and anchored their existence. It's not surprising that early cultures used water in tribute to their beliefs and saw intimate connections between water and their gods.

Even today, with all our knowledge of the water cycle and water's role in nature, we still apply sacred values to water. We know how precious it is, from irrigation systems to its use as a catalyst in the production of cement. It is an elemental force – a compound we use to facilitate most everything we do.

Water is truly amazing stuff:

- *It can move with gravity or defy it – falling as rain or rising through evaporation*
- *It floats effortlessly in the form of clouds or rests statically as a pool*
- *It can venture through space without changing form*
- *It is the one liquid that expands when frozen*
- *It keeps our planet at a consistent temperature*
- *It has shaped our land forms into what they are today*
- *It's the reason the sky is blue*
- *Its sounds are soothing to souls and psyches*
- *We fight wars over it*
- *It sparks life within bacteria, fungi, plants and animals*
- *Our bodies are approximately 75% water – and so is 75% of the earth's surface*
- *It envelops our unborn children for nine months*
- *We're born knowing how to swim (although it's a skill we must relearn!)*
- *We drink it every day, knowing we can't live without it*
- *We excrete it as sweat to cool our bodies and as tears to express strong emotion*
- *We use it to break down and carry away waste*
- *We use it to cleanse our bodies, homes and automobiles*
- *We recreate in it, on it and around it*
- *We use it as art in fountains*

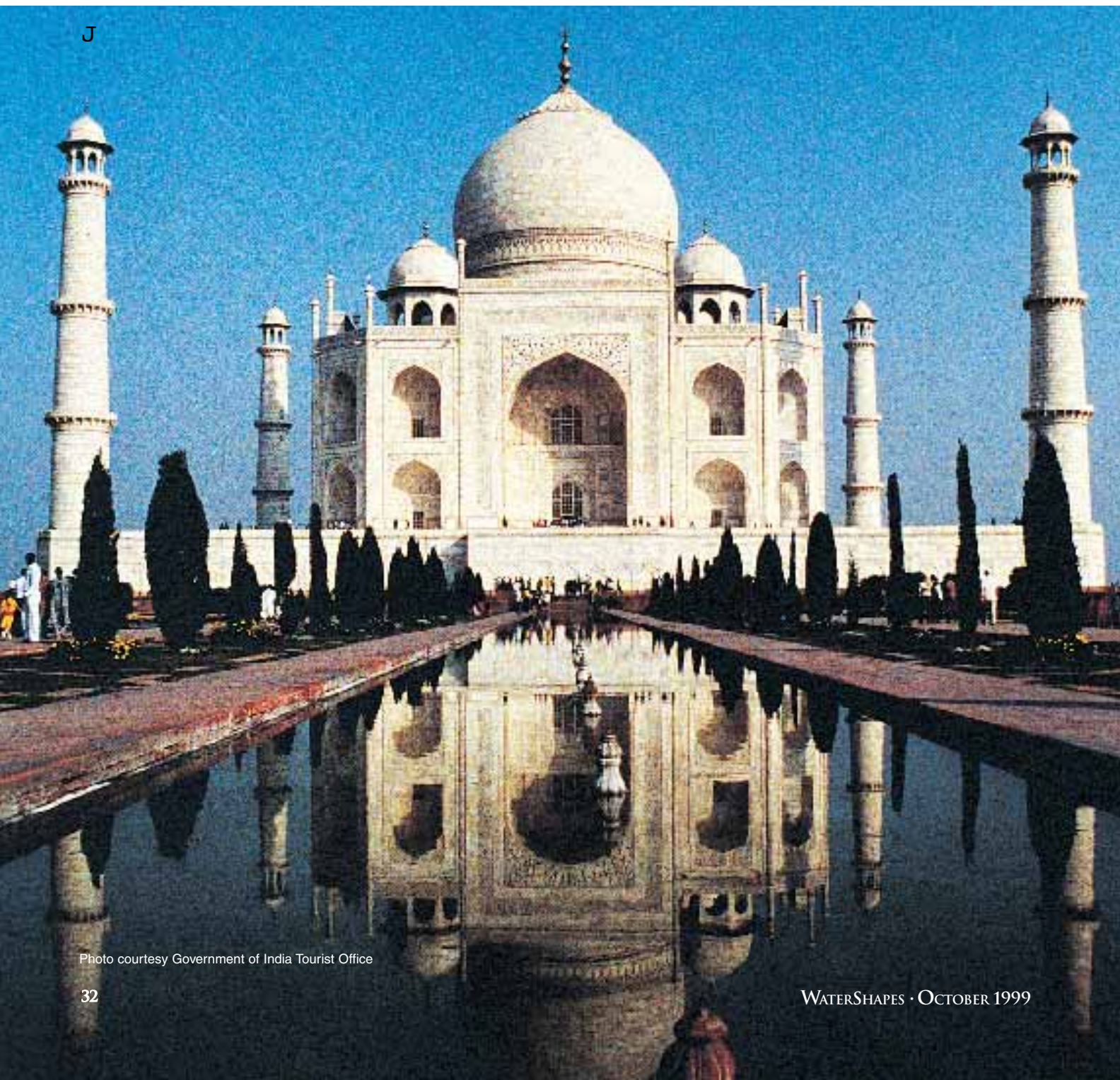
– M.H.

Mahal, and the waterways themselves serve to channel visitors along pathways that set pools, structures and gardens in the most favorable perspectives (J).

This monumental use of water and patterned use of architecture and spaces stands in contrast to the sensibilities of the Greeks and Romans. Where the Greeks saw water as a way to announce and celebrate the presence of their deities, designers of Spain and India used it in a more utilitarian way to define space and guide perception.

Continued on page 34

I



J

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Continued from page 32

Contemporary Echoes

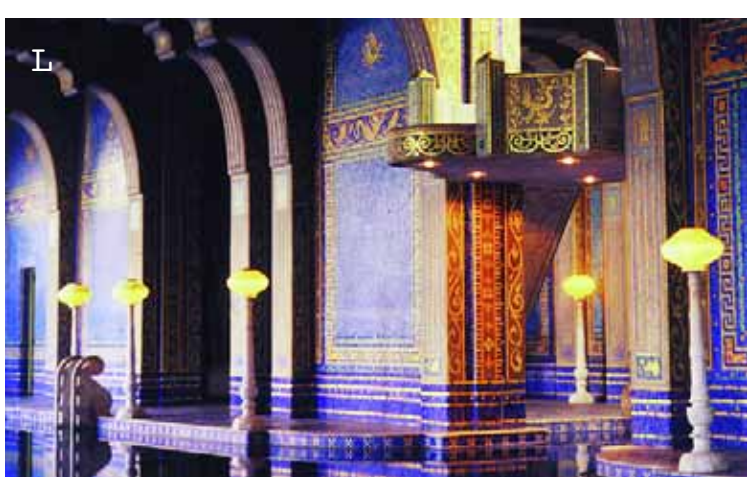
Today's watershapers clearly work with a stylistic vocabulary created for us by hundreds and even thousands of years of architectural and technological trends, and you don't have to look very hard to find 20th-century examples of work that harks back to ancient precedents.

Built by architect and engineer Julia Morgan at San Simeon, Calif., over an extended period early in this century, Hearst Castle is home to two significant swimming pools and a variety of important waterfeatures. The Greco-Roman Neptune Pool is probably the most memorable swimming pool of the first half of this century and feeds on design principles used by the Greeks, from the perfectly proportioned marble and granite columns and temple details to the statuary surrounding the pool and its elegant tile patterns (K).

William Randolph Hearst was an art collector who picked up much of his treasure trove on buying binges across Europe. The Neptune Pool evolved through the years from fountain to pool and changed dimensions a couple of times along the way, but every step was rooted in Greco-Roman principles he recognized and his designer was able to deliver.

The Hearst estate also included a huge indoor pool, finished entirely in Venetian glass tile (L), some of which was made with flakes of 24-carat gold that now shimmer through the water. Here and elsewhere on the grounds, you see the influence of Spanish/Moorish design as well as echoes of French Renaissance styles borrowed from Versailles. The estate is open to the public


K


L


M

and should be the object of a pilgrimage by every watershape designer.

Down the coast at the Getty Museum, designers were challenged to bridge the gap between the 1990s modernist buildings on the hilltop site over Los Angeles and the Getty's collection of Greek and Roman antiquities. In this case, and in keeping with the Spanish traditions of Southern California, the inspiration comes straight from the Alhambra and the Alcazar (M). The look here is far from antique; rather, it's a warm, engaging reinterpretation of traditional themes of aquatic design.

Another contemporary expression of antique styles is the pool complex at the Bellagio Hotel, which opened in Las Vegas in 1998. Intended to mimic a grand villa at Lake Como in Italy, the 27 million gallons woven in and around the hotel bring a slice of Italian countryside to the Nevada desert (N). This American gambling town has been known for cartoon-like architecture, but this re-creation brings a sense of class to an otherwise gaudy city. There are no $1 hot dogs here: All aspects of the hotel and its pools are at the highest level of design (see O on page 36).

The water complex contains 11 major pools and fountains. A long linear colonnade reminiscent of the portico at Hadrian's Villa stretches through the space and provides a measure of diversity while separating the two major swimming pools.


N

The distinction here is one of the designer's perspective: These aren't pools with waterfeatures; rather, these are waterfeatures in which it is possible to swim. In fact, this drama is particularly effective without swimmers, as you work your way past watershape after watershape inspired by Italian models. With bathers in the water, it becomes a playful swimming environment that elevates everyone's perception of all a swimming pool can be.

Working the legacy

How can we improve today's watershapes? I have a simple suggestion: *Trust the creators of the past.* These designers, engineers, architects and builders have collectively spent hundreds, even thousands of years working and studying and transferring their skills to future generations, and we as modern watershapers have all this heritage of knowledge on hand to use as we see fit.

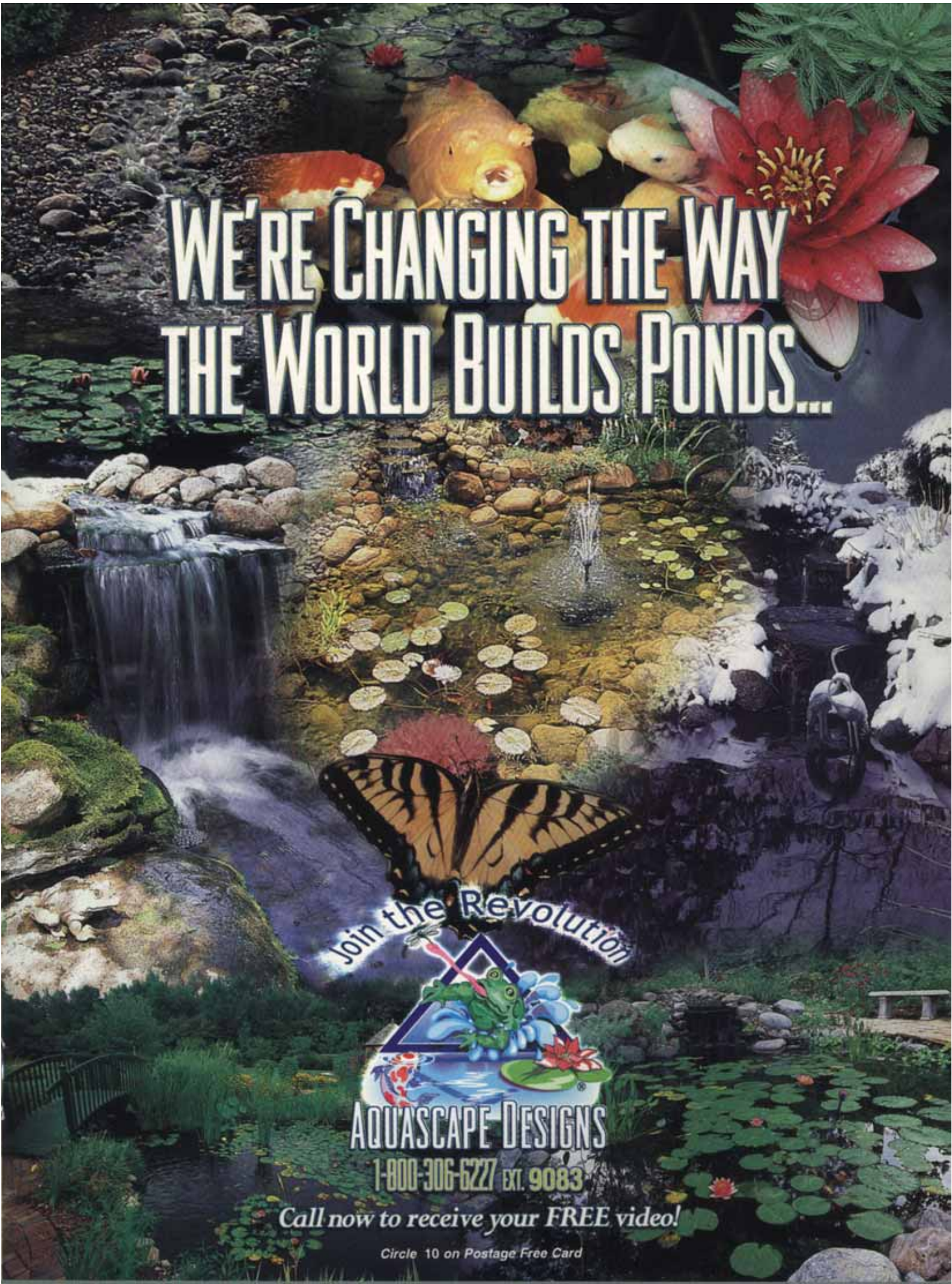
Exploiting that knowledge doesn't take much effort. Countless books document the history of design and architecture – and a great many of them are about places and the projects of people who should be part of your own knowledge. You can also go right to the source and actually go see these places. Photographs like the ones you see in the accompanying article are a big help, but there's no substitute for drinking in the sounds and smells and total settings that characterize the best work of past watershapers.

I can't overstress the value of the architectural styles, concepts and forms left us by builders of the past. If we are to progress beyond the limits of our own immediate surroundings, then we as conscientious creators need to stop pretending that pool building began in the 1920s and that our work represents the highest evolution of the craft. In fact, we represent just a small space on the watershape time line, and we'll have much more to accomplish if we work as part of this tradition rather than outside it.

With all that we have available to us in terms of inspiration and technology, we can take watershaping farther than our ancestors ever dreamed. We are the new architects of water, and we have much to do and accomplish.

– M.H.

We invite you to write or e-mail us with your suggestions of watershapes you'd like to see covered as part of this series of articles. Our goal in conducting this research is simple: We want to provide all of us with the kind of knowledge we all need to improve the art and craft of watershaping.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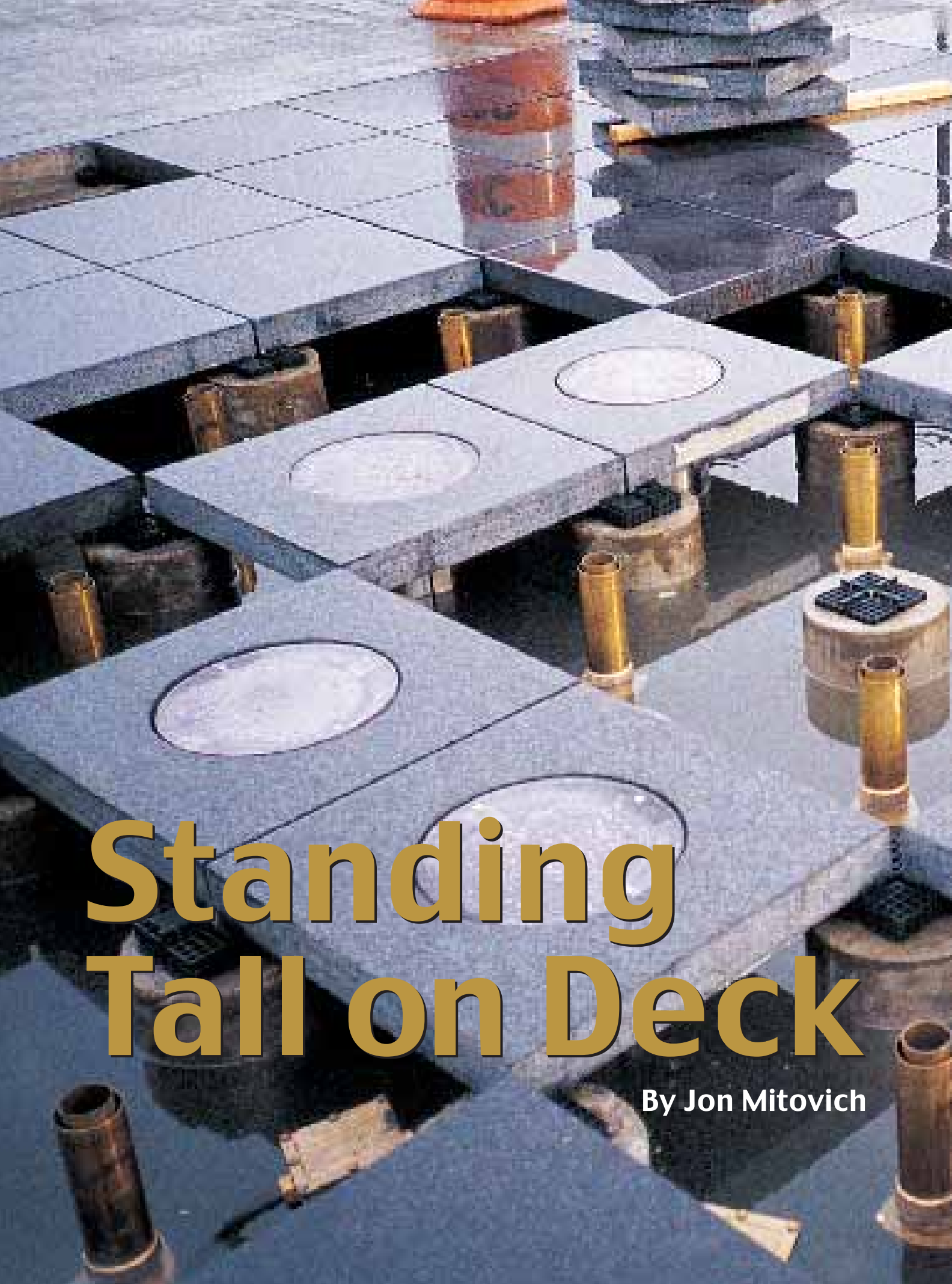


Standing Tall on Deck

By Jon Mitovich

You see them more and more often these days: Streams of water leaping from beneath paved walkways or plazas in a display that adds drama, beauty and interactive fun to any public space. In this feature, system designer and manufacturer Jon Mitovich shows how these projects, known as 'dry-deck' fountains, come together as projects and how their very special effects are achieved.

It was one of those projects where aesthetics, technology, function and history all came together.

Installed on a pier on the waterfront in Hoboken, N.J., right across the river from the Manhattan skyline, the dry-deck fountain pictured on these pages was part of a civic development movement aimed at creating new public areas on both the New York and New Jersey shores.

Our company, Roman Fountains of Albuquerque, N.M., first became involved in the project in 1996, when we were contacted by the Princeton, N.J.-based project architect, Arnold Wilday Associates, Joint Venture. At that point, they were spearheading a joint venture still in its preliminary design phase.

The architects sought our expertise in defining the "nuts and bolts" of an elaborate fountain system they had in mind. They definitely knew what they wanted to see when they turned on the switch, they said, but they weren't at all certain how to get there either mechanically or electrically speaking. We exchanged some basic design parameters by phone and fax and were on our way.

A PLACE ON THE RIVER

Civic projects at this level can take years to unfold. In this case, we were invited in October 1996 to attend a project-planning session that included the architect, the project team and officials from the Port Authorities of both New York and New Jersey. From the 72nd floor of the World Trade Center where the meeting was held, we could all see the long-neglected Hoboken waterfront and its Pier A. As I looked down on the site, I knew that a unique and ambitious renovation was beginning to take shape.

Perhaps best known as Frank Sinatra's home town, Hoboken, with its red-brick waterfront buildings and the dark green wrought-iron structure of the Erie Lackawanna train station, provided a backdrop for a dramatic combination of elements of the past along with the technology of the present.

And it was a great and productive meeting: We all came out of it with a clear understanding of the project's design criteria and the construction challenges and limitations we'd all face in carrying it off.

The big challenge was to build a vessel and fountain into an existing pier without compromising the integrity of its structure. Actually, the job would have been easy if we could have penetrated the pier and worked up from below; that was not to be permitted, however, so we had to take extra care in site evaluation and in choosing locations for equipment.

At this stage, all we had been asked to do was to prepare schematics, construc-

LARGE-SCALE POWER: This 30-horsepower pump (A) drives the display with a flow of 1,150 gpm with 68 feet of head at the nozzles; the water returns via 10-inch main suction and discharge pipes.

VERTICAL EFFECTS: The foam-aerator nozzles chosen for this dry-deck fountain (B) are swivel mounted and were chosen for their relative wind stability and high-level visual qualities (C).

DECK DETAILS: Granite pavers, 24 inches square and 3 inches thick, were core-drilled offsite to accommodate the nozzles (D). The pavers are supported on 8-inch-diameter, poured-in-place pylons seen in (B) .

ALL LIT UP: The lighting fixtures were wired through bronze submersible junction boxes (E) and powered by three 1,000-watt transformers mounted in an adjacent planter bed.

tion specifications and preliminary cost estimates for a fountain system and its mechanical and electrical requirements. These documents were developed under the watchful eye of Roman Fountains' senior design manager, Steve Shadle, and submitted to the architect and the New Jersey Port Authority for engineering review and for compliance with the site requirements and codes.

Once the schematics had been "massaged" by the various disciplines involved in the project, we took the review information, mark-ups and written comments and prepared a working set (still prelim-

Into the Wind

The design team determined the eventual 16-foot spray height for the dry-deck fountain featured in the accompanying story based on the footprint of the entire fountain in the context of its hardsacpe. As it turns out, 16 feet was the highest spray possible for viewing while still giving us control over the splash-zone, mist and wind-drift issues that confront most vertically inclined watershapes.

In this case, a two-stage wind-control system was designed, specified and furnished for the fountain. The electronics in the wind-control system work in conjunction with an electrically actuated butterfly valve and an anemometer (that is, a wind-speed meter) located on an adjacent lighting standard.

When the wind velocity reaches a pre-set, "first stage" velocity, an electrical signal is sent to the butterfly-valve actuator, opening the valve slightly. This diverts a portion of the flow back into the vessel and cuts the spray height in half. If the velocity hits a second setpoint, the display pump shuts down for a set time – or until the wind dies down – returning to operation at either full or half height depending on the prevailing wind speed.

– J.M.

inary) of the installation drawings. These documents detailed all equipment, piping, conduit, wiring, utility requirements and offered complete, scaled blueprints and technical specifications — everything needed by contractors in preparing bids.

At this point, Roman Fountains joined the ranks of qualified bidders and submitted its price along with about six other suppliers.

FACING THE CHALLENGES

A year had passed since the initial October 1996 meeting before the public bidding process began. Kathy Wilson, our sales and marketing manager, followed the project as it slowly made its way through channels. Ultimately, J. Fletcher Creamer & Son of Hackensack, N.J., was selected as the general contractor for the pier portion of the overall project, including the fountain.

In turn, the general contractor hired us to supply the fountain's specialized components and take care of system start-up. We signed on in this capacity in May 1998; production, delivery and equipment installation took place through the rest of the year and into Spring 1999.

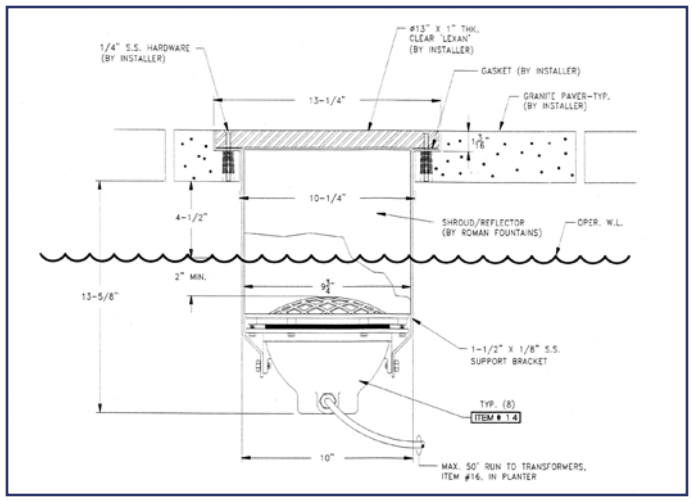
But let's back up a bit: The initial design criteria and parameters provided to us by the architect had included water volume and mass, spray type, spray height and a footprint for the fountain area. The objective: to provide a safe, durable and interactive fountain that could be enjoyed from a distance – or by getting wet.

We were also told that the design should complement the space as well as the pier environment. The architects wanted a waterfeature that would attract visitors to the newly designed park – but not one that would overwhelm the area or the many other amenities designed into it, including play areas for children, vending carts and an outdoor performance venue.

Another important criterion was safety, which was why the concept of a grade-level, dry-deck fountain, which eliminates artificial barriers and trip hazards at the fountain, had so much immediate appeal. Better yet for the pier, this sort of light, clean hardscape/pavement transition would allow light-vehicle traffic to traverse the deck to speed service and maintenance.

The most challenging aspect of the project was the fact that the fountain's vessel had to be built into the old pier. Indeed, the Port Authority insisted that we maintain the integrity of the pier's structure, which meant that the vessel would have to be deep enough to accommodate proper equipment installation but shallow enough to stay within a long list of pier-integrity requirements.

The vessel's final dimensions spanned 24-by-24-feet at a depth of 2 feet with an operating water level of 18 inches. The nozzles we used made it possible to keep the depth to a minimum.



A Bright White Light

As part of this Hoboken pier project, we designed, specified and furnished a submersible lighting system.

The primary requirement here was that the lighting be low voltage, with transformers located adjacent to the fountain in a planter area protected from pedestrian access. The design called for an intense, bright-white light for evening viewing of the features, all controlled through a digital time clock.

The lighting assembly consisted of submersible bronze fixtures, high-polish stainless-steel reflector shrouds, stainless lighting hangers and clear, inch-thick, flush-to-deck Lexan covers. The fixtures' lamps are all easily accessed through the top cover, making re-lamping easy.

– J.M.

The architects wanted a waterfeature that would attract visitors to the newly designed park but not one that would overwhelm the area or the many amenities designed into it.

We also faced a challenge with the remote, poured-in-place pump room, lowering its height to the absolute minimum required to install the equipment with all proper clearances required by code. This meant that we needed to maintain tight tolerances for the pipe slope from the vessel's floor to the pump room, and the contractor did a great job in getting it right on the first try. Improper pipe slope could have resulted in an air-trap condition that would've made it *very* difficult to maintain a functional flooded-pump condition.

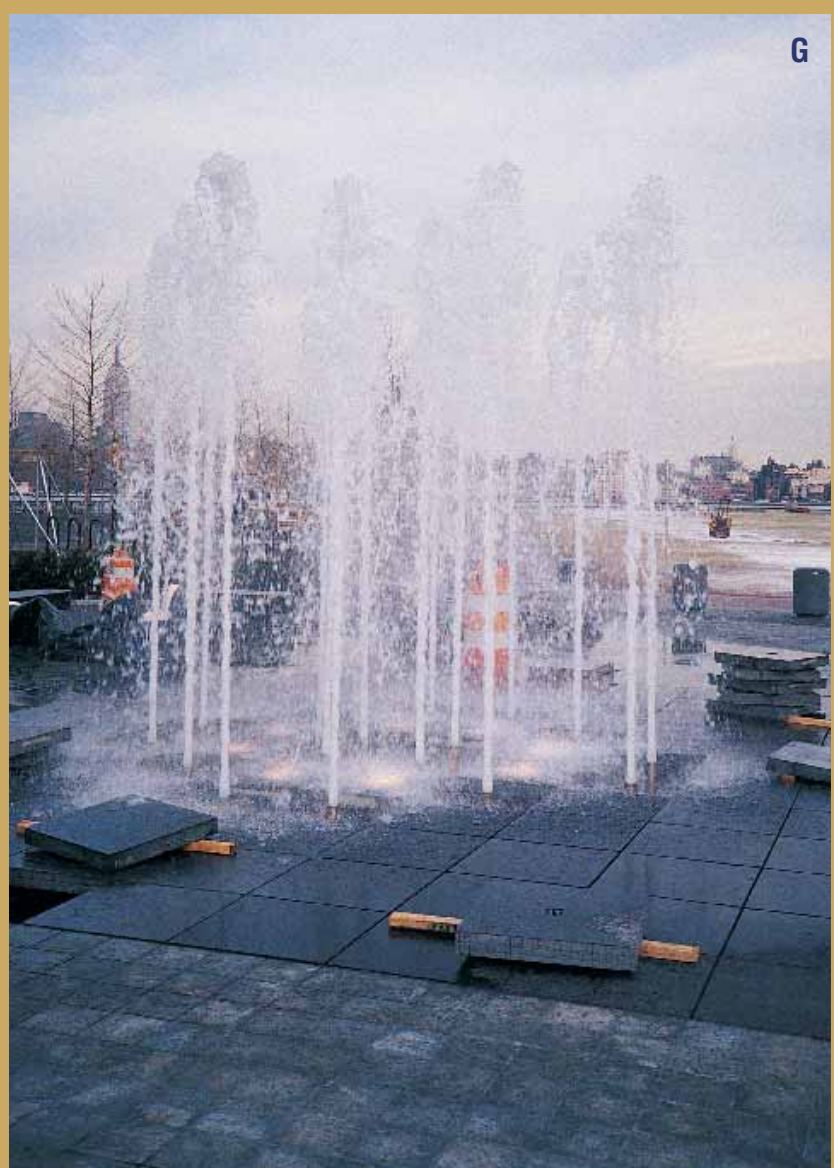
SPECS ON DECK

Beyond the project's many site, mechanical and hydraulic issues, the remaining major issue had to do with the manner in which the 24-inch-square by 3-inch-thick granite pavers – each weighing more than 200 pounds – were to be supported. We had a couple of options here, including custom-fabricated stainless-steel stanchions, extruded fiberglass structural skeletons and molded plastic leveling supports, each of which functions well on small systems.

In this case, however, we had heavier-duty requirements and decided to pour a series of reinforced-concrete pylons using 8-inch Sonotubes. Each pylon supports the corners of four pavers, each of which was shimmed using the "Pave-El" pedestal-support system made by Envirospec, Inc., of Buffalo, N.Y.

We set 3/8-inch gaps around each of the


F


G

GETTING STARTED:
The first run with just about any fountain system will dislodge construction and other debris that makes flow to the nozzles uneven (F). With a bit of fine-tuning, however, the fountain performs at peak height with all nozzles firing evenly (G).

We couldn't afford any guesswork when it came to pipe layout or to take installation shortcuts that can occur when you work without a well-conceived plumbing plan.

pavers, bearing two major factors in mind. First, Title 27 of the American with Disabilities Act dictates a maximum grate span of no more than l/2-inch wide. At the same time, the gap had to create enough open area to accommodate the 1,000 gallon per minute return flow to the vessel beneath the deck. There wasn't much room for error in either direction!

As for the fountain and its plumbing, we prefabricated the 16 nozzle headers and associated plumbing at our facility in Albuquerque. We used 6-inch schedule 80 PVC pipe and fittings, and prefabrication was needed to control the locations of all nozzles to match holes core-drilled through the pavers while also accommodating all of the support pylons.

We also had to be sure that we had balanced water distribution for each of the nozzles. This was critical: We had eliminated the possibility of using individual nozzle-riser valves because of the tight height requirements.

In other words, we just couldn't afford any guesswork when it came to pipe layout or to take any installation shortcuts that can occur when you work without a well-conceived and detailed plumbing plan. At the factory, we were able to do a full-scale mock up of the header and nozzles to verify spray patterns as well as nozzle-to-nozzle balance issues. We also were able to establish and verify spray heights and anticipate splash patterns.

DEBUGGING DEBRIS

I don't like to use the word "problems" in describing anything we do, but we did face the usual array of installation hassles that come with any large fountain system. In fact, we approach jobs like this one with what we in the company call the "fountain fact of life" in mind: Something invariably happens to knock you off stride.

In this case, there was a series of minor problems – all of them easily corrected. The suction sumps, for example, had become clogged with the usual construction debris, from soggy cardboard and leaves to chunks of concrete. We also found that a few pressure-test plugs had

A Cool Departure

Over the past five years or so, dry-deck fountain systems have become more and more popular as both architectural features and public amenities – for lots of reasons.

First of all, they're safe. With a dry-deck design, you eliminate trip hazards and the body of water is completely enclosed. Second, the usual sorts of vandalism are foiled largely because the equipment is all hidden and inaccessible below grade. Third, they offer a streamlined, contemporary look that provides a nice departure from the traditional open-pool/ raised-curb fountain design.

But the feature appreciated perhaps most of all by architects and municipalities and others who commission these fountains is the fact that deck-level systems basically disappear: They offer no problems when it comes to handicapped access (as mentioned in the accompanying text) nor any impediment to foot or light-vehicle traffic.

– J.M.

Photos courtesy Arthur Wilday Associates, Princeton, N.J.

been left in the sump connections by the contractor; we removed them.

This was no big deal because of the way we handle start-ups, which involves running through a pretty extensive checklist. As we go, we usually discover (and can correct) these sorts of problems long before they cause any real trouble or system damage.

In one key check, for example, we sized up all the nozzles for true vertical orientation. As it turns out, a few of the nozzles had been knocked out of alignment during installation and required some routine adjustments.

For all our precautions, we found that later, when we fired up the display pump, some construction debris was still in the system and ended up clogging a few of the nozzles. A dual-strainer system installed on the display-pump system *did* catch a lot of debris, but some on the downstream side of the strainers (between the pump room and the pool) slipped through to create a few erratic spray heights.

Right From the Start

Straight through this project from its inception, the situation was just about ideal from our perspective at Roman Fountains. First, we had been involved from Day One and were able to see to all of the needs of a dry-deck system and the submersible lighting that came with it.

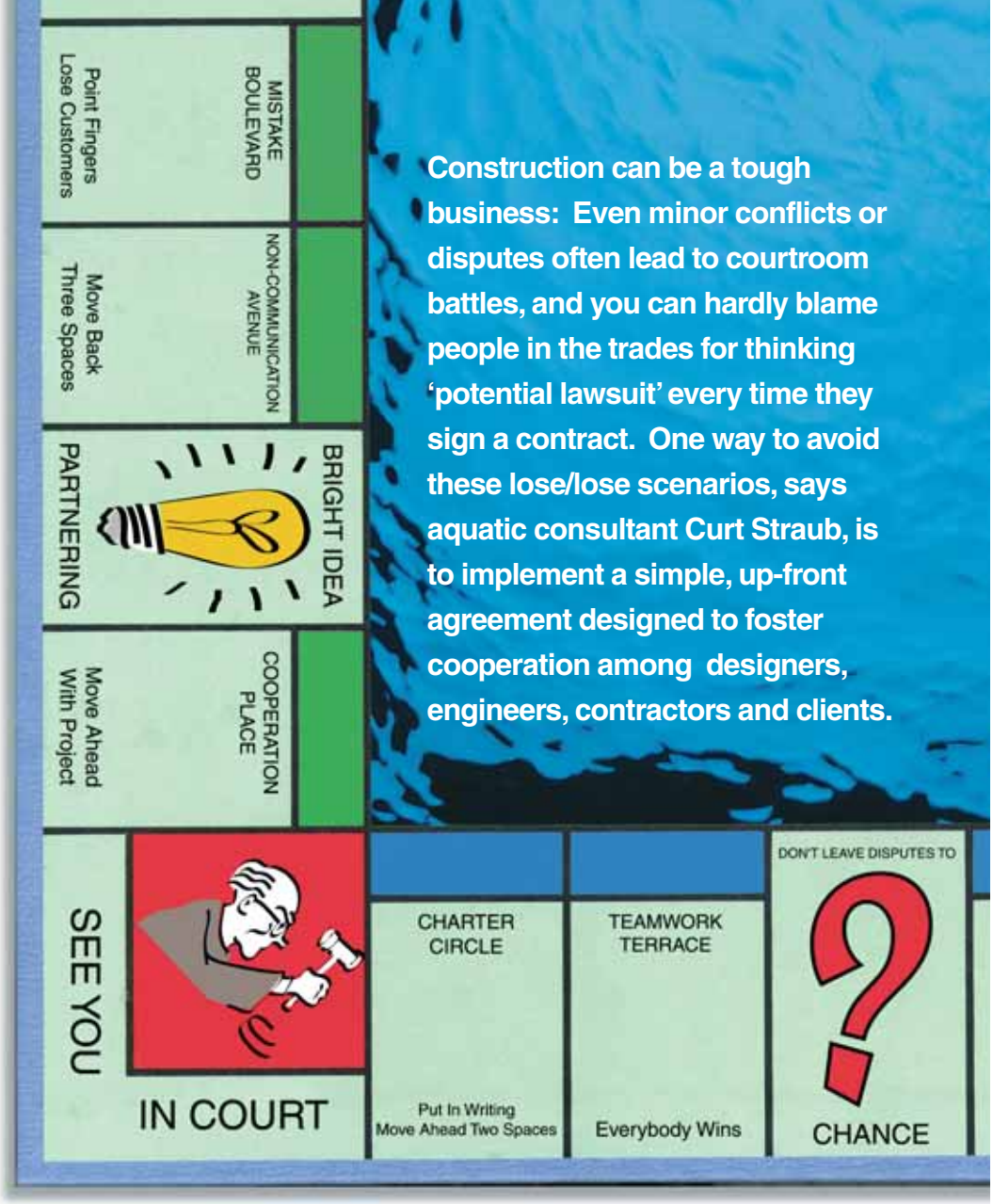
Too often, fountain designers and manufacturers don't get "invited to the party" until midway in the process or, worse, near the end – by which time certain fountain/hardscape issues are already "set in concrete." Not the case here: We had full cooperation among all parties from start to finish – and we're talking about lots of parties from lots of disciplines.

Not only were we given a say in the initial and final project stages by supplying the system and handling the start-up: We also were asked to consult with the architect, the New Jersey Port Authority and the contractor during the installation phase. All in all, it was a project that was set up for cooperation and success from the start right on through to the dedication ceremony.

– J.M.

We also encountered an unusual problem: Loose, fibrous material from bark used in nearby planters and tree wells was finding its way into the water. The strainer system was catching it, but it resulted in a need for frequent cleaning until the bark settled down into the planter beds.

All the bugs were out of the system by Dedication Day, and our clients are happy with the fact that the fountain has become a big attraction on Hoboken's Pier. Architect Stephen Lederach said it all when he e-mailed us photos of the dedication: "The opening was superb," he wrote. "The children had a ball playing around it, and we watched a jogger run through it to cool off. You made a dream a working reality!"



Construction can be a tough business: Even minor conflicts or disputes often lead to courtroom battles, and you can hardly blame people in the trades for thinking 'potential lawsuit' every time they sign a contract. One way to avoid these lose/lose scenarios, says aquatic consultant Curt Straub, is to implement a simple, up-front agreement designed to foster cooperation among designers, engineers, contractors and clients.

The Power in Partnering

By Curt Straub

It's human nature:

When you work with someone in a *cooperative* effort to achieve a *common* goal, the odds are greatly reduced that you will wind up one day facing that person in a courtroom.

The neat thing about this form of cooperation, also known in business circles as *partnering*, is that it can do much more than keep you off your lawyer's time clock. In fact, partnering is something that all of us in the industry can use to our advantage – and to the advantage of our customers.

Better yet, partnering is a simple, practical concept that can be implemented with relative ease, even by people new to the idea. It's already being used in large commercial projects, where the needs and activities of many trades and interests must be coordinated, scheduled and accommodated – and there's no reason why it shouldn't be applied in all cases where multiple disciplines have roles in a project, be it residential or commercial.

Defining Parameters

What does it take to launch a partnering program? For starters, it requires a distinct mindset – and a commitment based on that mindset – of everyone involved in the project. No exceptions!

To be effective, the partnership depends on an atmosphere of mutual respect, understanding and teamwork. All parties to the agreement must assume responsibility for their performance and participation, and cooperation and communication must occur at all levels. Finally, all parties must accept the fact that problems will arise and that solving them (rather than defending one's turf) is the common desire of all partners.

Partnering is, in fact, both simple and idealistic – but it is also very much down to earth by virtue of its main objective: successful comple-

tion of the project.

To be sure, that goal should apply to everything we do in business. In the real world, however, we are all susceptible to error – and as more people get involved, the opportunities for those errors as well as conflicts, disputes and lawsuits all tend to multiply. This is where the rubber meets the road with partnering: that is, in the resolution of occasional mistakes and misunderstandings.

Consider the status quo: Historically, if a mistake is made on a job, the attitude of anyone affected by the problem is that someone, somewhere, somehow, is going to pay. We might call this the "I'll see you in court" reflex. This reflex gets good workouts poolside, for example, in arguments over why the finish failed or how the tile didn't match the sample or why the extra main drain wasn't in the original plans and specs. These debates can get ugly in a hurry – definitely bad for business and very poor professional form.

Many of us with some years behind us in the watershaping trades have been subjected to this adversary tradition for far too long. In fact, it almost seems like a requirement, a necessary part of doing business. So let me ask a key question: Why do mistakes on a job so often mean a visit to a judge?

It all boils down to a fundamental lack of communication, to a lack of a sense of shared responsibility. Let's face it: Mistakes *are* going to happen, and on almost every job that goes in. Knowing that, it becomes incumbent upon us to handle those mistakes in a way that fosters success rather than litigation.

That's what partnering is all about.

Partnering Parts

My dictionary defines a partner as "one of two or more persons engaged in the same business enterprise and sharing its profits and risks." In this sense, watershape designers, engineers, general contractors and subcontractors are *already* "partners," whether they recognize it or not. The difference comes in making effective use of those ties – or in squandering the opportunity to work as a team.

That said, there are four major components of effective partnering:

- a total commitment to success at all levels
- upper-level management support
- open communication and trust
- having the right people in place to implement the partnering method.

Acceptance of responsibility as a group is also a factor: If one partner makes a mistake, the entire group is responsible for solving it, not just the individual partner. In that sense, partnering takes the principles of responsibility you probably apply within your own business and applies them to a group activity.

So who's in this "group"? The short answer is that it includes everyone involved at all levels. Expanding a bit, the list of those involved should include:

- owners
- aquatic directors/pool operators/service technicians
- consultants
- designers/architects/engineers
- project facilitators
- general contractors/subcontractors
- materials and equipment suppliers
- financiers
- insurers
- mediators/arbitrators/lawyers.

That's a diverse group of interests, and getting them all into alignment takes effort. Yes, it's easy to say, "Let's all just get along," but without something formal, it's also easy to fall back into the same old patterns of blame and defend. To be effective, in other words, partnering has some real requirements and is not always easy to arrange.

Making It Work

Let's get down to cases here and define the sorts of interactions at work in part-

Federal Insights

Many people are surprised to hear that partnering developed primarily in the public sector rather than the private sector. The U.S. Army Corps of Engineers, the largest contractor in the country (and maybe the world) has been using partnering for years and now promotes and uses this approach as a matter of policy in most of its construction projects.

"The agency is generally recognized as the leader in implementing partnering," says Charles Schroeder, a project manager for the corps. "It involves putting a handshake back into the relationship." It's hard to imagine such a statement coming from a bureaucrat, but his attitude and outlook are a reflection of the spirit of cooperation that makes truly huge projects work as smoothly as they do.

Sometimes the wisdom comes slowly, and at a cost. The General Services Ad-ministration's renovation of a federal office building in San Francisco, for example, had bogged down entirely in conflicts and threats of legal action; once a partnering program was initiated, however, the project moved forward and GSA now looks at partnering as standard procedure on its larger projects.

What these programs achieved for the feds can work for smaller projects, too, serving to improve working relationships, reduce litigation and achieve the goals of all involved parties. It's all a matter of transforming what are too often seen as adversary relationships between owners and contractors (and among contractors and subcontractors) along more collaborative and productive lines.

If you've yet to try partnering, of course, you're unfamiliar with the kinds of commitments it involves and have every right to be skeptical. So before you dismiss this as something too grand or bureaucratic for your operation, let me offer a final, motivational observation: If partnering can work for the *government*, just imagine what it can do for watershapers!

– C.S.

nering agreements. (Note: These projections apply primarily to commercial and institutional rather than residential projects in terms of scope and scale, but the same principles of cooperation and communication apply to all watershaping projects.)

- ❑ The *owner* and *aquatics director* work together to determine the use of a given facility and associated requirements.
- ❑ The *aquatics director* in turn receives input from the *manager, pool operator* and *service technician.*
- ❑ The *consultant* handling the project reviews these expectations and requirements with the *owner* and *aquatics director*, assisting in development of the project.
- ❑ The *owner, aquatics director* and *consultant* work together to select a *design/engineering team*, a *project facilitator* and the *financier.*
- ❑ The *design team* prepares the project documents, receiving input from the *owner, aquatics director* and *consultant* throughout the process – and, in turn, works with the entire team through the bidding process and ultimately in selecting a *general contractor.*
- ❑ The *watershape contractor* then selects the *subcontractors* and *material suppliers* based on input about the scope and expectations of the project as dictated by the *owner, aquatics director* and the *design team.*
- ❑ If needed, the *owner* and *aquatics director* choose a *mediator* or *arbitrator.*

This ladder of interactions informs the attitudes and disposition of the team from top to bottom, side to side and beginning to end. In other words, everyone is empowered to play their parts, knowing that they have been selected deliberately, with full support of the parties at the various other levels of the project.

This summary obviously simplifies what can be a complex set of relationships and processes – and certainly does not define everything involved in the construction of a commercial pool. Nor does a structured "teaming" of these professionals eliminate the inherent problems that develop with construction. In other words, *partnering does not preclude the need for a written contract.*

What it *does* do, however, is clarify expectations for performance and areas of responsibility, thus eliminating a great many potential problems along the way and, more important perhaps, providing

A Model Agreement

1) We the undersigned are committed to a positive use of teamwork in the construction and contract administration of this project. We believe and expect that, through teamwork, we will be able to provide a safe, quality project completed on time and within budget.

2) We are committed to the concept of prompt, equitable problem-solving, recognizing the individual interests and the common goals such as an *XX*-hour cycle time for problem resolution. We firmly believe that by open, sincere, trustful and objective communication, problem-solving can be accomplished predominately through anticipation and prevention, thereby ensuring success for all team members. Early identification and open communication, along with principled negotiations, are the tenets of our problem-solving commitment.

3) We believe and expect that this partnering commitment will enable all team members to improve and expand their job performance. Further, we are committed to sharing and transferring these partnering characteristics of teamwork and problem-solving with and to all people associated with this project to enhance their participation and to achieve maximum success in all respects.

– C.S.

a mechanism for solving problems in which everyone involved assumes some level of shared responsibility.

What I've found in projects that have been installed using this sort of partnering model is that problems are usually handled quickly and at the lowest level possible, most often by workers in the field. Some projects formalize things by prescribing a problem-solving time frame (usually 48 hours). It's remarkable how often that target is met, even with seemingly severe problems.

Finally, it's important to note that while partnering probably works best if implemented long before construction begins, it can still work even if it is applied long after the project is under way.

Partnership In Practice

Typically, partnering begins with an orientation session or conference conducted with representatives of all parties on hand. As important as defining the partnering process, the meeting must include instruction in the art of improving communications within the team.

For larger projects (such as those run by the government), this initial gathering is conducted by a facilitator who assists the team in developing the terms (or *charter*) that all participants agree to sign. This agreement elaborates on the project's scope, outlining shared goals and the methods necessary for success. (See the sample partnering agreement on page 48.)

Beyond this initial meeting and the signing of the partnering agreement, the process should also include a team-evaluation component to track progress and/or shortcomings in the overall project. These follow-up meetings are conducted for the specific purpose of identifying areas that need improvement and for devising plans for implementing corrections in the most expedient way possible.

This problem-solving function is where the critical work of partnering really takes place. When conflicts arise (as they do almost inevitably in any project, let alone a large commercial one), it can be tough to overcome the tendency to fall back into adversary postures.

One pre-emptive approach is "alternative dispute resolution," or ADR. With this mechanism, the owner and contrac-

tor each designate individuals within the affected organizations to work out any problems. This group includes people from the field through to upper management, matching individuals of similar station from both sides.

In this sense, partnering does not assume trickle-down power and control. Rather, it embodies an effort of equals to accomplish the task of resolving problems. This sense of equal footing fosters a shared level of respect. It also works to place the focus on the problems at hand, enabling those involved to isolate the issues and come up with a solution that is free of pecking-order constraints and pressures.

Maintenance Schedule

When a dispute does arise, an immediate attempt is made to resolve it. This initial effort should involve mainly those at the lowest level possible. If they are unable to come up with a plan, the issue moves on to the next level, where the two parties have a similarly restricted time frame to reach a resolution. The process continues up the ladder until the process is resolved.

The aforementioned progress and evaluation meetings afford all parties a wonderful opportunity to stave off conflicts that may result from potential or pending problems. In fact, proponents of partnering often comment on the effectiveness of dealing with a problem ahead of time, well before unnecessary costs are incurred or emotions have a chance to flare. As these pitfalls are avoided, the goals and principles of partnering are refined and reinforced.

In other words, the process of partnering and the reinforcement of teamwork become the overriding focus – a one-two combination with the capacity to knock down just about any individual problem.

The traditional adversary relationships are explicitly rejected here. Under the partnering agreement, there is a clear recognition that all parties are working toward the same goals and acting in the interest of shared success. The importance of moving effectively through a project's phases thus replaces the fear and animosity that can arise almost naturally out of the contracting process. Under partnering, cost overruns and change orders are minimized as well.

Clearly, owners and contractors need to recognize that partnering cannot eliminate all disputes on the job site. Even in the best relationships, differences of opinion can arise. But these disputes need not destroy the partnering relationship if the partners approach their responsibilities with trust and a spirit of cooperation.

In other words, partnering is not a panacea for all problems and cannot be used to bail out a partner with, say, serious financial or management problems. When ability and integrity are coupled with a commitment from the partners, however, partnering becomes a tremendously positive force that stands to revolutionize watershaping at all levels. After all, it makes good business sense!

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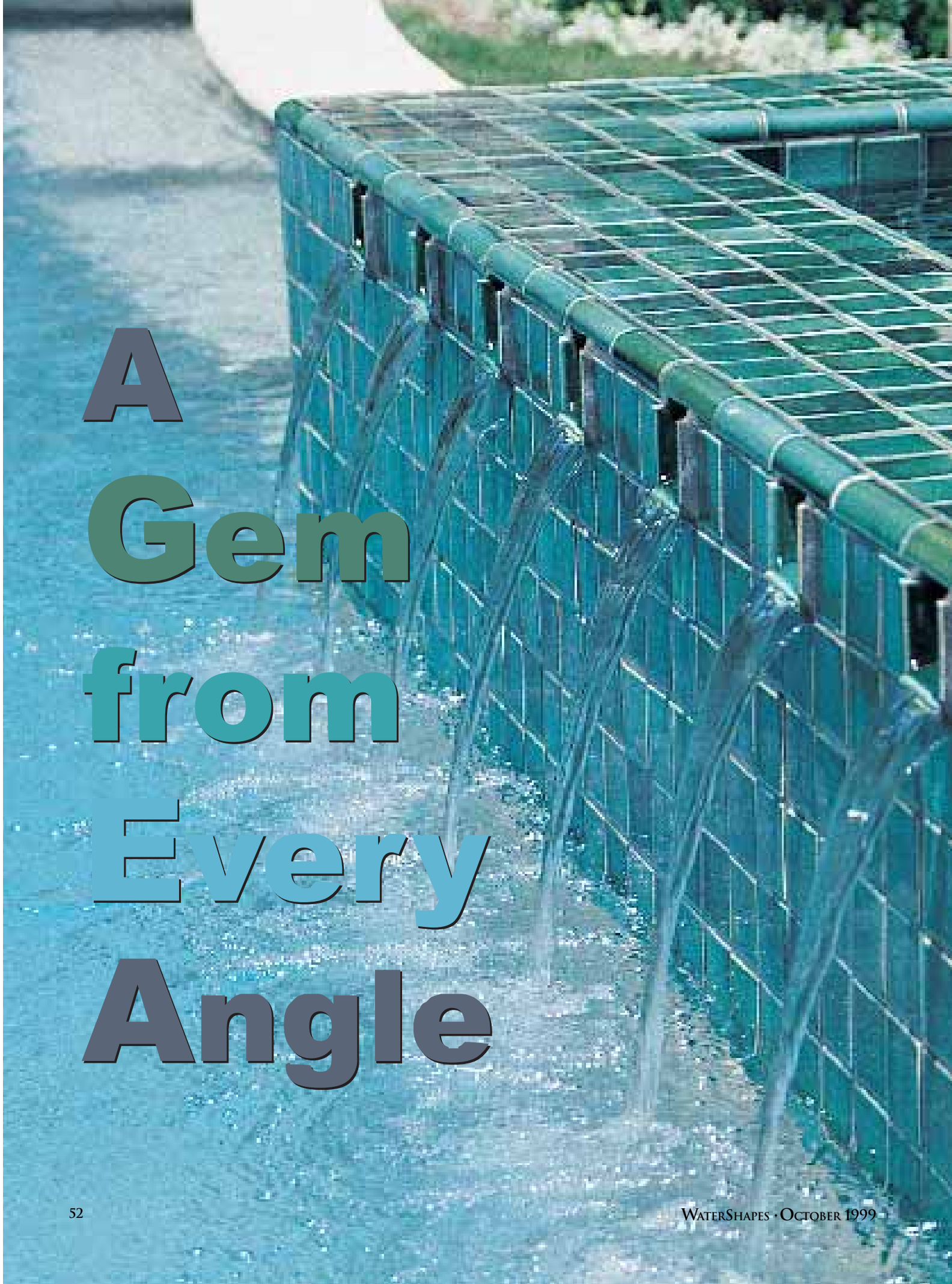


A Gem from Every Angle

By David Tisherman

The shape, position, colors and textures of any watershape drive the experience to be had by those who venture near the water's edge. That in mind, says David Tisherman, the art of managing what is seen from various points around a job site is at the very heart of the designer's task. Here, he uses a recent project to define his approach to maximizing a space's potential from all angles.

The first thing I tell myself when looking at a prospective job site is that the pool is unimportant.

That may sound strange coming from one who has spent years of his life in designing and building the finest pools money can buy, but in a very real sense, I think it's absolutely true: The pool itself means nothing.

What's important is the site, its prevailing geological conditions, the visual strength and influence of the house or other structures and the natural elements of landscape and physical setting. All of these directly influence the design of the pool – its shape, size, elevations, materials and position on the property.

When all of these elements of the pool's physical structure come into balance with the surroundings, then the experience of someone entering the area can be utterly transforming: They will draw impressions of beauty, elegance, relaxation, tranquillity and even a distinct connection with nature.

You're off to a good start simply by recognizing this potential. To *maximize* it, however, you need to know a lot about design, art, architecture, color and history. Most of all, you need to be able to **visualize**.

The old pool had been set within a few feet of the back door, where it completely dominated all lines of sight and robbed the scene of any sense of discovery as homeowners or guests accessed the yard.

BREAKING GROUND ANEW

From the time I entered the yard seen in the photographs that illustrate this article, I was drawing the setting in my mind's eye, developing a new design and knowing that, by the time I was finished, the experience of being in this space would be completely different.

Visualizing is something that the previous pool builders did not do: The existing pool had been set right outside the home's back door, not more than five feet from the house. Simply by stepping out into the yard, you put yourself at risk of falling into the pool. In other words, the space was dominated and had essentially been destroyed by this unimaginative body of water.

By contrast, I'm always after the effective use of the *entire* setting, not just in "building a pool." I design a space and arrange features within it so they can be appreciated and enjoyed from all angles – not just up close, but also from a distance. In all ways, I want my work to be valued as art, not merely as a pool that

An Adaptable Palette

To me, color is the be-all and end-all when it comes to achieving balance – both with the natural features surrounding a watershape and within the watershape itself.

On this job, everything is soft greens and creams: The handmade, hand-glazed tile in the spa and around its exterior are a rich, custom blend featuring hues from phalo to a light hunter green. The pebble surface of the pool is a standard sand color, but its cement is a subtle green enhanced and deepened by refraction of light through the water. The coping and decking are both a soft-looking, cream-colored material.

I often say that green is the best of all colors to use with water – a pronouncement that draws stares from those who associate green with algae problems. I suppose this is why so many watershape designers' color palettes begin and end with shades of blue: Water is supposed to be blue, right? To me, however, green is the perfect color for many pool designs because it is the single most common color in nature.

This job offers a perfect example: The cool stucco of the house, the row of trees just beyond the usable area of the yard and the new expanse of grass dictate a natural look in the pool that simply wouldn't work as well in blue or gray or any of the other "popular" pool colors.

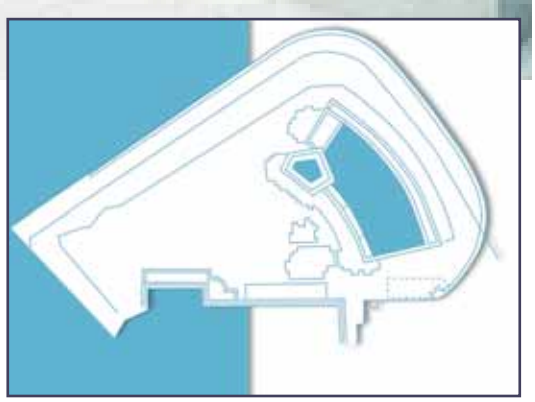
– D.T.

someone without imagination slapped up against the back of the house.

With the original pool placed in such a dominant position in the yard, all sense of discovery was nullified as you approached it, as was any sense of balance in the way the space had been used. All you got was the pool and nothing more – except on the far side of the pool, where a bland fountain stuck out almost literally like a sore thumb.

To me, great design means walking into a yard and thinking, "This is beautiful!" You don't have that thought here: Basically, you're watching your step to make sure you don't get wet. I don't want my clients to look at a pool and say, "Wow! What great tile! What a gorgeous swimming pool!" I'm after an altogether different and, I think, more satisfying sense of balance through management of the whole scene.

An interesting point about this particular project is that the pool you see in the "before" picture is actually the third pool built on the site, one atop the other. Each



In the revised scheme, you must step into the yard and turn to the right to take in a view of the pool. The eye goes quickly to the vanishing edge – but moves just as quickly to the green wall of trees and shrubs surrounding the property.

Preserving Site Integrity

Knowing what to leave in place and what to take out can be a big part of maximizing a site's design potential.

In this case, the home was surrounded by a beautiful stone wall that had been there since the home was built in the 1920s – an essential component of the site's character and feel.

Even though it would have been far easier and cheaper to gain access by breaking out a portion of the wall, we decided to leave it in place and crane everything over it. And you know, our respect for the site was one of the points most appreciated by the client in evaluating our bid.

– D.T

Now the homeowners have a yard in which the emphasis is on the lawn and the open space. The pool and spa are simply components of that space – a part of the scene, but not the dominant one.

had failed because none was adequate to withstand the soil conditions. In a way, this ongoing set of disasters was a blessing in disguise, because it gave me an opportunity to work with the client on turning a horror into something truly elegant and beautiful.

Immediately, I began thinking of how to position, proportion and design a new pool so that it would blend with and echo the feelings conjured by its surroundings. You do this by working with shapes, elevations, materials and color – and you start by visualizing where the pool might go and imagining what the person walking into the backyard will see from various points of view.

UP, OVER AND SIDEWAYS

With this kind of remodeling project, I'm never bound by what came before – and in this case, I didn't hesitate for an instant in moving the pool to another spot in the yard and rotating it relative to the angles defined by the house.

Turning it almost ninety degrees and pushing it toward the far corner of the yard created a broad area for a new lawn. So instead of falling into the pool when you walk out the door, you now see a green expanse backed up by the beautiful trees that edge the property and, off to the right, a pool elevated 15 inches above grade.

This repositioning and reshaping of the pool was essential to the backyard's new design. The new shape – a gentle, sweeping curve with a vanishing edge on the far side – blends perfectly with the majestic trees lining the space just beyond the yard.

Vanishing edges are typically used to accentuate infinite vistas on hillsides or mountaintops; in this case, however, it

Learning

I've been asked many times how much of the design work I do is based on instinct and intuition and how much of it is rooted in technical discipline. The honest answer is that I don't really know.

On the one hand, I know that the soil conditions on a site like this have a lot to say about the structure, which in turn tends to lead me to express a specific set of design principles. I also know that I've spent a large part of my life studying architecture, art history, color and design. Certainly, those formal disciplines have a tremendous, direct influence on the design work I do. Indeed, there's no substitute for education in all aspects of design.

On the other hand, when I'm on site, visualizing a design, I let my own personal experience and creative sensibility guide me. I look at a space and think, "If money were no object, what would I put here?" I consider specific lines of sight and how they appear to someone viewing the yard. I even think about my client's height and imagine seeing it through his or her eyes as well. I also think about human behavior and how people will interact with the space created by the design. And I think

Internal Consistency

In large measure, design work is about controlling lines and making them work together in defining a space. The key concept in that definition is *control*, which is why we spend a lot of time on site making things work with great and uncompromising precision.

Look at the grout lines on the spa's exterior walls, for instance, and the way they will align perfectly with the steps. This may look like a small detail, but it has great significance for what it says about the level of planning and care we bring to our projects.

What this does is create a sense of continuity of shape and texture. The lines created by the grout harmonize perfectly with lines created by the basic shape of the structure and is another contributing factor in balance. The lines do not fight one another, but serve to reinforce each other and the impressions made by shapes and surfaces.

– D.T

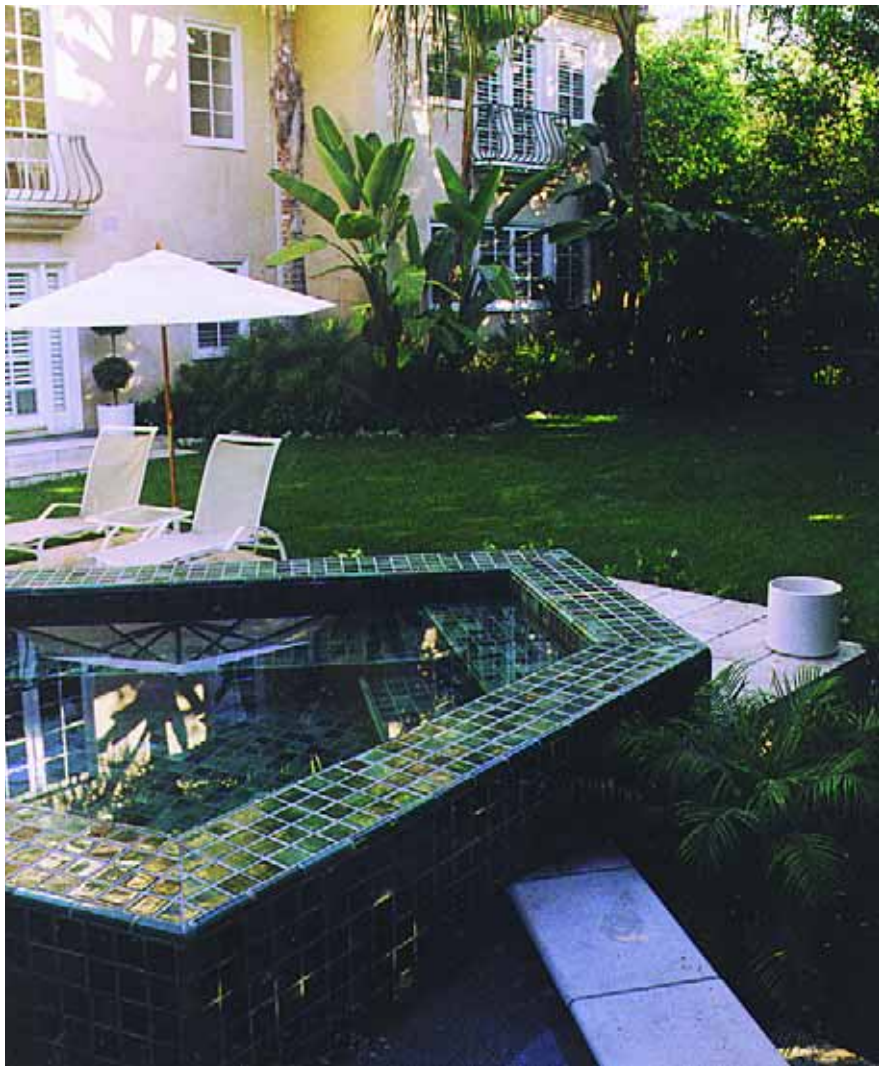
to See

about nature and the sublime beauty of natural forms.

The legendary architect Frank Lloyd Wright said that he did not seek to mimic nature in his designs so much as he sought to create forms that appeared to belong in a natural setting. That's what I try to do on jobs like the one covered in the accompanying article. Obviously, the pool pictured here is man-made, the decks are man-made, the spa is man-made – and the design makes no pretense to be otherwise. Yet there's no doubt that the curvilinear vanishing edge and the colors and textures of the materials all work to accentuate and comfortably coexist with nature.

The more you increase your knowledge of architecture, line, shapes, colors and textures, the better able you are to meet customers' needs. You'll be able to draw on a great frame of reference in obvious and not-so-obvious ways. I also believe that if you're wise enough to recognize the fact that you have a lot to learn and take courses and read books that let you see and appreciate the works of the true masters of design – and begin to apply their principles to your own work – then you will quite naturally begin to see things differently.

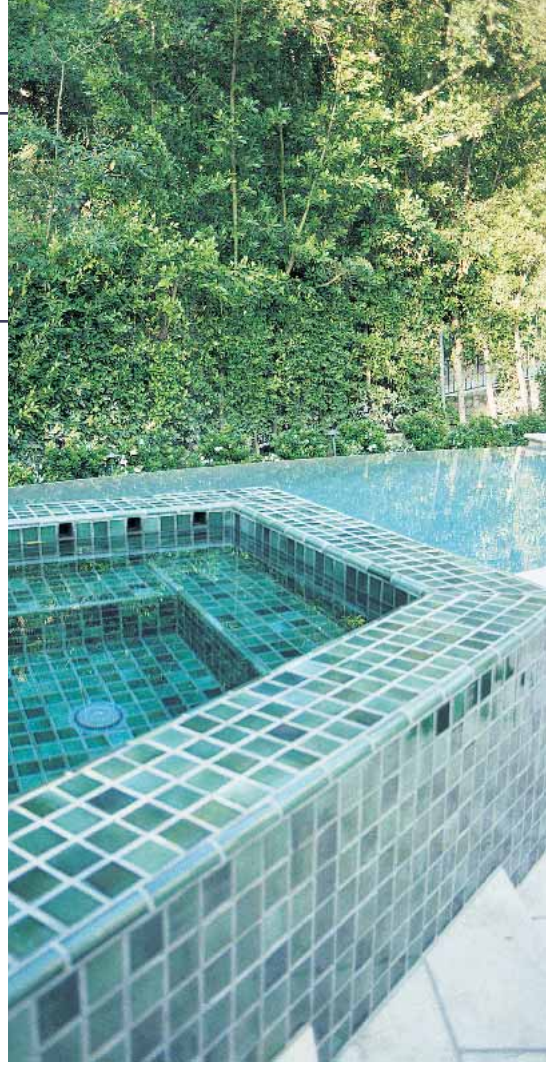
– D.T



The small deck on the far side of the pool behind the spa offers a great vantage point for taking in the full array of cream and green colors that make up the new backyard. Even from the close perspective of that deck, the vanishing edge detail works: The pool was raised 15 inches above grade, so we were able to lower the trough and keep it out of sight.

pulls the line of sight to a considerable wall of green that stands back only a few feet from the edge of the pool. (The pool's elevation provided lots of special seating areas and also enabled us to drop the trough down low enough that it is invisible from any usual vantage point in the yard.)

At the far end the of the pool structure, a raised spa was installed using a harder, more geometric approach with lots of sharp angles and crisp lines – a bold green-clad accent that echoes both lawn and trees. The spa's seven spillways bridge the gap between the turbulence of the spa and the gentle action of the water flowing over the vanishing edge – a combined aural effect that brings a natural feel to the entire installation.



The view from the spa is as good as it gets. Imagine being surrounded by churning water and looking toward the serenity of the vanishing edge and on to the trees and shrubs beyond. Note as well the use of quarter-round tiles on all the edges of the spa – an expensive touch, but one that softens the spa's hard geometry and completes a picture of comfort and tranquility.

The new pool with its sweeping curve affords a pretty picture from the driveway of the house as it follows the curve of the property and the tree line. Yes, we had the advantage of working with a great site – but making the design resonate on so many levels and from so many different angles is far from accidental.

In everything you see here, the governing principle is *balance*. In the pool industry, too many people equate balance with *symmetry*, but nothing could be less accurate. The balance I'm pursuing is achieved by properly considering the visual weight of the various components of the design, from the house and existing trees to expanses of lawn and both still and moving water. In this case, much of the balance comes in playing the soft edges of the rest of the yard off against the harder geometry of the pool and spa.

In the watershape itself, any sense of hardness or heaviness is balanced and softened through the gentle subtlety of the colors, all greens and creams, and the sweeping curve of the vanishing edge.

This isn't a simple juggling act by any means, but it is attainable if you recall my opening statement and come to see your watershapes as part of greater compositions rather than as yard-dominating behemoths.

Pool Mix

The Georgia Institute of Technology Aquatic Center, Atlanta, GA / Arch: Stanley, Love-Stanley, PC / Smallwood, Reynolds, Stewart, Stewart & Associates, Inc., A Joint Venture
General Contractor: Gaston-Thacker / Pool Plasterer: Olympic Pools

The Georgia Marble Company supplied over 67 tons of white POOL MIX® for the Georgia Tech Aquatic Center in Atlanta. POOL MIX makes a hard, smooth finish that doesn't require paint, resists staining and is easy to keep clean.

POOL Mix is composed of high white marble, ground to a specific aggregate size for in-ground swimming pools of superior quality. When formulated with white cement, POOL MIX provides a brilliant white finish that will give trouble free service for many years.

POOL MIX is also available in black and green.

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consumer product sales
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Circle 39 on Postage Free Card

Of Interest

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

UV-Stable Deck-Drain System

Circle 100 on Reader Service Card

GRATE TECHNOLOGIES presents its Drain the Deck system, featuring two components: an extruded, UV-stabilized PVC trench main base (4 in. wide and available in 10-foot-long straight or radius sections) and a 4-in.-wide grating with a T-bar construction that runs perpendicular to the drain. Available accessories include joiners, corners, end sections, down sections and T-sections. The UV stable system will not fade, yellow or corrode and offers 35% open space. **Grate Technologies**, Naples, FL.

Brochure on Stain-Removal Products

Circle 102 on Reader Service Card

JACK'S MAGIC has prepared a four-page, full-color brochure defining its complete line of products for the prevention and removal of a variety of metal stains from swimming pools and spas. Also included in the brochure is information on stain-testing kits, water clarifiers, filter aids, non-chlorine shock and water-test kits designed for use by professionals. **Jack's Magic**, Clearwater, FL.

Pond, Waterfeature System Designs

Circle 101 on Reader Service Card

ADVANCED AQUACULTURE SYSTEMS specializes in pond- and waterfeature-system design that meets exact site specifications. During the past 15 years, the company has developed many proprietary products and designs specifically for ornamental and extensive pond applications. In addition to maintenance-free Aquacubes and Perma-Bead media, the company offers hundreds of other quality, dependable components. In addition, the company provides professional system-design and technical-support services for all projects. **Advanced Aquaculture Systems**, Brandon, FL.

Cost-Effective Fountain Nozzles

Circle 103 on Reader Service Card

WATERWORKS INTERNATIONAL offers a new line of fountain nozzles in both bronze and powder-coated aluminum. The Premier Fountain line of nozzles and fittings, along with the company's engineering capabilities, give customers a real advantage in design and execution. The company is particularly well known for the Jumping Jets and Jumping Jewels effects seen at theme parks. **Waterworks International,** Kankakee, IL.

Product Information Card

For more information on advertisers and/or products featured in this issue's Of Interest *section, circle the corresponding Product Information Number on the postage-free card opposite this page.*

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	Aquatic Access (pg. 48)
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Shell and Deck Materials Introduced

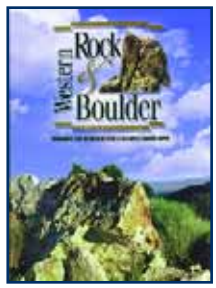
Circle 104 on Reader Service Card

TXI has published a flyer describing its Contour line of shell- and deck-construction materials for use in swimming pools and other waterfeatures. The line includes white cement, calcium carbonate, natural pebbles, ceramic aggregates, colored-glass aggregates, color pigments, coping, filter sand, plaster finishing tools and more – all from a single supplier. **TXI**, Dallas, TX.

Media Kit for Boulder Line

Circle 108 on Reader Service Card

WESTERN ROCK & BOULDER offers a full-color, four-piece kit describing its selection of 1- to 2-ton boulders for use in all types of landscapes for monumental or decorative purposes. The kit highlights the vivid colors available in these mineral-rich boulders and details the fact that delivery is included in the price. **Western Rock & Boulder**, Fallon, NV.



Pool Enclosures Highlighted

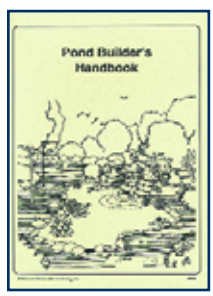
Circle 105 on Reader Service Card

CCSI has released a new, full-color brochure on its Garden Prairie line of pool and spa enclosures. Titled "Swimming Pretty," the brochure is designed to help clients visualize the company's enclosures in their own backyards. The brochure also includes information on custom-designed enclosures in single- or double-slope configurations and highlights the fact that the systems can be freestanding or attached to existing structures. **CCSI International**, Garden Prairie, IL.

Handbook for Pond Builders

Circle 109 on Reader Service Card

RESOURCE CONSERVATION TECHNOLOGY presents "Pond Builder's Handbook," a 40-page guide to installation of anything from lilly and rock ponds to more elaborate koi ponds and garden fountains. The booklet discusses selection of pond liners as well as the plumbing and circulation systems needed to support installations of various types. **Resource Conservation Technology**, Baltimore, MD.



Comprehensive Cover Brochure

Circle 106 on Reader Service Card

COVER-POOLS offers its most extensive brochure ever, providing a complete overview of the company's line of automatic and manual safety covers. The 20-page booklet contains more than 60 full-color photographs highlighting new options and application ideas for both the Save-T Cover II automatic system and the Step-Saver manual covers. It also outlines training programs and rapid order processing. **Cover-Pools**, Salt Lake City, UT.

Top Quality Pool Plaster

Circle 110 on Reader Service Card

NORTHERN PREMIX SUPPLY manufactures both Armorcoat and Armorcoat Smooth Colors to bring durability, beauty and comfort to swimming pool plaster. Armorcoat will not mottle, change color or wear prematurely, even under severe operating conditions. For more than 27 years, Armorcoat plasters has come with a factory performance warranty rather than the more common contents warranty. **Northern Premix Supply**, Weston, Ontario, Canada.

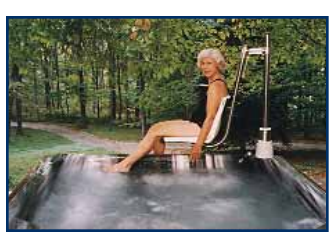
New Boom Pump Offers Reach, Power

Circle 107 on Reader Service Card

PUTZMEISTER'S new 32Z truck-mounted concrete boom pump delivers both high-volume 210 cu. yd. outputs and high pressure – 1,233 psi on the rod side. It also features free-flow hydraulics, radio and cable remotes, and a high performance S-valve. The 32-Z-Meter doesn't have to be fully unfolded to begin a pour, allowing concrete to be placed right next to the truck. When a longer reach is needed, the boom extends to 105 ft. vertically and 92 ft. horizontally. **Putzmeister Inc.**, Sturtevant, WI.

Lift Systems for Handicapped Access

Circle 111 on Reader Service Card



AQUATIC ACCESS offers a full line of water-powered and portable lifts to ease access to pools and spas. Several lift models are independently operable and have a capacity of up to 400 pounds. The seats come in blue, green, taupe and white. A free videotape is also available. **Aquatic Access**, Louisville, KY.

MULTIMEDIA INFORMATION ON FEEDERS

Circle 112 on Reader Service Card

G.H. STENNER & CO. has released a multimedia kit on its line of chemical feeders: A 24-page, full-color catalog offers product specifications, details on parts and tips on installation, maintenance and troubleshooting; the compact disk contains the full catalog and downloadable files in PDF format; and a pocket guide (also available in Spanish and French versions). **G.H. Stenner & Co.**, Jacksonville, FL.

FLYERS ON POOL-PLASTERING EQUIPMENT

Circle 114 on Reader Service Card

MACALITE EQUIPMENT offers leaflets highlighting its full line of trowels, spike plates, plaster hoses, white rubber boots, nozzles, brushes, rollers, pails, fittings and more, including easy-flow nozzles for pebble application. The company also makes plaster mixers, distributes plaster pumps and has a service department that can handle most plaster mixers and pumps. **Macalite Equipment**, Phoenix, AZ.

HEAT PUMPS FOR POOLS

Circle 113 on Reader Service Card

AQUA CAL makes a new generation of heat pumps for warming or cooling pools. The HeatWave Icebreaker's standard features include continued operation even in freezing temperatures, pool heating or cooling with the flick of a switch, a phenolic-epoxy-dipped coil, a time-clock extend switch, dual thermostats, lockable control panel and an Aqua Top to keep moisture and debris out. **AquaCal**, St. Petersburg, FL.

NEW AGGREGATE BINDER IN NINE COLORS

Circle 115 on Reader Service Card

MASON MART is distributing Brookstone Binder, a proprietary blend of cement, pozzolans, pigments and other additives that can be used with marble and limestone aggregates as well as colored particles and pebble-type synthetic aggregates. The product is available in nine colors – white, blue/black, blue/gray, red, golden, plum, black, green and blue – and is manufactured by Liljenquist Brothers, developers of the Brookstone line of Natural Stone Surface materials. **Mason Mart**, Phoenix, AZ.

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GENESIS 3 A DESIGN GROUP

To reinforce that commitment to industry education, we will be available in the following booths at the NSPI show in Las Vegas:

AquaCal/Auto Pilot	Dec. 1 and Dec. 2	2:00 pm to 3:00 pm
Cover-Pools (Skip)	Dec. 1 and Dec. 2	5:00 pm to 6:00 pm
PacFab/Compool	Dec. 1 and Dec. 2	3:00 pm to 4:00 pm
Pebble Technology	Dec. 1 and Dec. 2	12:00 noon to 1:00 pm
Polaris Pool Systems	Dec. 1 and Dec. 2	4:00 pm to 5:00 pm
Sta-Rite Industries	Dec. 3	11:00 am to 12:00 noon
Teledyne Laars/Jandy	Dec. 1 and Dec. 2	1:00 pm to 2:00 pm
Swimming Pool/Spa Age (Brian)	Dec. 1 and Dec. 2	5:00 pm to 6:00 pm
WaterShapes (David)	Dec. 1 and Dec. 2	5:00 pm to 6:00 pm
South Central Pool Supply	On Demand at SCP at the Aqua Show	

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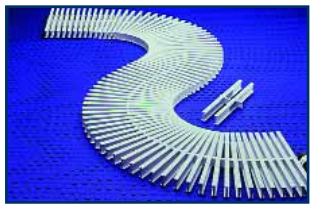
OVERFLOW GUTTER GRATING

Circle 116 on Reader Service Card



ASTRAL PRODUCTS introduces its grating system for overflow gutters. The central-spine design permits system use in free-form installations, radius turns and flexible continuous runs. Constructed of injection-molded polypropylene, the grating is highly resistant to pool chemicals and UV damage and is modular in design, so it requires no cutting for installation – pieces simply snap together or unsnap. As an option, the system comes with a support channel to speed installation in concrete gutters. **Astral Products**, Jacksonville, FL.

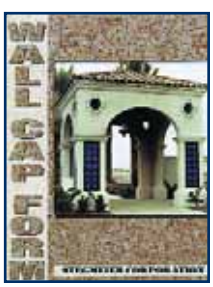
NEW SHOTCRETE PUMP

Circle 120 on Reader Service Card

SCHWING AMERICA announces its new WP 301X concrete pump, with capabilities for shotcrete application. In addition to handling a wide range of mixes with aggregate sizes to 1 in., the unit offers surge-free shotcreting through an easy-to-handle hose. Designed for low maintenance and trouble-free operation, the WP 301X is an all-hydraulic, twin-cylinder piston pump equipped with Schwing's Rock Valve. With 1,100 psi applied to the concrete, contractors can expect pumping distances to 1,160 ft. horizontally or 330 ft. vertically. **Schwing America**, White Bear, MN.

WALL-CAP FORMS HIGHLIGHTED

Circle 117 on Reader Service Card



STEGMEIER CORP. offers a four-page, full-color leaflet describing applications for its line of wall-cap forms. Available in five styles, the forms clamp onto the top of a wall and provide for an elegant, seamless finish. Specifications for the concrete and application techniques are included, as are tips outlining the entire process. Also included is a guide to cap profiles. **Stegmeier Corp.**, Arlington, TX.

BLADES FOR CUTTING BRICK AND TILE

Circle 121 on Reader Service Card

MK DIAMOND PRODUCTS offers masonry blades with specially formulated diamond-bond segments designed to promote fast, true cutting as well as blade durability and operator safety. The company also offers tile blades designed for clean, precise cutting, long service life and value. **MK Diamond Products**, Torrance, CA.

NEW PUMP FOR MAKING ARTIFICAL ROCK

Circle 118 on Reader Service Card

QUIKSPRAY has developed its new *Carrousel Heavy Duty Pump* (model #15010TBM-3-GAM) for the spray application of heavy-bodied cement coatings, with or without fibers, for the production of artificial rocks and water scapes. The pump uses peristaltic principles; no moving parts come in contact with the material, which makes for a low-maintenance system. This variable-speed model is powered by a high-torque pneumatic motor requiring a 125 cfm compressor, but electrically and hydraulically driven models are also available. **Quikspray, Inc.**, Port Clinton, OH.

NEW POND SUPPLY CATALOG

Circle 122 on Reader Service Card

POND SUPPLIES OF AMERICA has just released its 2000 catalog, designed to aid water-garden installers and landscape designers in selecting components for ponds of all sizes. The catalog includes tested products from the best suppliers to the industry and offers tips on specifying pumps and skimmers. Products are ready for quick shipment nationwide from warehouses in Chicago, Los Angeles and Pittsburgh. **Pond Supplies of America**, Yorkville, IL.

DATA SHEETS ON WATERFEATURES

Circle 119 on Reader Service Card

POLARIS WATER DESIGNS has released individual, full-color data sheets on installation of its fountains, jets and waterfalls. Each sheet shows various nozzles that create different shapes and sizes of water effects – including a number that have fiberoptic capabilities and will send colored lights cascading through the water. Combinations of waterfeatures are also described, offering a broad range of design possibilities. **Polaris Pool Systems**, Vista, CA.

TELESCOPING FOUNTAINS FOR POOLS

Circle 123 on Reader Service Card

FOUNTAINS FOR POOLS introduces telescoping fountains that transform pools or spas into beautiful waterfeatures in non-bathing hours. The fountains retract automatically when not in use and are powered by standard pool pumps. Designed for beauty and ease of use, they come with a descriptive brochure and simple installation instructions. **Fountains for Pools**, Tarzana, CA.

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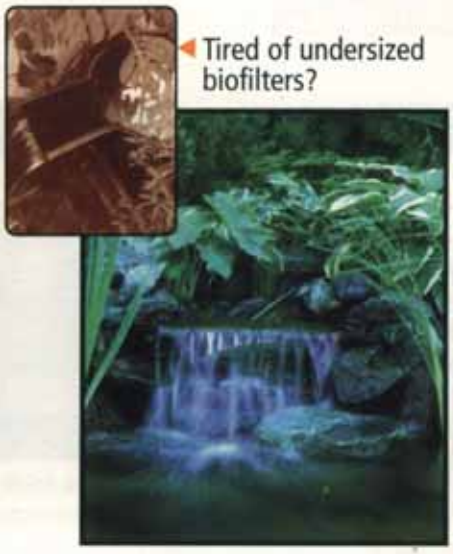
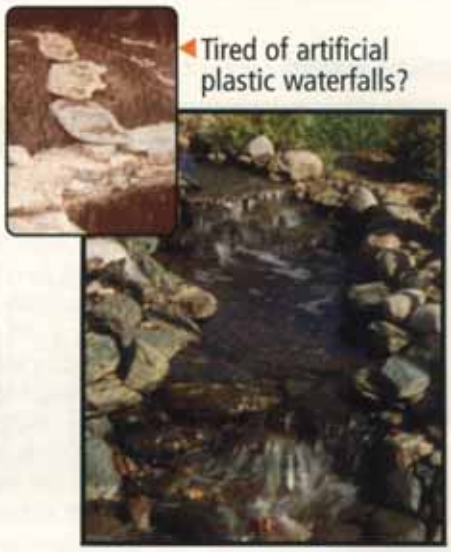
Your Koi Pond Will Thrive with PuriFalls Filter Waterfalls!

Use real rock to hide our PuriFalls™ to create magnificent waterscapes!

Tired of ugly pipe returns?

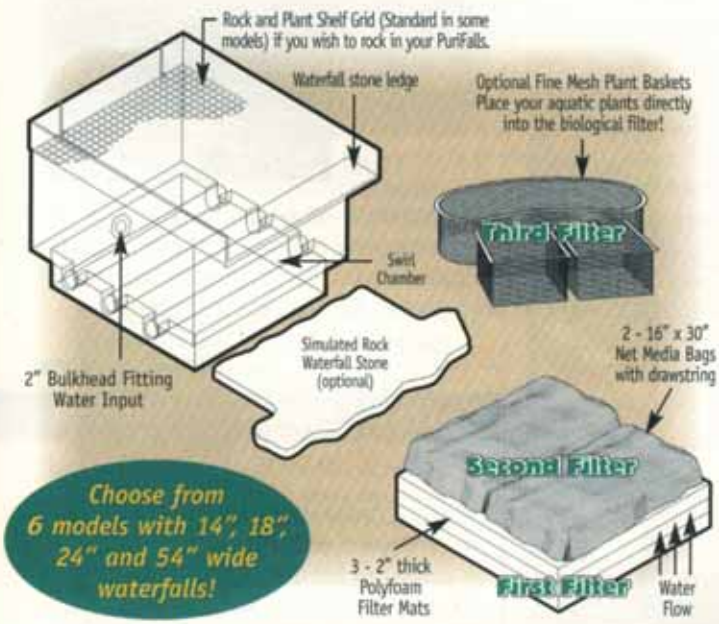


Tired of undersized biofilters?



Tired of artificial plastic waterfalls?

The Triple Filtration PuriFalls™ filter/waterfalls is the ultimate filter for your garden pond!



Our Upflow Design:

- Mimics a natural spring
- Has three different kinds of biological filters for maximum filtering
- Uses aquatic plants to both filter the water and hide the box
- Supports large colonies of beneficial bacteria
- Helps create a natural, chemical-free ecosystem

Key Design Features:

- Ruggedly built for in-ground installation makes it easy to hide the box and plumbing while gaining the beauty of a waterfall (eliminating the hose-buried-in-the-ground look)
- Built-in waterfall ledge greatly simplifies waterfall construction for any skill level
- Helps to create a waterfall up to 54-inches wide or wider by using side by side filters
- In most applications requires only annual cleaning.
- Available in high strength reinforced resin-injected fiberglass or environmentally-friendly polyethylene
- Recommended for use with our patented PondSweep™ skimmer boxes.

Skimmers and PuriFalls starting at $239.99 retail

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POND SUPPLIES of America, Inc.

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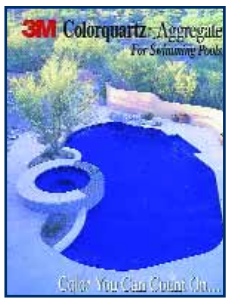
COLORED AGGREGATE FOR POOL FINISHES

Circle 124 von Reader Service Card



3M offers its Colorquartz Aggregate for pool finishing in an almost limitless array of custom colors. The product has color permanence proved through more than a decade of in-pool use. The finish texture is also customizable, from smooth comfort to sure-footed slip-resistance. Backed by a name customers will recognize and trust, the aggregates come with a ten-year warranty. **3M**, St. Paul, MN.

SUBMERSIBLE PUMP AVAILABLE

Circle 128 on Reader Service Card

OTTERBINE-BAREBO introduces its Bunker Pumper, a submersible unit featuring a 6-hp engine and wear-resistant propeller. It will run at full throttle for 1 hour on just one tank of fuel and can run dry without harming engine components. The machine offers submerged suction without additional hoses or priming systems and can operate in less than 3 in. of water. **Otterbine-Barebo**, Emmaus, PA.

SYSTEM SMOOTHES ROUGH POOL FINISHES

Circle 125 on Reader Service Card

DRP offers its Aquaglide system to transform or correct the rough outer surface of any pool to a smooth, dense finish. Pneumatically driven, model AGP-7 features the company's diamond-disc system in a lightweight, durable machine that removes stock rapidly and cuts the cost of the new, polished plaster finishes or of repairing overexposed quartz finishes by as much as 50%. The center water-feed system eliminates dust and burn marks and prolongs disc life as the machine creates a beautiful, soft-to-the-touch finish. **DRP**, Delray Beach, FL.

POOL FINISH FOR NEW WORK OR REMODELS

Circle 129 on Reader Service Card

GEORGIA MARBLE offers Pool Mix as a finish for new installations and renovation work. The product is a mix of white cement with a high quality marble and a special-particle-size aggregate – the key to a white, long-lasting pool finish. The product also comes in colored versions, in green and the popular black finish. All Pool Mix products are made using the highest quality standards. **Georgia Marble/Consumer Product Sales**, Kennesaw, GA.

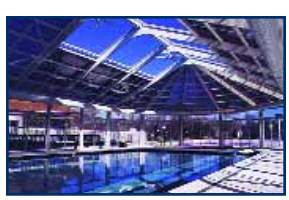
PROGRAMMABLE CHEMICAL CONTROLLER

Circle 126 on Reader Service Card

SANTA BARBARA CONTROL SYSTEMS offers the Chemtrol PC2000, a microprocessor-based, programmable controller with a four-line LCD display and a 16-key pad. In addition to the standard ORP and pH control, the system has optional temperature and total-dissolved-solids monitoring, a ppm display and temperature control. With true duplex remote operation and control through Windows software, the system allows for real-time supervision and remote technical support by the factory or an authorized dealer. **Santa Barbara Control Systems,** Santa Barbara, CA.

ENCLOSURES FOR HIGH-MOISTURE AREAS

Circle 130 on Reader Service Card



CAROLINA SOLAR STRUCTURES brings 30 years of experience and a track record with hundreds of installations to the marketplace with its high-quality glazed structures. Designed specifically to enclose high-moisture areas, the structures are made of non-corrosive materials: aluminum alloys for high-strength rafters, columns and purlins; polycarbonate roof glazing; and glass sliding doors and windows. Design, engineering and installation services are available. **Carolina Solar Structures**, Arden, NC.

VOLCANIC BUBBLES FOR SPAS, POOLS

Circle 127 on Reader Service Card

MASTER SUPPLY manufactures the Air Bar to make ordinary pools and spas extraordinary by introducing millions of tiny bubbles in an effect best described as volcanic. The system is virtually invisible when installed in the seat or floor or both, and custom fittings make nearly anything possible in custom pools or spas through connections to standard PVC pipe. The Air Bar and its fittings come in white, black or gray. The company also offers design templates and free samples. **Master Supply,** West Covina, CA.

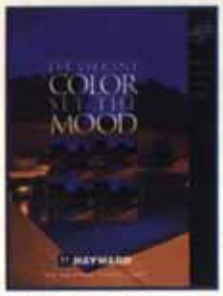
SOLVENT CEMENTS FOR PVC PIPE

Circle 131 on Reader Service Card

UNITED ELCHEM offers a full line of solvent cements, cleaners, primers and accessory items for plastic pipe and fittings. Pool-Tite solvent cement was developed with professional installers' needs specifically in mind. Pool-Tite is a fast-setting cement that can be used in wet conditions and tested at up to 150 psi within 2 or 3 minutes of application. The cement works on both flex and rigid pipe and is a blue color that dries clear after 72 hours' exposure to UV rays. **United Elchem**, Dallas, TX.

Fiberoptic Lighting Detailed

Circle 132 von Reader Service Card



HAYWARD POOL PRODUCTS offers literature on SuperVision, its line of fiberoptic lighting. The leaflet includes information on the cost efficiency and versatility of the lighting, which offers more light output per source. Also included is information on crystal-clear illumination with EndGlow underwater lighting fixtures for dramatic highlighting of spas, stairs, swim outs and caves as well as tips on how to add color to your presentations with SuperVision's wide variety of models and potential lighting designs. **Hayward Pool Products**, Elizabeth, NJ.

Free-Standing Screen Enclosures

Circle 134 on Reader Service Card

AQUA-CLOSURE SYSTEMS introduces a free-standing pool enclosure designed to create a higher level of comfort for those lounging at poolside. The enclosures screen out bugs, leaves and other unwanted elements while allowing breezes in. Prefabricated for easy installation, the enclosures are suited to any climate and come in standard and custom sizes. **Aqua-Closure Systems**, Hudson, FL.

Flyer Describes Fiberoptic System

Circle 133 on Reader Service Card

TELEDYNE LAARS/JANDY PRODUCTS offers a single-sheet, four-color flyer detailing its Sheer Radiance fiberoptic lighting system. Designed for ease of installation and maintenance in uses with pools, spas and fountains as well as decks and landscapes, the large-core fiberoptic system has a variety of available colors that can change to fit any mood. **Teledyne Laars/Jandy Products**, Novato, CA.

Book Offers Tips on Waterfeatures

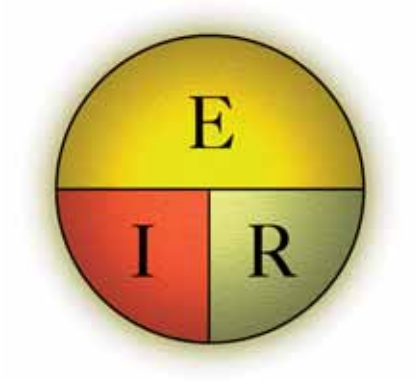
Circle 135 on Reader Service Card

AQUASCAPE DESIGNS introduces the first book ever written exclusively for contractors interested in tapping into what the company describes as the "fastest-growing trend in the Green Industry": the surging popularity of waterfeatures. Featuring more than 200 color photographs and in-depth business advice, this book is intended to change the way you approach, sell and install ponds, streams and other waterfeatures. **Aquascape Designs Inc.**, Batavia, IL.

Continued from page 70

or division.

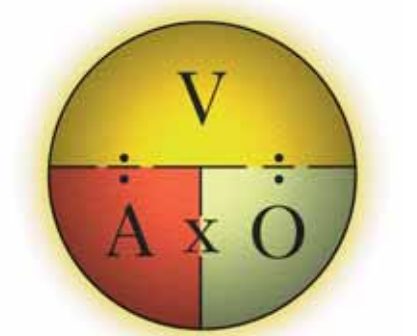
The following pie chart is a handy aid to keeping these equations sorted out. To use it, place a finger on the unit for which you want to find a value and read the formula from the remaining two elements.



For example, if you wish to know the volts of a circuit, cover the "E" and "IR" remains, indicating that you must multiply the amperes times the resistance to find the volts. Or cover the "I" and "E over R" remains, directing you to divide the volts by the ohms to find the amperes. Likewise, cover the "R" and "E over I" remains, telling you to divide the volts by the amperes to find the ohms.

A More Practical Tool

That's all well and good, but I believe that it is asking too much to expect people who don't work with things electric every day to remember that "E" is volts, "I" is amperes and "R" is ohms. So let's make a simple change to the chart to get rid of the mumbo-jumbo.



With this new chart, when you put a finger on the "V," you now clearly see "A x O." Covering the "O" will leave "V ÷ A," while covering the "A" shows "V ÷ O." With this change, I believe we have a better chance of keeping these things straight when we see A, V and O representing amps, volts and ohms, respectively, than we did when they were labeled with E, I and R.

Once you become comfortable with these relationships, you will begin to find practical applications for them in dealing with all sorts of electric circuits.

For instance, although many people are aware that they should not string together several extension cords, they may have no understanding as to why it is considered bad practice. Aside from the obvious tripping hazard that might be created, there is a significant electrical consideration.

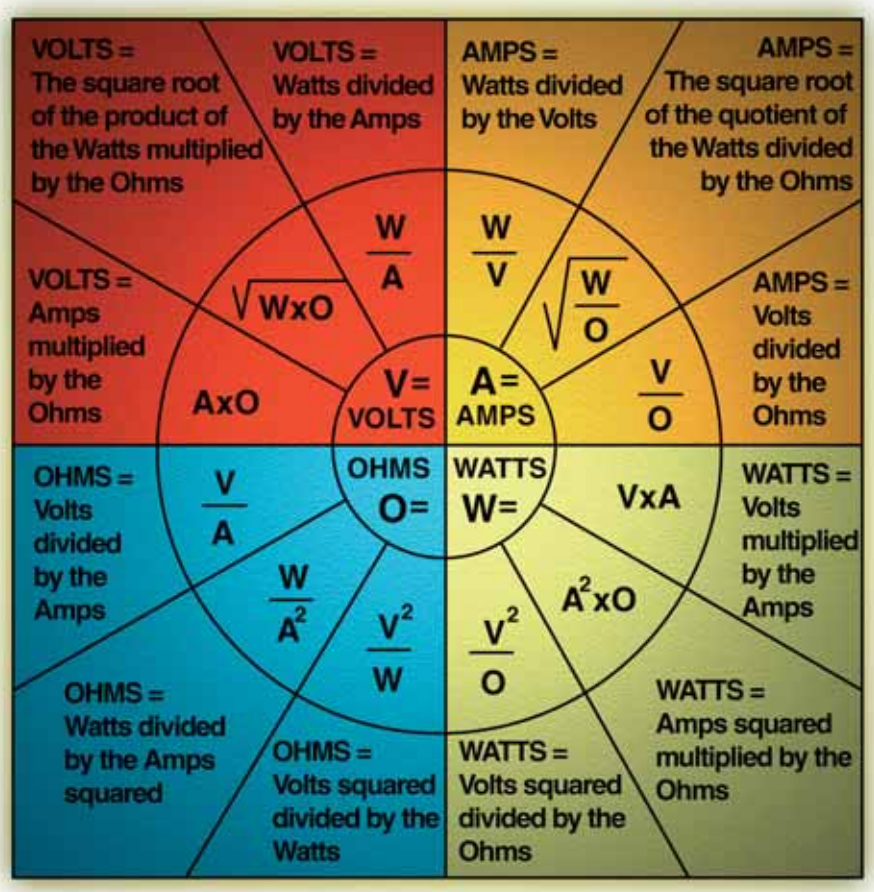
To illustrate, let's say you want to operate a 120-volt circular saw, drawing 12 amps, at a distance of 150 feet from a wall receptacle. To span that gap, you have six 25-foot-long, 18-gauge, lightweight extension cords plugged end to end. The total resistance of those cords will be about 1.9 ohms.

How much voltage loss will take place in those cords? Try V = A x O: That's 12 x 1.9 = 22.8. On a 120-volt circuit, you're losing 22.8 volts – and it's unlikely your saw will be happy operating at 97.2 volts. In fact, it will become angry and hot.

You could trade in those skimpy extension cords for three decent, medium-duty, 50 footers with 14-gauge conductors. The resistance will drop to about 0.7 ohms, so the voltage available at the saw will be approximately 112 volts. Much better. The saw's anger subsides.

What About Watt?

As handy as these pie charts are for helping us with Ohm's Law, they do not



provide us with any information on the fourth electrical unit of interest: the *watt*.

The watt is a bit of an oddball in this scheme of things: It is not specifically an *electrical* term, like volt or ampere or ohm; rather, it is the name given to the standard unit of power.

Power is defined as the rate at which work is performed or at which energy is expended. The source of the energy doesn't matter, nor does the type of energy: We can measure it in watts. We measure the light energy of a light bulb in watts, for example. We use watts to measure the sound energy of a stereo system and the heat energy of an oven. We could just as easily rate the size of all the motors we use (and our automobile engines) in watts as well, but convention is this country long ago opted for *horsepower* – and we won't give it up.

(Incidentally, the relationship between the watt and the horsepower is an interesting story in itself – one I look forward to exploring in an upcoming issue of *WaterShapes*.)

As odd as the watt is, we are fortunate that it has strong mathematical links to the other terms we are dealing with, because it allows us to expand the pie charts shown on page 68 in all sorts of helpful ways.

As you see, I have now embellished the chart to include words that talk you through each of 12 equations that should be part of your electrical vocabulary. I sincerely hope it finds a place on your wall. I think it would make a great refrigerator magnet!

Although many people are aware that they should not string together several extension cords, they may have no understanding as to why it is considered bad practice. Aside from the obvious tripping hazard that might be created, there is a significant electrical consideration.

Jim McNicol is a technical consultant to the swimming pool, jetted bath and spa industries. He works from a base in Orange, Calif.

The Secret Life of Extension Cords

By Jim McNicol

During our last session, we explored the water-flow/electric-current-flow analogy and summed it up in a few sentences that are worth repeating:

• *Water:* The pressure created by the pump forces water to flow through the pipes and valves, overcoming the friction losses of the system. Higher pressure provides for more gallons per minute.

• *Electricity:* The voltage created by the battery forces electrons to flow through the wires and switches, overcoming the ohmic resistance of the circuit. Higher voltage provides for more amperes. (The short version of that is, "Volts push amps through ohms.")

To be truly useful to us, we must know something about the way these three basic units relate to one another.

Sorting The Relationships

Bear with me for a moment while I get some textbook/background stuff out of the way, after which I will provide you with some handy charts that will guide you to a better understanding of these things.

The interrelationships among these standard units – *volts*, *amps* and *ohms* — were investigated by Georg Simon Ohm during the 1820s. He determined that the current flow produced in a circuit by the application of a given voltage depended upon the resistance of the circuit. This resulted in *Ohm's Law*, which is usually expressed as the equation *resistance equals voltage divided by amperes.*

Traditionally, physicists symbolize voltage with an *E* (for "electromotive force"), amperes with an *I* (for current "intensity") and resistance with an *R*. Thus, Ohm's Law is often shown as *R = E/I*.

The rules of mathematics allow us to express that equation in two other forms: I = E/R or E = IR. From this we see that whenever we know the value of any two of the units, we can calculate the value of the third unit by simple multiplication

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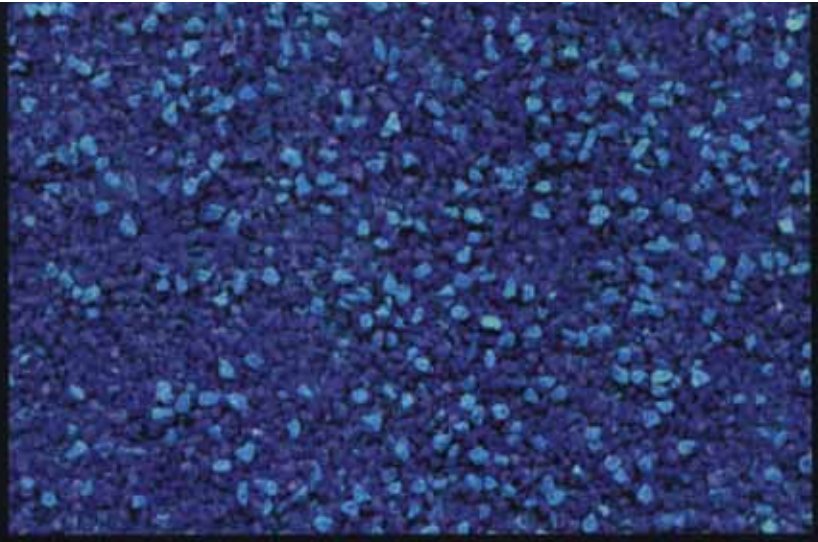

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